

CRITERION 1

SECTION 1.3.2

(2020-21)

1.3.2.

Q_nM

Average percentage of courses that include experiential learning through project work/field work/internship during last five years

1.3.2.1: Number of courses that include experiential learning through project work/field work/internship year wise during last five years

Data Requirement for last five years: (As per Data Template)

- Name of the Course
- Details of experiential learning through project work/field work/internship
- Name of the Programme

Formula:
$$\frac{\text{courses that include experiential learning through project work/field work/internship}}{\text{Total No. of Courses}} \times 100$$

2016-17	$\frac{\text{courses that include experiential learning through project work/field work/internship}}{\text{Total No. of Courses}} \times 100$ $= \frac{14}{15} \times 100 = 93.33\%$
2017-18	$\frac{\text{courses that include experiential learning through project work/field work/internship}}{\text{Total No. of Courses}} \times 100$ $= \frac{15}{15} \times 100 = 100\%$
2018-19	$\frac{\text{courses that include experiential learning through project work/field work/internship}}{\text{Total No. of Courses}} \times 100$ $= \frac{15}{15} \times 100 = 100\%$
2019-20	$\frac{\text{courses that include experiential learning through project work/field work/internship}}{\text{Total No. of Courses}} \times 100$ $= \frac{15}{15} \times 100 = 100\%$
2020-21	$\frac{\text{courses that include experiential learning through project work/field work/internship}}{\text{Total No. of Courses}} \times 100$ $= \frac{15}{15} \times 100 = 100\%$

Average percentage of last five years (2016-21)

$$= \frac{93.33 + 100 + 100 + 100 + 100}{5}$$

$$= 98.66\%$$

10

Internal Quality Assurance Cell (IQAC)
Deen Dayal Upadhyay
University of Lucknow

Pragya

1.3.2 Average percentage of courses that include experiential learning through project work/field work/internship during last five years (10)

Program name	Program code	Name of the Course that include experiential learning through project work/field work/internship	Course code	Year of offering	Name of the student studied course on experiential learning through project work/field work/internship	Link to the relevant document	Page No.	Annexures
B.A.(H) ENGLISH	511	MODES OF CREATIVE WRITING , POETRY ,DRAMA AND FICTION(SEC)	12033914	2020-21	SIMRAN KHAN,AKANSHA,AKSHAT MAHAJAN,ANJU MEENA,CHAVATAPALLI , RAJAKUMARI,GUNJITA PASSI,HARSH YADAV,HARSHI CHAHAR,KIRTI CHAUDHARY,KUNAL ROY,MAITRI JAIN,MANISH BHARTI,MANISHA,MANISHA KANDULNA,MANVI TYAGI,MUSKAN SINGH,NANCY GAHLOT,NANDINII GOEL,NEESHA KUMARI,PAWAN KUMAR SONI,POOJA MEENA,PRACHI KHUSHALANI,RICHA SHARMA,RITIKA JANGRA,RITIKA SOOD,RUCHI NEGI,SAHAJ NAIR, SALONI,SHIFALI SHIVGOTRA,SNEHA R,SONAKSHI,VANSHIKA YADAV,VARSHA RAWAT VISHAL,YASHIKA SATUA,MAITRI KHANTWAL,ANJALI JHA,MANUSHI,KHUSHBOO,W.A.D. O. SEHANI UTHPALA		1-152	Annexure-1 (List of students and Project sample report)
B.A.(H)ENGLISH	511	TRANSLATION STUDIES(SEC)	12033904	2020-21	SIMRAN KHAN,AKANSHA,AKSHAT MAHAJAN,ANJU MEENA,CHAVATAPALLI , RAJAKUMARI,GUNJITA PASSI,HARSH YADAV,HARSHI CHAHAR,KIRTI CHAUDHARY,KUNAL ROY,MAITRI JAIN,MANISH BHARTI,MANISHA,MANISHA KANDULNA,MANVI TYAGI,MUSKAN SINGH,NANCY GAHLOT,NANDINII GOEL,NEESHA KUMARI,PAWAN KUMAR SONI,POOJA MEENA,PRACHI KHUSHALANI,RICHA SHARMA,RITIKA JANGRA,RITIKA SOOD,RUCHI NEGI,SAHAJ NAIR, SALONI,SHIFALI SHIVGOTRA,SNEHA R,SONAKSHI,VANSHIKA YADAV,VARSHA RAWAT VISHAL,YASHIKA SATUA,MAITRI KHANTWAL,ANJALI JHA,MANUSHI,KHUSHBOO,W.A.D. O. SEHANI UTHPALA		153-156	Annexure-2 (List of students and Project sample report)
B.A.(PROGRAM)/B.A.	501	RESEARCH METHODOLOGY(SEC)	62273426	2020-21	DEEKSHA,HARSH SINHA,JAYASH,NAKARAN MEE,LAKSHAY YADAV,NITU BISHNOI,PRATEEK PAL,SHRUTI,SHRUTI KHANDELWAL,SIDDHARTH SRIVASTAVA,VISHWAJEET KUMAR,TEJASWITA SAHOO,MAHIMA RATHORNYU KUMAR		157-211	Annexure-3 (List of students attached with signed by respective Teacher for mentioning project allocation)

Internal Quality
Assurance
Coordinator
Dr. Anjali K. Jha
Dhanu College
University of Delhi

Signature
Date

<p>B.A.(PROGRAM)/B.A.</p>	<p>501</p>	<p>AECC – Environmental Science</p>	<p>72182801</p>	<p>2020-21</p>	<p>AMAN,RAJ,AVINASH,MOHIT,MANISH,KUMAR,SAHIL,RUNESH,PARUL,SAKSHI,ANNAPURNA,MANISHA,GOURAV,PIKKI,RAHUL,SAI ARJUN,VISHAL KARN,CHANDAN,ANKIT,DEEPESH,KORABANDI PRASANTH,YASH,BHUKYA,KARTHIK,ABHISHEK,ANANYA,TANNU,SHRUTI,PRATHAM,ASHISH,KHUSHI,ABHAY, ANUPRIYA,MD ZEESHANUDDIN,DIKSHA,SHIPRA,KANISHKA,RASHI,SEJAL,PRACHI,ABHISHEK SHARMA,AKANKSHA,UDITANSHU RAI,SHRADHA THAKUR,ARPIT,ABHINAV,NAGENDER, SHIVAM GOYAL,GAURAV,NIKHIL,ARCHANA,LAKSHMI,ARYAN,MADHAV,NILESH,AJEET YADAV,KUSHAGRA,UDAY RAJPUT,PRIYA,RITESH,ABHAY,RAJENDRA,BRIJESH,ABHISHEK,PAWAN,DEEPANSHU,SHREY,SHIVANI,KESHAV ,ADITYA,KULDEEP,OJASWINI,DIKSHA,DRISHTI,SHIVAM,ARZOO,ANIKET,HIMANSHU,VIVEK,KAPIL,MAHAVEE R,SIDH TANYA KUMARI,SRISHTI,MONIKA,PREETI,ANJALI,AMRITANSH,ANUBHAV,YUKTA ,ODARA,KHUSHI JINDAL,PIYUSH,SAHIL,YAMAN,SNEHIL,DIKSHA, CHESHTA,BRAJENDRA, PARIHAR,ABHINAV,YUVRAJ,PRAPTI,VIKRAM,ANAND,SHANKI,PRIYANKA,AVNEET,KRITI,PRIYANSHU,VIKAS,G ARVIT,ANKIT,SANJAY,BHUMIKA,SARTHAK,SANJEEV,SURYANSH,SHILPA,RAHUL,GAURAV,RAUNAQA,RITIK,VIK ASH MANDA,KHUSHI,AYSHA,KULDEEP,ABHISHEK,HIMANSHU,YOGESH,ANIKET,MOHIT,PRADEEP KUMAR MANDAL,VIKASH,ANJALI,VIVEK,ASHWANI,DHARMRAJ,ROHIT,VIKASH,AKASH NARWARIYA,SUMIT,PRIYANSHU,MOHIT,TUSHAR,DEVESH,ABHISHEK,ADITI SINGH,ALOK GUPTA,NEERAJ,AMIT,AMAN,NAYAN,SHIVAM,YASH,RONAK,BHARAT,DEEPA,RAUSHAN,SURAJ,DASHARAT ,KUNAL,SAURABH,AKASH,GAWAN,NEHA,JOYA,DEEPAK,AJEET,VISHAL,ROHAN,ARCHIT,PANKAJ,SAKSHAM,K ALPANA,SHYAM,DEEPAK,CHANDAN,PRINCE,HARSHIT,HARSH,NIDHI,RAKHI,AVINASH,SYED,JAYANT,SACHIN, KRISHNA,RAHUL,ANANYA,AMOLI,ARPIT,KOYAL,AJAY PRATAP SINGH CHAUHAN,DEEPANSHU MALIK,SHANTANU SINGH,KALPANA,AAFTAB ALI ASHANI,ASHOK PADHYE,PRATIBHA I,REETU KUMARI,ABHIMANYU,ANJALI,ADITYA,TUSHAR,SANSKAR,SUMIT,AKASH,AKHILESH SHAH,VISHAL,AARTI,AYUSH,KAUSHIK,YASH,RAHUL,ABHINAV,SHIVAM,SHREYA,HARSHIT,PARIPALLY RAVI TEJA REDDY,SAKSHI VISHWAKMA,AMIT,NIKHIL DIXIT,HEMANT,NIKHIL YADAV,PRIYANSHU KUMAR,YASHIKA,VIKAS PUROHIT,KULDEE,KHUSHBOO,ARYAN,KANISHKA,APRAJITA,DIVYA KAIRA,PRAKARSH PANDEY,DEVRAJ DRALL,SAKSHI,ARIHANT,DANISH,SAKSHI PATHAK,NISHANT KUMAR,DEEPAK,ARYAN SHARMA,SUNIL,KANISHAK TANTA,AVIRAL JAIN,SAGAR PUNETHA,MADHAVENDER,ARYAMAN,KRISH,SAGAR,VARUN</p>	<p>212-217</p>	<p>Annexure-4 (List of students with Project allocation)</p>
<p>B.COM.(H)</p>	<p>504</p>	<p>Fundamental of Investment(DSE)</p>	<p>22417601</p>	<p>2020-21</p>	<p>AMAAN AHMAD,TUSHAR KUMAR,ABHISHEK KUMAR,SANGEET KHANNA,SAHIL CHOUDHARY,ANUSHKA YADAV,AAKRITI SINGHAL,SHRUTI SHARMA,ARSHITA GUPTA,VIJYANT NAGPAL,AMAN SAH,TUSHAR SINGH,SOURAV BIJARNIA,VANIKA GUPTA,SANDEEP KUMAR,ANKIT KHANNA,ADITI SAINI,TIJIL SURJI,TANYA GULATI,UPASANA SHARMA,VIDISHA VERMA,ADITI GUPTA,AMAN GAUTAM,YASHITA MEHTA,VINAY YADAV,SARTHAK GUPTA,SATYAM SABOO,ABHISHEK,YASHIKA GARG,TAZIM,SUNIL SHAH,SHANTANU,SUNIL PANDIT,VIDHI KANODIA,VINAYAK YADAV</p>	<p>218-233</p>	<p>Annexure-5 (List of students and Project sample report)</p>

B.COM.(H)	504	AECC – Environmental Science	72182801	2020-21	ASHISH,AAVESH,ABHISHEK ,ADITI,ADITI ,ADITYA ,ADITYA TANWAR,AKAN ,AKANKSHA ,AKANSHI SHARMA,AKASH,AKASH KUMAR ,AMAN,AMAN KUMAR,AMAN SINGH,AMIT ,ANANYA AGRAWAL,ANANYA OJHA,ANKIT RANA,ANKITA SHARMA,ANKUR KUSHWAHA,ANSHITA YADAV,ANURAG,ATUL PAL,AYUSH SINGLA,BHAWNA,CHHAVI KARN,DAVINDER SINGH,DEEPANSHI GOYAL,DEEPANSHU,DEEPANSHU ARORA,DHRUV DEWAN,DIKSHA KAPOOR,DILIP KUMAR ARYA,DILKHUSH,DIVYANSHI GARG,DIYARA MITTAL,EESHA JAIN,FARMAN,GOPICHAND,HARMANDEEP,HARSH,HARSHIT,HIMANSHU,IPSHA,AAYUSH CHAUHAN,HIMANI,ABHIMANYU,ANURAG,ABHISHEK RAJ,ANKIT YADAV,ASHISH,AYUSHI,DARSHIKA SHARMA,DEEPA,HARSHIT ARORA,HIMANSHU,AASHRAY SENA,AADYA DUBEY,HIMANSHU,ANSH JAIN,BHUMIT,DHRUV KUMAR,JA,JASLEEN,JATIN BANSAL,JYOTI,UPADHAYA,KARISHMA,KASHISH GANDHI,KESHAV ARORA,KHUSHBOO,KHUSHI,KOMAL,KRITIKA GOYAL,MAHAK JAIN,MANISH RANA,MANNU MALIK,MANVI GOEL,MAYANK ,UMAR SINGH,MEGHA MEENA,MOHAMED IMRAN CHURIHAR,MUKUL CHADHA,MUSKAAN,NAIMISH ,ERMA,NIDHI DEVI,NIKHIL SINGH,NIKITA GUPTA,NIKITA SINGHAL,NISHTHA MALHOTRA,NISTHA SHARMA,NITISH BRAHMA,PAKHI GARG,PIYUSH AGGARWAL,PIYUSH KUMAR SINGH,POOJA MEENA,POTHULA SUJINDER CHAITANYA,PRANJAL JAIN,PRITIKA GANOTRA,PRIYANSHI JAIN,PRIYANSHI,RAINA TUTEJA,RAJAT JAISWAL,RAJNEESH KUMAR,RENKAL RATHORE,RISHABH JAIN,RISHI,RITIK RAJPUT,RIYA DAS,ROBIN AHUJA,ROHIT KUMAR MEENA,ROHIT NAREDA,RUDRA PRATAP SINGH,JA SHREE,JANVI,KANISHK,MUSKAAN,NANCY,NIDHI YADAV,NITISH,PANKAJ THAKUR,PRATHAM ANAND,RAJESH,MOKSH SHARMA,NIRVANI SINGH,JOEL K. REJI,RAJ VERMA,SAKET, SAKSHI LOHANI,SAMEER SAINI,SANSKAR GARG,SARTHAK MEENA,SAURAV MEENA,SHALU,SHIVAM RANGA,SHREYA AGGARWAL,SHREYA RAWAT,SHREYAS ACHAL,SHRUTI GOEL,SHUBHANSHI GUPTA,SHUBHANSHU DHAKA,SIDDHARTH JAIN,SONAKSHI GUPTA,SONIA PRASAD,SUDIPIKA,SUKHVINDER KAUR,SUMIT YADAV,SURAJ KUMAR,SWECHA TYAGI,TANISHA GUPTA,TEJAS GOYAL,VANSHIKA THAREJA,VARTIKA GARG,VICKY KUMAR SHAH,VIJAY KOLI,VIKAS RANA,VISHAL KUMAR,SIDDHARTH SETHIA,MD. SAHIR AALAM,SUBHANKAR MISHRA,,SHWETA,TANSHIKA,VISHAL,YASHICA GUPTA,SANJANA SARRAF,SARTHAK SAHU,SATYAM TYAGI,SAURABH,SAURABH RAJPOOT,SUMIT YADAV,SIMRAN	234-244	Annexure-6 (List of students with Project allocation)
BMS	590	AECC – Environmental Science	72182801	2020-21	AASHIMA VERMA,ABHIMAN SHARMA, ADITYA GOLANI,AKASH KUMAR,AKSHAT BHARDWAJ,ANANNAY AGGARWAL,ANMOL,ANSH SETHI,ARCHITA JAIN,ARYAN,AYUSH,MAVI,AYUSH,CHOUDHARY,BHANU YADAV,BHAVIKA GUPTA,CHARU KUSHWAHA,CHEVY JAIN,CHIRANSHI ARORA,DHRUV CHOULA,DHRUV KHULLAR,EKTA SHROFF,GAURAV KUMAR MEENA,GURLEEN KAUR,HANSIKA CHHABRA,KANAK RUSTAGI,KANCHAN RUHELA,KANISHKA PACHAURY,KARAN YADAV,KARTIKEY CHANDRA,KUSHALA PRASAD,LAVANYA PURI,MANAN YADAV,NIHARIKA MOTWANI,PRARTHANA JOSHI,PRATEEK PANDEY,RAGHAV POONIA,RITIKA KAPOOR,SAHIL ARORA,SANYA GUPTA,SATVIK SRIVASTAVA,SHAILENDRA PRATAP SINGH,SHIV BANSAL,SHIVAM GARG,SHUBHI AGARWAL,SIMAR SEKHRI,SUJAL KUMAR,SUMIT VERMA,VANSH SACHDEVA,VARNIKA VISHWAKARMA,,VATSAL AGARWAL,YASH RAJPUT,Mr. OBAIDULLAH OBAREZ,AMAN KUMAR,ARYAN TIWARI,KUMAR SAURABH JAISWAL,LAKSHA,RHYTHM PURI,SHIVAM,SHUBHAM CHAUDHARY,URVASHI KRISHNATRA,VANSH MAHESHWARI,ABHIJAI CHATURVEDI,LAKSHIT SEHGAL,SHUBHAM SHARMA,TUSHAR SETHI	245-246	Annexure-7 (List of students with Project allocation)
B.SC.(GEN.)LIFE SCIENCE /B.SC. LIFE SCIENCE	583	AECC – Environmental Science	72182801	2020-21	ABHISHEK,ARCHANA DHILLO,ARUN ARUN ARUN,ARYAN NEGI,BHAGIRANI LEISHANGTHEM,BHAWNA,HARDIK KUMAR SAH,KAMAL SINGH,KHUSHBOO,KSHITU GROVER,LAKSHIKA SINGH,MANISH KUMAR,MANISHA RAWAT,MONIKA,NEHA YADAV,NISHA KUMARI,POOJA,RAHUL TIRKEY,SALONI MASAND,SARTHAK DHAR,SHALU,SHIVAM,SHIVANI,SHREYA UPADHYAY,SHRUTI,SHRUTI KUMARI,SHUBHAM,SIMRAN,SURAJIT MONDAL,SWETA SHARMA,TAMANNA,TANISHA SHARMA,VAIDEHI JAIN,VIKAS,VIKAS PANDEY,VIVEK,YASH,YASHIKA RIVEDI,CHHAVI BASRA,PRACHI KUMARI,PREETI,ROHIT	247-249	Annexure-8 (List of students with Project allocation)

B.SC.(H) MATHEMATICS	563	AECC – Environmental Science	72182801	2020-21	<p>AAKRITI,AANCHAL SHEKHAWAT,ABDUL WAJID,ABHISHEK,ABHISHEK BHAGAT,ADITYA,AGNI TAG,AKASH,AKSHANSH YADAV,AMANDEEP,ANISHA,ANJALI,ANKUR KUSHWAHA,ANUJ,ARPIT SINGH,ARPITA,ARUSHI KUMARI,ARYAMAN YADAV,ARYUSHI,ASHA POONIA,AVICHAL DIXIT,AYUSHI,AYUSHI TIWARI,BASANT KUMAR,BHAVIKA GUPTA,BRAJESH GAUR,DEEPA YADAV,DEEPTI TURAN,DEVANAND YADAV,DEVANG MEENA,DEV DUTT CHAUHAN,DIVYANSHU RAJ,FAHMI ANSARI,GARVIT,GENIYA,HARISH,KUMAR,HARSH,GAUTAM,HARSHIT,RANA,HARSHITA,HITESH,HITESH,ISHA GUPTA,JYOTI YADAV,JYOTSNA,KAJAL,KRITI MAKHIJA,KUNAL,LOKESH YADAV,LOVISH VYAS,MAHIMA YADUVANSHI,MANDEEP KODAN,MANISH,MAYANK,MEGHA,NAVEEN KUMAR,NEEKITA,NIPUN SHARMA,NISHANT VERMA,NITIN KUMAR,PAYAL,POOJA DAILA,PRANJAL SHARMA,PRAPHULL KUMAR RAJPUT,PRASHANSA KANWAL,PRAVESH KUMAR YADAV,RAHUL PRAJAPAT,RAJNEESH GAUTAM,RENU KUMARI,RISHIKA ,APOOR,ROHIT,ROHIT,ROHIT KUMAR,ROHIT KUNDU,RUCHIKA,RUDRANSH BISHT,RUPALI YADAV,SAHIL,SATVIK TYAGI,SAURAV PARCHA,SHRISHTI SRIVASTAVA,SHRUTI AGARWAL,SHUBHAM ,AHIYA,SOURABH CHOUDHARY,SWEETY,SWIKRITI PATEL,TAMANNA,VARTIKA RAWAT,VINEET CHAMOLI,VINOD KUMAR MEENA,VISHAL,YASHPAL,YUG KUMAR,ANJALI JOSHI,AVNI CHAUHAN,HANSIKA,JATIN DHAKA,MUDRIKA PANDEY,PRIYANSHI AGGARWAL,SAHIL RATHEE,SHARAD SHARMA,TANVI GOEL,UTKARSH JAIN,VANSH JAIN,VANSH JINDAL,NITIN AHLAWAT,TARUN DWIVEDI,,ABHISHEK BHARGAVA,ANURAG KHOKHAR,SHIVAM SINGH PARIHAR</p>	250-254	Annexure-9 (List of students with Project allocation)
B.SC.(GEN.) PHYSICAL SCIENCE/ B.SC.(GEN.) PHYSICAL SCIENCE WITH CHEMISTRY	582	AECC – Environmental Science	72182801	2020-21	<p>AKASH,AMIT KUMAR YADAV,ANJALI,ASHISH KUMAR,DEEPA,DEEPANSHU,DEEPANSHU GULIA,DHEERAJ KUMAR,DIVAS GAUR,GAURAV AHLAWAT,GAURAV MEENA,HAPPY BAGHEL,HITESH,HITESH KUMAR,ISHANT SHUKLA,JITEN KUMAR YADAV,KAMALDEEP,KANISHK YADAV,KAPINDER YADAV,KARISHMA,KHUSHBU YADAV,KIRAN,MANISH,MAYANK KUMAR,NIKHIL,NISHA,PARDEEP KUMAR,PRADEEP GENWA,PRINCE PUNDIR,PRIYA,PRIYA AHLAWAT,RANJIT,RIGZEN NURBOO,RITIK,CHATURVEDI,ROHIT KUMAR,SANJAY KHANNEOTRA,SATYAM,SIVANI,VIPIN KUMAR,YUVRAJ TOKAS</p>	255-256	Annexure-10 (List of students with Project allocation)
B.SC.(H)BOTANY	556	AECC – Environmental Science	72182801	2020-21	<p>AAYUSH,ALICE MIBANG,ANSHU,ANUJ KUMAR,APARNA JANGIR,ARUN,ASHISH,AVDHI KAUSHIK,BHANU KAUSHIK,CHETNA,DEVENDER,DIVYA,GARIMA KHATRI,GAURAV RATHORE,GEETANJALI,KHEROON NISSA,LHAM DREMA,LUV GUPTA,MAHIMA CHAUDHARY,MANJEET KUMAR,NANCY,NIGHAT NAZ NEEN,NIKITA BISHT,NIKITA SHRIVAS,NILZA ANGMO,POOJA,MANISHA TANDON,PREETI VISHWAKARMA,SANYUKTA BHOWMICK,SHIVANI KOUNDAL,SHRUTI RAY,SMILE,SUNAINA,SUSHANKITA SRIVASTAVA,SWATI CHAUHAN,TANU CHAUHAN,TRISHA MEHRA,TWINKLE YADAV,NIKITA PANDEY,RAGHAV SHIVKUMAR CHOUBEY,MAHESHWARI SYMOND PREMKUMAR,SAKSHI YADAV,SHUBHAM KUMAR,VIDUSHI SINGH,NANCY YADAV,ANKIT DABLA,KARTIK</p>	257-259	Annexure-11 (List of students with Project allocation)
B.SC.(H)CHEMISTRY	557	AECC – Environmental Science	72182801	2020-21	<p>AAKANKSHA,ANJALI GAUTAM,ANKITA RAWAT,GURNOOR KAUR,HARSH SHARMA,ISHU GOYAL,KESHAV VASUDEV,MANDEEP,MUKUL SINGH,NANCY,NEHA,NIHARIKA SAHAY,NIKITA ROY,NISHANT NANDA,PRIYANKA,RAVI MISHRA,RITISH,SHISHRAM DHAKA,SHIV SHANKAR MEENA,SOMYA UPADHYAY,TARUN KUMAR,VAISHANAVI,VINAY KUMAR,NEHA YADAV,SWATI VISHWAKARMA,ANKUSH KUMAR,ANUSH,ARYAN DOODWAL,DHRUV,DHRUV GAHLAN,JAIVEER,KRISHANKANT,MUSKAN SHARMA,RESHAB KARANWAL,ROHIT KUMAR MAURYA,SACHIN MEENA,SAHIL YADAV,SANSKAR,UMESH RATHORE,NANCY,PRANJAL RAJ,TANYA GUPTA</p>	260	Annexure-12 (List of students with Project allocation)
B.SC.(H)COMPUTER SCIENCE	570	AECC – Environmental Science	72182801	2020-21	<p>ABHISHEK MARTOLIA,ABHISHEK,ADARSH KUMAR SINGH,ADITYARAJ,AJAY KUMAR,AKSHIT,AMISHA,ANIKET,ANNIRESH,ANSH,ANSHITESH KUMAR,ANSHU RAJ,ASHISH SHAKYA,AVANTIKA,CHARU PATEL,DEVJYOTI MUKHERJEE,DIVYANSH MAGAN,GAURAV KUMAR,HARSH,ISHA CHAUHAN,ISHIKA CASLEY,ISHIKA SARASWAT,JATIN ADHIKARI,KARAN SINGH,KOMAL SAHOO,KRITIKA,LALIT KUMAR,MANTSHA,NANDINI BISHT,PALAK PANDEY,PRAGATI RATHI,PRAKRITI SINGH,PRANJAL GUPTA,PRATEEK,PRIYA,PRIYANSHU RANJAN,RAHUL KUMAR MANJHI,RAJ RAUNAK KUMAR,RITIKA,RITU KUMARI,ROHIT KUMAR SINGH,SAGAR PRAJAPATI,SANCHIT ,ATIJA,SANJANA DAS,SANJANA GOEL,SEEMA KUMARI,SHAGUN PANDEY,SHIVAM DALAL,SHRESHTHA ,UMAR GUPTA,SHUBHAM YADAV,SIMRAN,TANVI,VANSHIKA GUPTA,VINAY KHANDURI,VISHAL ,UMAR,Ms. AZIZAH NOORI,BELO ABHIGYAN,AVINASH KUMAR THAKUR,ANUJ PRATAP SINGH,ASHUTOSH TIWARI,BINTU SINGH CHAUHAN,MAYANK AGARWALLA,HARSHIT,ANISH GUPTA</p>	261-262	Annexure-13 (List of students with Project allocation)

B.SC.(H)ELECTRONICS	558	AECC – Environmental Science	72182801	2020-21	ADITYA JAYANT,ADITYA KUMAR MISHRA,AKASH KUMAR MAURYA,ALOK KUMAR,NIMESH KUMAR,ANKIT GUPTA,ANKUSH SHEKHAWAT,ANMOL SHARMA,ANSHUMAN SINGH,DASRATH,DIKSHA SINGH,DIXIT,HARSH JAWLA,HARSHVARDHAN SINGH TOMAR,ISHITA JOSHI,LALIT KUMAR CHAUHAN,MANGESH POONAR,MANISH KUMAR,MAYANK,MEER SAMAD KHAN,MILAN,MOHIT AHIRWAR,MUSKAN SETH,NIKHIL YADAV,NITIN YADAV,PRAJWAL BARANWAL,PRINCE,PRIYANSHU AGGARWAL,PUNEET,R HARI NARAYAN,RAHUL YADAV,RAJAN KUMAR JHA,RAKESH KUMAR,RASHIK ROUSHAN,RITNESH,ROHAN,SAHIL,SHARAT SINGH,SHASHANK CHAUHAN,SHRASHANK SINGH TILAK,SUYASH TRIPATHI,TASHI PHUNCHOK,UTKARSH CHAMOLI,VARCHASV GUPTA,VINIT KUMAR,ANIKET,GAURAV RAJPUT,JATIN SINGH,RUDRAKSH MAURYA,ABHISHEK PAL,PRASHANT KUMAR SINGH,RAVI BHUSHAN KUMAR,SAHIL KUMAR YADAV,VEDANTI KIRAN,VIKRANT YADAV,SAGAR MISHRA	263-266	Annexure-14 (List of students with Project allocation)
B.SC.(H)MATHEMATICAL SCIENCE	587	AECC – Environmental Science	72182801	2020-21	ABHISHEK,ABHISHEK MEENA,ANKIT KUMAR,ANSHU,DIBYANSHU GOSWAMI,DIKSHA YADAV,DISHA PATTNAIK,EKTA GANDHI,FARHAAN,GAUTAM,GHANSHYAM YADAV,HAMZA MOINI,HARSH KANSAL,HARSH VERMA,JITENDER,MOHIT KUMAR MISHRA,NEHA,NIKHIL KUMAR,PRATIKSHA,RAJA GOLA,RAJKUMAR YADAV,RISHIKESH BARELA,RIVA YADAV,RUDRA PRATAP SINGH,SAHIL LUTHRA,SHASHANK KUMAR PRAJAPAT,SHIVANI RAWAT,SHREYA SRIVASTAVA,SHRUTI VARSHNEYA,TANMAY AGRAWAL,TEJASHWANI DUBEY,UTKARSH PRATAP SINGH,YATHARTH MANROY,AJAY KUMAR,ROHAN TAMTA,ANTRA DAS,PRASHANT,RAGHAV SAHI	267	Annexure-15 (List of students with Project allocation)
B.SC.(H)PHYSICS	567	AECC – Environmental Science	72182801	2020-21	AASHISH PRASAD,AAYUSHI JOSHI,ABHINAV ACHARYA,ADITYA CHECHI,ADITYA PRATAP SINGH,AKHIL PRATAP SINGH,AKSHAY KUMAR,AKSHIT GUPTA,AMAN VERMA,AMBER MISHRA,AMIT KUMAR GOND,ANIL GOSWAMI,ANIRUDH SINGH,ANKIT RANA,ANKUR DWIVEDI,ANSHU GAUTAM,ANUJ PRAVESH,DRON JOSHI,HARISH,HEMANT KUMAR,HIMANSHU,HRITIK,KANISHKA VARSHNEY,LAVKUSH PATEL,MANISH KUMAR MINA,MAYANK KUMAR,NISHA,NITIN RAGHAV,NITISH JOON,OMPRAKASH,PRADEEP YADAV,PRAVEEN KUMAR,PRINCE KUMAR CHOBAY,PRIYANKA,PRIYANSHU KUNWAR,RAHUL,RAHUL MEENA,RAHUL BHATTI,RAUNAQ GOHAIN,RHITIK CHAUHAN,RISHIKA THAKUR,ROHAN SINGH,ROHAN JOSHI,SACHIN PANDEY,SAKSHI BISHT,SAMEEP SATIJA,SATYAM,SAURAV KUMAR,SHUBHAM BHARDWAJ,SHWETA KOTECHE,SHYAM,SIDHARTH,SOMRAJ MEENA,SONU KUMAR,SPARSH JAIN,TANISHA,TUSHAR,UPASANA GAHTORI,VIDHAN CHANDEL,VIKAS KUMAR,VIKAS KUMAR,YASH	268-269	Annexure-16 (List of students with Project allocation)
B.Sc.(Gen.)Physical Science /with computer science	582	AECC – Environmental Science	72182801	2020-21	AMAN KUMAR,AMIT KHATRI,AMIT KUMAR,ANKIT KUMAR,ARVIND KUMAR,ARYAN SINGH,ASHISH KUMAR,AYUSH BHARDWAJ,AZAD,BHALENDER,DANISH NAWAZ,DEGAVAT ROHIT NAIK,DIWAKER,HARSHIT DHAKA,INDRAJEET KUMAR PASWAN,ISHITA BATRA,KAMAL SINGH,KISHAN KUMAR,LOKENDRA SINGH,MOHINISH KUMAR,MOHIT RAWAT,MUKESH KUMAR,NIKHIL NEGI,NUPUR KUMARI,PARTHIV DAS,RAHUL ARORA,RAHUL KUMAR,REBECCA DAGAR,RIYA,SAHIL,SAKSHAM JAISWAL,SALONI RAJ,SANDEEP PATEL,SATTWIK TIWARI,SHIVAM JAIN,SHUBHAM SINGH BHANDARI,SIDDHANT PUNDIR,SIDDHARTH SHARAVAT,SITA RAM ROY,SOURABH CHOUHAN,SURAJ,VICKY KUMAR,VIPUL KUMAR,YOGESH BISHT	270	Annexure-17 (List of students with Project allocation)
B.SC.(H)ZOOLOGY	569	AECC – Environmental Science	72182801	2020-21	ABHIRUPA BARMAN,ARJUN RAM,ARKA KUMAR CHOWDHURY,ASHISH KUMAR SINGH,BHAVYA,DEEPALAXMI BRAHMA,GANESH KUMAR,GAURAV YADAV,JANVI,JAYA,JYOTI YADAV,KALYANI SINHA,KANIKA GHUGTIYAL,KHUSHI PATEL,KUMARI HONEY,MAHAK TICKOO,MANISH KUMAR,NAMAN KUMAR PATODIA,NIKITA,NIKITA ROHILLA,PIYUSH DADHICH,RITIK YADAV,RITU THAKUR,RIYA SHARMA,SANDHYA KUMARI,SIMRAN,SONIKA SETH,TANYA MISHRA,TULSIMAYEE TUDU,TUSHANT KUMAR SAINI,YOGITA,RANJITA,ANJALI,ANKUSH SINGH,KHUSHI KUMARI,PRIYANSHI,SHRUTI AGARWAL,SONALI PHOGAT,VIJAY KUMAR SHARMA,NISHA MEENA,SUBHI PANDEY,ANCHAL JHA,BALWANT SINGH SOLANKI,NEERAJ YADAV	271-273	Annexure-18 (List of students with Project allocation)
B.SC.(H)ZOOLOGY	569	PRINCIPLES OF ECOLOGY	32231102	2020-21	ARJUN RAM,ASHISH KUMAR SINGH,DEEPALAXMI BRAHMA,GANESH KUMAR,GAURAV YADAV,JAYA,JYOTI YADAV,KANIKA GHUGTIYAL,KHUSHI PATEL,KUMARI HONEY,MANISH KUMAR,NAMAN KUMAR PATODIA,NIKITA,NIKITA ROHILLA,PIYUSH DADHICH,RITIK YADAV,RIYA SHARMA,SANDHYA KUMARI,SIMRAN,SONIKA SETH,TANYA MISHRA,TULSIMAYEE TUDU,TUSHANT KUMAR SAINI,YOGITA,RANJITA,ANJALI,ANKUSH,KHUSHI KUMARI,PRIYANSHI,SHRUTI AGARWAL,SONALI PHOGAT,NISHA MEENA,ANCHAL,BALWANT	274-278	Annexure-19 (List of students and Project sample report)

B.SC.(H)ZOOLOGY	569	RESEARCH METHODOLOGY	32233904	2020-21	AKANKSHA NANDWANA,AMISHA SINGH,ANJALI CHAUHAN,ANNAPURNA,ASHISH,HARSHITA PANT,HITESH SINGH,JYOTI,KAJAL JOON,MANISH HARARIYA,MEHAK MATTOO,PRIYA JHA,RAHUL KUMAR BENIWAL,RAVEENA,RITIKA SAINI,RIYA JAIN,RIYA RAI,RUCHI YADAV,SAMIDHA KUMARA,SAMPA BISWAS,SHUBHAM SAINI,SIMRAN CHAUHAN,SIMRAN PARVEEN,SUMIT,SUNITA HAZRA,VAIDEHI JHA,YASHIKA JINDAL,UTKARSH,AMAN AKASH,KOMAL	279-280	Annexure-20 (List of students attached. Signed by concerned teacher for Project report/Marks)
B.SC.(H)ZOOLOGY	569	DEVELOPMENTAL BIOLOGY	32231601	2020-21	AASHI,AASTHA,ADRIJA MOHANTA,AKANKSHA SINGH,AKRITI KUMARI,BHAWNA SOLANKI,MANSI JANGRA,NILAMADHAB,NISHI PANT,POOJA VERMA,PRACHI,RAM SHANKAR R,SHALLU,SHILPI SINHA,SHRADHA DARIYAL,SHWETA DOHARE,SIMRAN RANA,SIMRAN KHAN,SIMRAN SINGH,SONIA,SOURABH,SRASHTI SAHU,TANUJA,VAIBHAV SAINI,VISHLESH KOTARYA,NIRMAL SINGH,SIMRAN YADAV,SIDRAH IQBAL,SAPNA YADAV,MUKUL ROHILLA,MONIKA,KISA,CHETAN CHOWDHARY,ARUNA NEHRA	281-290	Annexure-21 (List of students and Project sample report)
B.SC.(H)ZOOLOGY	569	Physiology: Controlling and Coordinating Systems (Core Paper)	32231301	2020-21	AKANKSHA,AMISHA,ANJALI,ANNAPURNA,ASHISH,HARSHITA,HITESH,JYOTI,KAJAL,MANISH,MEHAK,PRIYA,RAHUL,RITIKA,RIYA JAIN,RUCHI,SAMPA,SHUBHAM,SIMRAN CHAUHAN,SUNITA,VAIDEHI,YASHIKA,UTKARSH,KOMAL	291-295	Annexure-22 (List of students and Project sample report)
B.SC.(H)ZOOLOGY	569	Food Nutrition and health	32235906	2020-21	BENNY P THANGLAMVAN,GAURAV PRCHA,KIRAN KUMARI SAH,LAKSHYA PANDEY,PRAMOD KUMAR MEENA,POOJA KUMARI,ROHIT,SHREYANSHI,SURAJ PANDEY,RITIK SINHA,DEEPIKA KUMAR DWIVEDI,GAGAN SINGH,JASKARAN SINGH BINDRA,JITENDER KUMAR ARORA,ROHIT,NAVEEN KUMAR,ROHIT,SHOBHIT,TRILOK SINGH YADAV	296-321	Annexure-23 (List of students and Project sample report)
B.SC.(H)Life Science	583	Genetics and evolutionary biology	42234406	2020-21	ANKIT SRIVASTAVA,ANKITA KAPIL,ANOOP YADAV,ARPIT,ARVIND,ASHISH,ASHUTOSH,AYUSHI SINGH,BARBIE NAGPAL,DIVYA SHARMA,GEETA RANI,HARITA,HIMANSHI DALAL,KM SWETA SINGH,MANDAVI SHUKLA,NEHA YADAV,NISHITA BHARDWAJ,PORISHMITA KUTUM,PRASHANT SAKIT,SAKSHI,SAMEEKSHA JHA,SHAILJA SINGH,SHASHI KANT SHEKHAR,SONAKSHI SAXENA,VERSHA PANDEY,VIKKY SINGH,YOGITA GAUR,MANPREET LOCHAB,ANJALI TYAGI,SUMAN,SAHIL,KHURANA,YOGITA TOMER	322-329	Annexure-24 (List of students and Project sample report)
B.SC.(H)Life Science	583	Animal Biotechnology	42237903	2020-21	AAKASH KUMAR,AAYUSHI KASHYAP,ANJALI,DEEPAK ARORA,DISHA SHARMA,GARIMA,HUKAM SINGH MEENA,MANNAT NEHRA,MAYANK VASHISTHA,NAINCY,POONAM,PRATIBHA YADAV,PRIYANKA YADAV,PRIYANSHI,RAHUL,RENU MAANZU,RICHA PAL,RITIKA,SEEMA KUMARI,SHILPI,SUSMITA,VANSHIKA SAINI,VIDHI RAJ,ANISHA SHARMA,DARSHNA PANDEY,DILIP KUMAR MEENA,SAKSHI PATHAK,SRISHTI,AMAN CHALIA,JYOTI,KHUSHI BARSIWAL,LAKSHAY JEET,LALIT BHATIA,NIKITA,RITIKA,SNEHA KUMARI	330-353	Annexure-25 (List of students and Project sample report)
B.Sc.(H) Mathematics	563	Field Visit Environment Science		2020-21	AAKRITI,AANCHAL SHEKHAWAT,ABDUL WAJID,ABHISHEK,ABHISHEK BHAGAT,ADITYA,AGNI TAG,AKASH JAISWAL,AMANDEEP,ANISHA,ANJALI,ANKUR KUSHWAHA,ANUJ,ARPIT SINGH,ARUSHI KUMARI,ARYAMAN YADAV,ARYUSHI,AVICHAL DIXIT,AYUSHI MODAK,AYUSHI TIWARI,BASANT KUMAR,BHAVIKA GUPTA,BRAJESH GAUR,DEEPA YADAV,DEEPTI TURAN,DEVANG MEENA,DEV DUTT CHAUHAN,DIVYANSHU RAJ,FAHMI ANSARI,GARVIT MATHUR,GENIYA,HARSH GAUTAM,HARSHIT RANA,HARSHITA,HITESH,HITESH,ISHA GUPTA,JYOTI YADAV,KAJAL,KRITI MAKHIJA,KUNAL CHHIKARA,LOKESH YADAV,LOVISH VYAS,MAHIMA YADUVANSHI,MANDEEP KODAN,MANISH SEN,MAYANK,MEGHA,NEEKITA,NIPUN SHARMA,NISHANT VERMA,NITIN KUMAR,PAYAL,POOJA DAILA,PRANJAL SHARMA,PRASHANSA KANWAL,PRAVESH KUMAR YADAV,RAHUL PRAJAPAT,RAJNEESH GAUTAM,RENU KUMARI,RISHIKA KAPOOR,ROHIT,ROHIT,ROHIT,ROHIT KUMAR,RUCHIKA,RUDRANSH BISHT,RUPALI YADAV,SAHIL,SATVIK TYAGI,SAURAV,SHRISHTI SRIVASTAVA,SHRUTI AGARWAL,SHUBHAM DAHIYA,SWEETY,SWIKRITI PATEL,TAMANNA,VARTIKA RAWAT,VINEET CHAMOLI,VISHAL,YUG KUMAR,ANJALI JOSHI,AVNI CHAUHAN,HANSIKA JAIN,PRIYANSHI AGGARWAL,SAHIL RATHEE,SHARAD SHARMA,TANVI GOEL,UTKARSH JAIN,VANSH JAIN,VANSH JINDAL,NITIN AHLAWAT,TARUN DWIVEDI,ABHISHEK BHARGAVA,ANURAG KHOKHAR,SHIVAM SINGH PARIHAR	354-358	Annexure-26 (List of students and Project sample report)
B.SC.(H)ZOOLOGY	569	Reproductive Biology	32237910	2020-21	AASTHA,ADRIJA MOHANTA,AKANKSHA SINGH,AKRITI KUMARI,ARUNA NEHRA,BHAWNA SOLANKI,CHETAN CHOWDHARY,KISA BATOOL,MANSI JANGRA,MONIKA,MUKUL ROHILLA,NILAMADHAB SENAPATI,NIRMAL SINGH,NISHI PANT,POOJA VERMA,PRACHI,RAM SHANKAR,SAPNA YADAV,SHAILU,SHILPI SINHA,SHRADHA DARIYAL,SHWETA DOHARE,SIDRAH IQBAL,SIMRAN,SIMRAN,SIMRAN,SIMRAN SINGH,SONIA,SOURABH MEENA,SRASHTI SAHU,TANUJA,VAIBHAV SAINI,VISHLESH KOTARYA	359-366	Annexure-27 (List of students and Project sample report)

B.SC.(H)ZOOLOGY	569	Aravali Biodiversity Park Visit		2020-21	77 Participants		367-369	Annexure-28 (No. of students and Project sample report)
B.SC.(H)ZOOLOGY	569	Animal Biotechnology	32237903	2020-21	AASTHA,ADRIJA MOHANTA,AKANKSHA SINGH,AKRITI KUMARI,ARUNA NEHRA,BHAWNA SOLANKI,CHETAN CHOWDHARY,KISA BATOOL,MANSI JANGRA,MONIKA,MUKUL ROHILLA,NILAMADHAB SENAPATI,NIRMAL SINGH,NISHI PANT,POOJA VERMA,PRACHI,RAM SHANKAR,SAPNA YADAV,SHALLU,SHILPI SINHA,SHRADHA DARIYAL,SHWETA DOHARE,SIDRAH IQBAL,SIMRAN,SIMRAN,SIMRAN,SIMRAN SINGH,SONIA,SOURABH MEENA,SRASHTI SAHU,TANUJA,VAIBHAV SAINI,VISHLESH KOTARYA		370-386	Annexure-29 (List of students and Project sample report)
B.SC.(H)ZOOLOGY	569	Comparative Anatomy and Development Biology Vertebrates	32231401	2020-21	AKANKSHA NANDWANA,AMAN AKASH,AMISHA SINGH,ANJALI CHAUHAN,ANNAPURNA,ASHISH,HARSHITA PANT,HITESH SINGH,JYOTI,KAJAL JOON,KOMAL,MANISH HARARIYA,MEHAK MATTOO,PRIYA JHA,RAHUL KUMAR BENIWAL,RAVEENA,RITIKA SAINI,RIYA JAIN,RIYA RAI,RUCHI YADAV,SAMIDHA KUMARA,SAMPA VISWAS,SHUBHAM SAINI,SIMRAN CHAUHAN,SIMRAN PARVEEN,SUMIT,SUNITA HAZRA,UTKARSH,VAIDEHI JHA,YASHIKA JINDAL		387-399	Annexure-30 (List of students and Project sample report)
B.SC. LIFE SCIENCE	583	Comparative Anatomy and Development Biology Vertebrates	42231202	2020-21	ABHISHEK,ARCHANA DHILLO,ARUN,ARYAN NEGI,BHAGIRANI LEISHANGTHEM,BHAWNA,CHHAVI BASRA,HARDIK KUMAR SAH,KAMAL SINGH,KHUSHBOO,KSHITIJ GROVER,LAKSHIKA SINGH,MANISH KUMAR,MANISHA RAWAT,MONIKA,NEHA,NEHA YADAV,NISHA KUMARI,POOJA,PRACHI KUMARI,PREETI,RAHUL PETER TIRKEY,ROHIT,SALONI MASAND,SARTHAK DHAR,SHALU,SHIVAM,SHIVANI,SHREYA UPADHYAY,SHRUTI,SHRUTI KUMARI,SHUBHAM,SIMRAN,SURAJIT MONDAL,SWETA SHARMA,TAMANNA,TANISHA SHARMA,VAIDEHI JAIN,VIKAS,VIKAS PANDEY,VIVEK,YASH,YASHIKA TRIVEDI		400-416	Annexure-31 (List of students and Project sample report)
B.SC.(H)ZOOLOGY	569	Non-Chordate II : Coelomates	32231201	2020-21	ARJUN RAM,ASHISH KUMAR SINGH,DEEPALAXMI BRAHMA,GANESH KUMAR,GAURAV YADAV,JAYA,JYOTI YADAV,KANIKHA GHUGTIYAL,KHUSHI PATEL,KUMARI HONEY,MANISH KUMAR,NAMAN KUMAR PATODIA,NIKITA,NIKITA ROHILLA,PIYUSH DADHICH,RITIK YADAV,RIYA SHARMA,SANDHYA KUMARI,SIMRAN,SONIKA SETH,TANYA MISHRA,TULSIMAYEE TUDU,TUSHANT KUMAR SAINI,YOGITA,RANJITA,ANJALI,ANKUSH,KHUSHI KUMARI,PRIYANSHI,SHRUTI AGARWAL,SONALI PHOGAT,NISHA MEENA,ANCHAL,BALWANT		417-438	Annexure-32 (List of students and Project sample report)
B.SC.(H)ZOOLOGY	569	Non-Chordates I: Protists to Pseudocoelomates	32231101	2020-21	ARJUN RAM,ASHISH KUMAR SINGH,DEEPALAXMI BRAHMA,GANESH KUMAR,GAURAV YADAV,JAYA,JYOTI YADAV,KANIKHA GHUGTIYAL,KHUSHI PATEL,KUMARI HONEY,MANISH KUMAR,NAMAN KUMAR PATODIA,NIKITA,NIKITA ROHILLA,PIYUSH DADHICH,RITIK YADAV,RIYA SHARMA,SANDHYA KUMARI,SIMRAN,SONIKA SETH,TANYA MISHRA,TULSIMAYEE TUDU,TUSHANT KUMAR SAINI,YOGITA,RANJITA,ANJALI,ANKUSH,KHUSHI KUMARI,PRIYANSHI,SHRUTI AGARWAL,SONALI PHOGAT,NISHA MEENA,ANCHAL,BALWANT		439-453	Annexure-33 (List of students and Project sample report)

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University of Delhi

Coordinator

Room Cell (11/04/21)

PAPER S8: MODES OF CREATIVE WRITING – POETRY, FICTION, AND DRAMA

Course Objectives

This course introduces students to Creative Writing in the three fundamental modes - poetry, fiction (short story and novel), and drama (including scripts and screenplays). The students will be introduced to the main tropes and figures of speech that distinguish the creative from other forms of writing. The students will be able to see language as not just a means of communication but as something that can be played with and used for the expression of the whole range of human emotion and experiences. Within each literary mode, the students will study conventional as well as contemporary expressions. This course will interest those who wish to engage with the discipline of creative writing in its varied manifestations.

Learning Outcomes

Through this course, students will

- be introduced to a variety of tropes and figures of speech, and sensitised to the texture of literary language;
- understand the importance of reading with a view to unlocking the writers' craft;
- be introduced to various forms of poetry, fiction and drama and the wide range of possible genres within them;
- be made aware of the range of career opportunities that exist within the field of creative writing as well as within the realm of theatre and performance; and
- be encouraged to revise their work critically and inculcate the skills of editing and preparing their work for publication.

Facilitating the Achievement of Course Learning Outcomes

Unit No.	Course Learning Outcomes	Teaching and Learning Activity	Assessment Tasks
1.	Understanding concepts of skill to be taught	Interactive discussions with students to guide them towards skill based learning	Reading theoretical material together in small groups working in peer groups to discuss
2.	Application of skill	Practical application performed under supervision of teacher	Producing assignments preparing
3.	Demonstrating conceptual understanding and practical application of skill in tests and examinations	Discussing exam questions and answering techniques	Class tests

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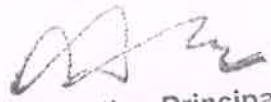
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MODES OF CREATIVE WRITING: POETRY, FICTION AND DRAMA

Unique Paper Code- 12033914

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19ENG0513	MAITRI JAIN
19ENG0514	Manish Bharti
19ENG0515	MANISHA
19ENG0516	MANISHA KANDULNA
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19ENG0518	Muskan Singh
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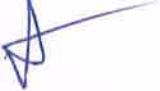














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19ENG0534	Sonakshi
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PROJECT DETAILS- MODES OF CREATIVE WRITING

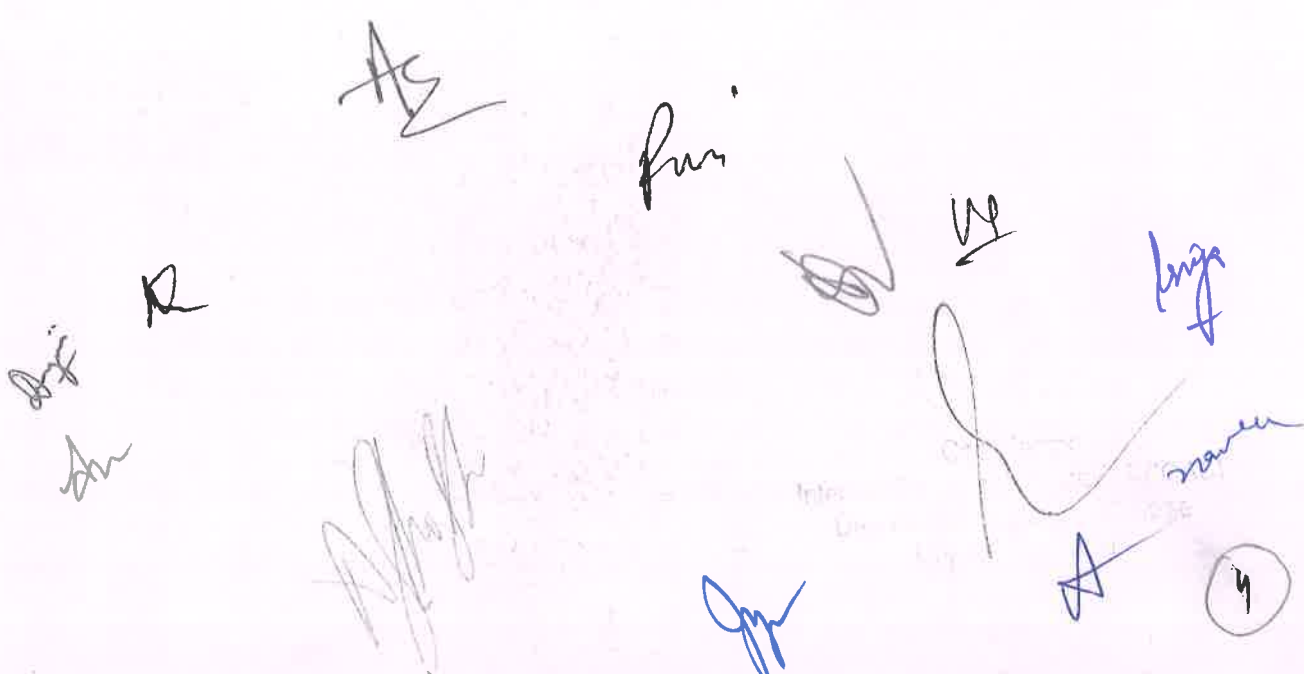
SUBMITTED TO- Dr Pramesh Ratnakar and Dr Jayini Adhyapak

UNIQUE PAPER CODE- 12033914

QUESTIONS-

1. Write a poem in any genre and use at least 3 to 4 figures of speech in it. Identify and write a note on the figures of speech used and the genre chosen.
2. Write any poem of your choice (minimum 8-10 lines).
3. Write one poem meant for children.
4. Make a play out of a joke
5. Locate the various types of advertising in different media; identify the purpose of the advertisement.
6. Scan the print, electronic and new media for examples of advertisements that use the five kinds of 'copy' defined above
7. Write five Haiku
8. Write a review of a movie you have seen.


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Proefs for 13.2

Deen Dayal Upadhyaya College, University of Delhi.

SEC : CREATIVE WRITING.

Submitted to : Dr. Jayini Adhyapak


Dr. Pramesh Ratnakar

Submitted by : Ritika Jangra

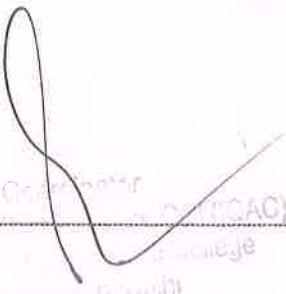
Course : B.A.(Hons.) English

Semester : 3rd

Roll no. : 19Eng0526


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Exercises 


International Centre for
Deen Dayal Upadhyaya College
University of Delhi


Megha


Ritika


Ramen


Ar


Ritika


Ar


5

1. Write a poem in any genre and use at least 3 or 4 figures of speech in it.
Identify and write a note on the figures of speech used and the genre chosen.

Congratulations developing world!

That we have come up so far,

From filthy little carts to super fast cars.

From the post letters to now sent satellites to mars.

Yes we have actually come so far,

Fulfilling the basic amenities that people once lacked

Truly we deserve a pat on out back.

But,

This is not the reason why I am here

Besides this stuff there is a lot to share

Close your eyes and see the world,

I repeat.

Look at the world after shutting your eyes

Thinking what we have ignored in the mission of touching the skies.

So allow me to stop the praises and throw some light


On the state of women and their plight.





She is adressed by many words:

Sometimes as a Siter, Mother and Wife

Sometimes as the essence of life

Some also adress her as a harlot


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some call them a whore

They shared her into peices yet wanting for more

What about the thousands of cases of rapes and assaults?

That pile up day by day,

Holding our heads down, feeling numb

We have nothing to say.

The world has witnessed many Asifas, Daminis and Nirbhayas till date

Some fought for them, Some thought it as their fate

We say nothing, we don't take a stand

Thinking one can't change the world merely with two hands.

You ignore and move so mean, so insensitive

Who in the world cares if the victim is none of your relatives

You do nothing not because you can't

But because you won't.

Congratulations! Again that we came so far.


A women is still fighting her own war

Critics are many, supporters are few

Spreading her hands, the world is looking at you.

Note:

The poem is in free verse but in the lyrical mode.


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naresh

Figure of speech:

- ❖ **Satire:** *Congratulations!*
- ❖ **Repetition:** Eg: *We have come so far*
- ❖ **Allusions:** *Asifas, Daminis and Nirbhayas*
- ❖ **Anaphora:** *It is a repetition of words at the beginning of the clauses to create emphasis. Anaphora draws the reader's attention to something that the author/poet thought was important. Eg: congratulations!*

dr

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8


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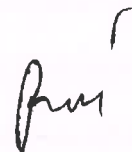
manu

2. Write any poem of your choice (minimum 8-10 lines)/ Write a short story.

I have lived in darkness a long time
Over the years, my eyes adjusted
Until the dark became my world and I could see
But then someone turned on the lights
And flooded my memory.

And now I am blind
Where do I look? there is a lot to find
I dont have much time
I cant think, Its too bright.


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naven

3. Write one poem meant for children.

The Little Boy and The Old Man.

On the bench, sat a solitary old man

The world went on, but he stayed there unmoving..

A boy fell down! The man went to help

But the boy was startled, he let out a yelp.

The man calmed him down, asked him to sit.

He said "Don't worry, you can cry a bit."

But the boy held on, his eyes didn't swell,

"Mister.." he asked "Do you cry as well?"

The man closed his eyes, he said "Yes I do,

I have shed some tears. Actually, quite a few."

The boy looked troubled, the old man inquired,

"What is it young man? What is it that's your mire..?"

"Oh it's just.." said the boy, "It seems,

The grown-ups don't pay attention to me"

And he felt the warmth of a wrinkled old hand,

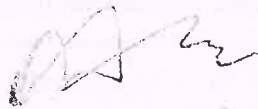
"I know what you mean" said the little old man.

REFERENCE: Inspired by the work of Shel Silverstein with the same name.

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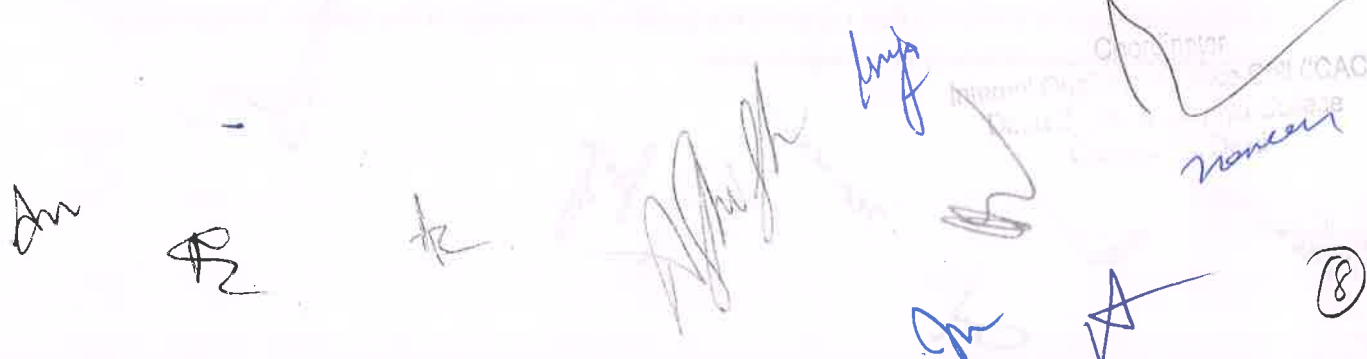
4. Haikus:

1. Shadow self-embraced,
The inner darkness revealed
A walk in sunlight.
2. One simple pleasure:
Bitter kiss on my lips,
Good morning coffee.
3. Winter soon arrived
And the last leaf on the tree
Kept swinging in glee.
4. Perfect sunny day
Flawless yet still has a stain:
You are far away.
5. The clouds are heavy
I am descending with many
Wet, cold, but happy.


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5. Locate the various types of advertising in different media; identify the purposes of advertisement.

Advertising does not constitute a separate medium. It is present in all media, but the factors which control it are different from other modes of communication. Advertising is commercially oriented—it spreads information about products and services. The motive of advertising is to make the audience aware of the existence of a particular product or service, and persuade them to use that product or service. At a very basic level, advertising tries to create a need in the consumer for the product which is being advertised. There are various kinds of advertising, classified according to their purpose. These range from those advertising products to those which serve public/social interests. These are as follows:



Standard Advertising

This is the kind of advertising that we see every day in the various media. This type of advertising aims to promote a particular product or service, with the intention of persuading the target audience to purchase them. Soaps, perfumes, clothes, soft drinks, and even advertisements for companies that offer bill-payment services, can all be included within this category. The advertising is paid for by the manufacturer/seller of the product or service, so the only purpose is to promote the product as efficiently as possible.

Examples: Coca-Cola, Apple, phillips, etc.

Public Service/Social Responsibility Advertising

Public service or social responsibility advertising answers a public need. It is generally produced and distributed by government agencies or non-profit organizations, in cooperation with private advertising and mass media companies. While the government or non-profit organization provides the information that is to be broadcast, the advertising and media agencies provide the creative services and the space and time for the display of the advertisement. Environmental messages, disease eradication campaigns, and announcements by police are kinds of public service advertising.

Examples: COVID-19 awareness, Polio, No- Smoking, Idea (use mobile save paper), etc.

Counter-Advertising

Counter-advertising focuses on the alleged fraud and misrepresentation in advertising. The advocates of counter-advertising claim that standard advertising does not inform the public of everything, thus hampering the ability of consumers to make a really informed choice. Counter-advertising intends to counteract the allegedly false claims, to ensure that the consumer is made aware of certain aspects which are hidden. The Anti-tobacco campaigns by various agencies, as well as the campaign for awareness of rights of consumers are part of counter-advertising.

Examples: WhatsApp Messenger, Anti- tobacco, etc.

Advocacy Advertising

This is closely related to social responsibility advertising as well as counter-advertising, except that advocacy advertising is a type of advertising placed by businesses and other organizations that is intended to communicate a viewpoint about a controversial topic relating to the social, political, or economic environment. It is concerned with the propagation of ideas and clarification of social issues of public importance in a manner that supports the position and interest of the sponsor. It expresses a strong point of view on behalf of an organization.

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Examples: Issues like drug addiction, alcohol consumption, rising crime rate, etc., which are perceived as conditions affecting public welfare, are taken up through advocacy advertising.

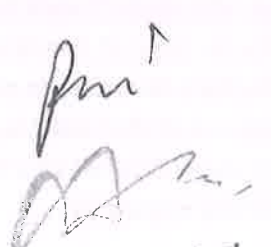
Image Advertising




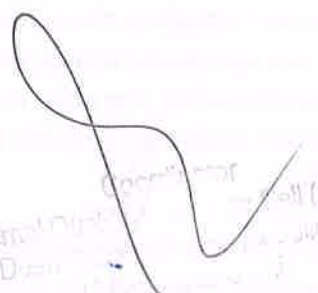





This kind of advertising is designed by businesses to improve their image, rather than to promote a particular product. At one level, this kind of advertising is affiliated more closely with public relations rather than with marketing. This kind of advertising promotes the name, the image, the personnel, and also the reputation of the advertiser. The intent is to enhance the image of the company in the eyes of the target audience. The advertisement may choose to emphasize the various areas of human activity in which the company is involved; it may be creating awareness of the different products Which they produce; the advertisement may also show how the company is a good place to work.

Examples: Maggie, Pepsi, etc.

Purposes of advertising:

Advertising is at the front of delivering the proper message to customers and prospective customers. The purpose of advertising is to inform the consumers about their product and convince customers that a company's services or products are the best, enhance the image of the company, point out and create a need for products or services, demonstrate new uses for established products, announce new products and programs, reinforce the salespeople's individual messages, draw customers to the business, and to hold existing customers.


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6. write a movie review.

Movie: Portrait of a lady on fire.(French: Portrait de la jeune fille en feu)

Director and writer: Céline Sciamma

Cast: Adèle Haenel and Noémie Merlant.

Genres: Historical drama, Romance.

Your presence is made up of fleeting moments that may lack truth.- Marianne

On an isolated island in Brittany at the end of the eighteenth century(France, 1770). Marianne, a female painter, is commissioned to do the wedding portrait of Héloïse, a young woman who has just left the convent. Héloïse is a reluctant bride to be and Marianne must paint her without her knowing. She observes her by day, to paint her secretly.

"Portrait of a Lady on Fire" Is More Than a "Manifesto on the Female Gaze". Without showing men onscreen, "Portrait of a Lady on Fire" depicts the myriad ways in which the patriarchy constricts the lives of its female protagonists.

The director Céline Sciamma is extremely confident in her unimpeachable talent as she unfolds a fairy tale of Marianne & Héloïse, two gorgeous women, brought together by destiny. The Countess decides to hire a painter to make a portrait of her daughter, Héloïse to be sent to a noble man in order to marry Héloïse.

Héloïse, who doesn't want to get married, has been reluctant to cooperate with any painter who came to make her portrait. Marianne reaches there as a hired companion & hides the fact that she was actually there to make the portrait. She befriends Héloïse, goes out with her & eventually learns all her features enough to finish the portrait. Noémie Merlant who plays Marianne is outstanding as she even inherits every detail of an artist, especially in those scenes where she paints. Adèle Haenel as Héloïse is both bold & vulnerable.

The entire movie looks like a huge continuous painting...You can try pausing at any moment during the movie and you would be left behind with a beautiful painting on your screen. The sound of bristles touching the canvas, the friction of charcoal pencils and the colors you see throughout the movie, create such an experience which is indeed difficult to divulge in words. There are spectacular scenes, like the one where Héloïse reads Marianne and Sophie...the story of Orpheus and Eurydice, the other one in which these three play cards and burst into laughs and my favorite scene is when they go to the bonfire where all the women sing and you get see the portrait of the lady on fire.

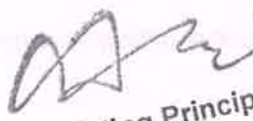
Unlike the typical romance, the film takes a more gradual approach to building a dynamic between each of the characters, which ultimately makes the events that follow all the more meaningful. In Some ways

you could say it's the polar opposite to a romance like James Cameron's Titanic. In my opinion it (Titanic) rushes the development of the protagonists' relationship in order to create an illusion of 'Star crosses lovers'. In some instances I don't mind this, such as when used in Romcoms, but in the case of a serious film like Titanic I believe it is extremely out of place. This is one of the reasons why I enjoyed Portrait of a Lady on Fire so much. Rather than rush into the romantic elements, it demands your patience, which in turn is rewarded to a satisfactory extent. One of the ways that Sciamma builds tension between Noémie Merlant's 'Marianne' and Adèle Haenel's 'Héloïse', is that during moments of interest she tends to linger on each of their faces, long enough for the average viewer to decipher their emotions and watch how they alter after certain changes. Of course this does almost entirely depend on the cast's ability to display said emotions, and fortunately each actress plays their part beautifully.

The cinematography is also incredible, with some absolutely stunning shots of vastly different scenery, and although music is used sparingly, when it's utilized it perfectly contributes to the atmosphere. Portrait of a Lady on Fire is a marvelously executed profound piece of cinema that would dip you deep in the colors of 18 century France. My one small gripe with this film is that often there is a meaningful scene that feels hastily cut off in order to continue with the plot. Although many people won't mind this I would've personally preferred if they had lasted a tad longer.

Céline Sciamma makes sure that you fall in love with everything on the screen, no matter what it is... the colors, the clothes, the curtains, the rooms, the sea, the sky, the candles and of course the gorgeous women....there are only two scenes where you see a man on screen.

In conclusion, Portrait of a Lady on Fire is a phenomenal film that echoes the directors passion, and due to a stellar cast, brilliant writing and amazing cinematography. The movie sings a song of forbidden love and it is said in such a subtle way, you can't escape falling love with both Marianne and Héloïse. Like Orpheus turns back and loses Eurydice forever, there is a turn back scene in this movie too in which Héloïse asks Marianne to turn back and everything ends there. The climax gave me a lump in my throat that's when I realized how much the movie had sucked me in. It's one of the best movies I watched on Amazon Prime. Make time for it, only if you are patient enough to go back to the 18th century for two beautiful women.


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Sector-3, Dwarka, New Delhi-78





Intern
Deen
Sector-3
Dwarka
New Delhi-78








7. Make a play out of a joke.

Scene 1: A Man was driving down the road when a policeman stopped him.

Driver: Hi! What's wrong?

Traffic officer: what are you doing on the phone?

Driver: I was not on the phone.

Traffic officer: But now you are on the phone.

Driver: well now I am video Taping you because you're scaring me.

Traffic officer: Sir I need to see your license registration and insurance.

Driver: That's what you stooped me for?

Traffic officer: Sir you crossed the speed limit. Apparently you don't understand that lights and sirens mean you have to pull over to the right, and you continue to try to turn into traffic. Sir please step out of your vehicle.

(The officer looked in the back of the man's truck and found some penguins in the back of his truck).

Traffic officer: Why are these penguins in your truck?

Driver: These are my penguins. They belong to me.

Traffic officer: Sir I am afraid that it doesn't work that way. You need to take them to the zoo.

(After checking the documents and cutting a speed ticket, the traffic officer released the driver).

Scene 2: The next day, the officer saw the same guy driving down the road. He pulled him over again.

(He saw the penguins were still in the truck, but they were wearing sunglasses this time).

Traffic officer: thought I told you to take these penguins to the zoo.

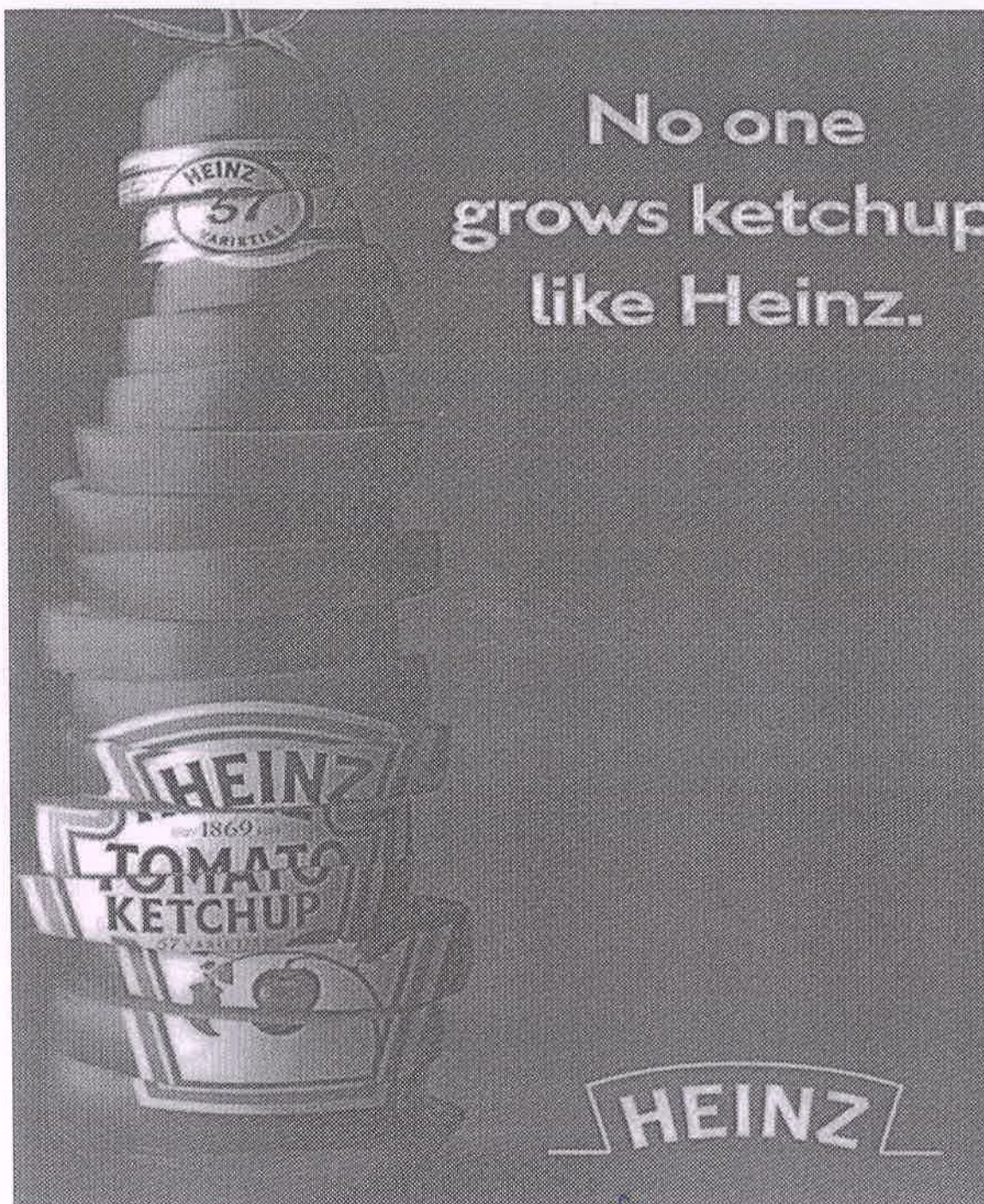
Driver: I did. And today I'm taking them to the beach.

Coordinator
Internal Quality Assurance (IQA)
Deputy Director of Quality
University of Bolton

8. Scan the print, electronic and new media for examples of advertisements that use the five kinds of 'copy'.

Straight copy

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Sector-3, Dwarka New Delhi-78



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Testimony copy



Narrative copy

COACH (COAC)

Officially Principal

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(University of Delhi)
Sector-3, Dwarka, New Delhi

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Humorous copy



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Internal Quality Coordinator

ISO 9001 (QAC)

Subject: Re: My Creative Writing Assignment

 **Jayini Adhyapak** <jayiniadhyapak@ddu.ac.in>
to Muskan Singh

Mon, Dec 7, 2020, 2:56 PM

You are viewing an attached message. Gmail can't verify the authenticity of attached messages.


Dear Muskan

I have tried to send you messages through Nancy and Sneha, and also tried to call you up on your mobile which did not connect. thereafter you called and we spoke and you said you are submitting your assignment yet it has not reached me. kindly do the needful as I have to submit marks today itself.

Best wishes

Jayini

On Fri, Nov 27, 2020 at 7:35 PM Muskan Singh <bbfmuskansingh@gmail.com> wrote:


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Deen Dayal Upadhyaya College
(University of Delhi)
Sector-3, Dwarka, New Delhi-78


Coordinator
Internal Quality Assurance Cell (IQAC)
Deen Dayal Upadhyaya College
Sector-3, Dwarka, New Delhi

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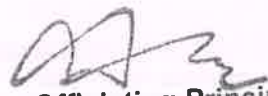
CREATIVE WRITING ASSIGNMENT

To- Pramesh Ratnakar and Mrs Jayini Adhyapak

BY – HARSHI CHAHAR

ROLL NO.- 19ENG0510

SEMESTER,-3


Officiating Principal
Deen Dayal Upadhyaya College
(University of Delhi)
Sector-3, Dwarka, New Delhi-78

Activity-4

I would like to write a review on- "the Expendables"

The Expendables is a movie that lifts you up out of your seeds that see on the head gives your lollipop then smashes you in the face.

The 2010 American action film is written by David callahan, starred by Sylvester Stallone. The film is about a group of Elite mercenaries who are tasked with the lethal mission to overthrow Latin American dictator whom they soon discovered to be a me a puppet controlled by a ruthless ex CIA agent. The film pays tribute to the blockbuster action film of the late 1980 and early 1990s. Engrossed a total of 274 million dollars worldwide and it was number one at the box office in the United States the United Kingdom China and India.

The lead actor Barney Ross (Sylvester Stallone) portrays a deep message. It says that even if you are alone and you are different from other people that doesn't make you wrong. it's the choices and the decisions we make that makes us what we are.

" Everything in life is cheap and filthy if you forget your family.", - Barney Ross.

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For me the movie is a must watch. It carries just the right kind of blue full confident attitude. The action packed film contains many-blood face scenes. Sylvester stallion, Jason Statham and a host of other action stars from yesteryear blew the theater with one of the ears bloodiest movies Personally I love classic movies . This Alpha male action movie has the right level of matchismo. Its a Novelty being seeing all of these great action stars together in one big action film.

Only negative I found was that the movie was quite predictable but on the other hand that's exactly what the directors were aiming at. Honestly it's the the predictability in this particular movie that made me see it countless Times now.

ACTIVITY 8

Locate the various types of advertising in different media; identify the purposes of advertisement.

Advertising is commercial oriented it spreads information about products and services .Advertising does not constitute a separate medium. It is present in all media, but the factors which control it are different from other modes of communication Advertising tries to create a particular need for the customer so that they can buy the product being advertised. The motive of advertising is to make the audience aware of the existence of a particular product or service, and persuade them to use that product or service. There are various kinds of advertising, classified according to their purpose. These range from those advertising products to those which serve public/social interests. These are as follows:

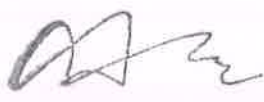
Coordinator
Internal Quality Assurance Cell (IQAC)
Deen Dayal Upadhyaya College
University of Delhi

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Deen Dayal Upadhyaya College
(University of Delhi)
Sector-3, Dwarka, New Delhi-78

Standard Advertising

This is a kind of advertising that in abundantly in televisions the the primary aim of the manufacturer is to showcase the the features of the product to the customers to arouse the need to buy it. Soft rings clothes soaps perfumes can be included here in this category. The advertising is paid for by the manufacturer/seller of the product or service, so the only purpose is to promote the product as efficiently as possible.

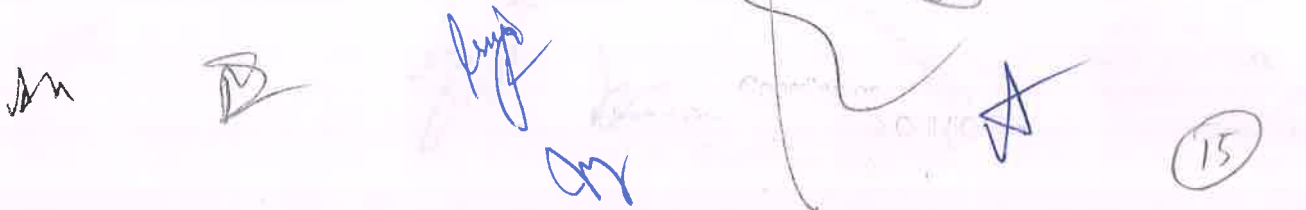
Public Service/Social Responsibility Advertising

This is generally produced by government agencies or non profit organisations in connections with private partner's. Public service or social responsibility advertising answers a public need. While the government or non-profit organization provides the information that is to be broadcast, the advertising and media agencies provide the creative services and the space and time for the display of the advertisement. Environmental messages, disease eradication campaigns, and announcements by police are kinds of public service advertising.

Counter-Advertising

Counter-advertising intends to counteract the allegedly false claims, to ensure that the consumer is made aware of certain aspects which are hidden. The Anti-tobacco campaigns by various agencies, as well as the campaign for awareness of rights of consumers are part of counter-advertising. it focuses on the alleged fraud and misinterpretation Advertising the advocates of counter advertising claim that standard advertising does not inform the public of everything has hampering the ability of consumers to make a really informed choice

Advocacy Advertising



This is closely related to social responsibility advertising as well as counter-advertising, except that advocacy advertising is a type of advertising placed by businesses and other organizations that is intended to communicate a viewpoint about a controversial topic relating to the social, political, or economic environment. It is concerned with the propagation of ideas and clarification of social issues of public importance in a manner that supports the position and interest of the sponsor. It expresses a strong point of view on behalf of an organization. Issues like drug addiction, alcohol consumption, rising crime rate, etc., which are perceived as conditions affecting public welfare, are taken up through advocacy advertising.

Image Advertising

This kind of advertising is designed by businesses to improve their image, rather than to promote a particular product. At one level, this kind of advertising is affiliated more closely with public relations rather than with marketing. This kind of advertising promotes the name, the image, the personnel, and also the reputation of the advertiser. The intent is to enhance the image of the company in the eyes of the target audience. The advertisement may choose to emphasize the various areas of human activity in which the company is involved; it may be creating awareness of the different products

Which they produce; the advertisement may also show how the company is a good place to work.

Purposes of advertising

. The very purpose of advertising is to inform the consumers about their product and convince customers that a company's services or products are the best, enhance the image of the company, point out and create a need for products or

Internal Quality
Assessment
Unit

Cell (IQAC)
College


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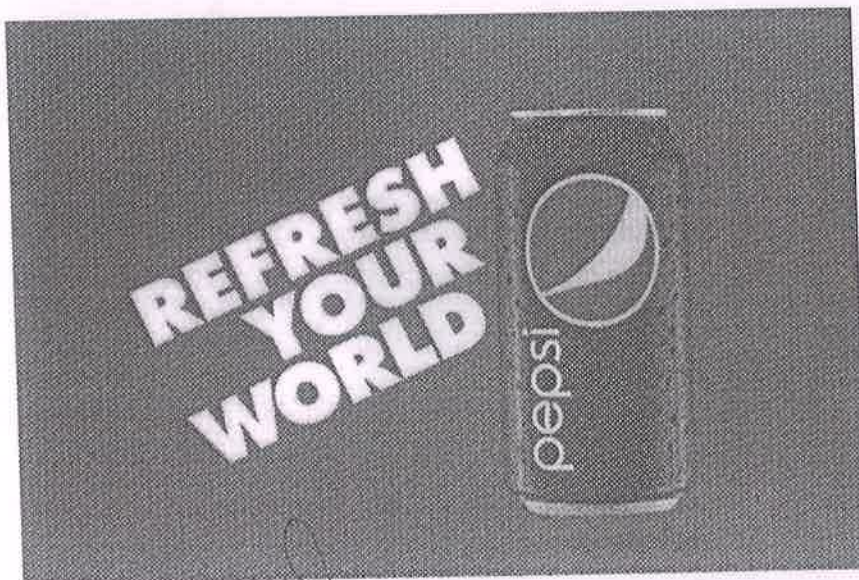
services, demonstrate new uses for established products, announce new products and programs, reinforce the salespeople's individual messages, draw customers to the business, and to hold existing customers. it is at the front of delivering the proper message to customers and prospective customers

ACTIVITY 11

Scan the print, electronic and new media for examples of advertisements that use the five kinds of 'copy'.

Straight copy


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Sector-3, Dwarka, New Delhi-78



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Descriptive copy



Testimony copy



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Coordinator

Internal Quality

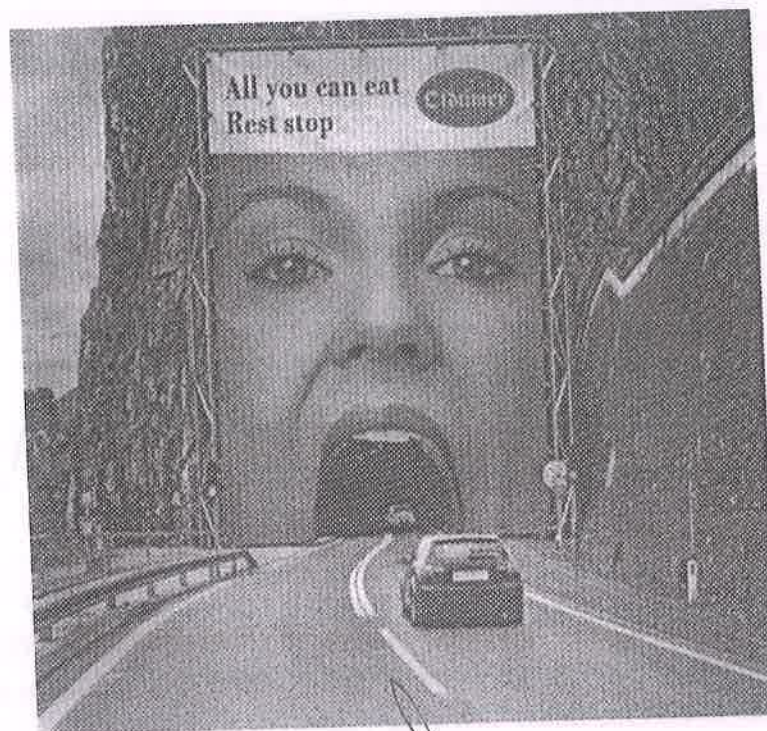
Ice Cell (IGAR)
via Cell
Delhi

Narrative copy



[Signature]
Officiating Principal
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(University of Delhi)
Sector-3, Dwarka, New Delhi-76

Humorous copy



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[Multiple signatures and initials in blue ink]
(17)

Write 5 haikus

- 1) A peaceful evening
Sparrows singing together
With pretty feathers
- 2) Turning the corner
Your shadow falls on mine
A total eclipse
- 3) Like crunchy cornflakes
Gold leaves rustle underfoot
Beauty in decay
- 4) Strokes of affection
Light and tenderly expressed
Keep love's bond so strong
- 5) Your eyes are fire.
Their image burnt into my soul,
Scarred by beauty.

Make a play out of a joke.

Joke- my husband and I were they dreaming about what we would do if we won the lottery. I shouted, "I would hire a cook so that I could just say -hey make me a sandwich", Thomas shook his head". Not me I already have one of those".

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Internal Quality Assurance Cell (IQAC)
Jawahar Dayal University
University of Delhi

Dr

monika

Dr

Dr

Dr

Play:

Scene: At house.

Husband: Hey, where are you? ohhhhh, let me call her.

Calling....

Wife: . who's this?

Husband- where are you?, I need food, God in am hungry.

Wife- I am in the kitchen! Can't you even check around first!

Husband- just bring me food!

Wife,- alright, I'll be over there in a second.

She brings food.

Wife- oh !! wish we would have money to hire a cook!


Husband- what do you want to cook for?

Wife- well then I could just shout in ask to bring him me a sandwich. Would,'nt that be wonderful!

Husband- it's not necessary and by the way this food is delicious.

Wife- what! don't you think it would be so fun to just call and shout and the food will be present on the table.

Husband- well I have you.


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Sector-3, Dwarka, New Delhi-78

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Write a poem in any genre and use atleast 3 or 4 figures of speech in it. Identify and write a note on the figures of speech used and the genre chosen.

Seen her?

See the girl,
who begs and chases,
Dances to rhythm of their joy?

Seen the girl
who plays safe
pressing her worth
to be judged -ok
she is normal
but only like the breath of hair
did you notice she was decaying inside

Seen that girl
who dreams of Hero
whose words speak
Oh beauty she is!!
like fairy love is
Is salty sweet

nonen

on

begs


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Internal Quality Assurance (IQAC)
Dr. [Signature]

Am

seen that girl
that half-witted fool
struggling to be average
afraid to spread Her wings
fearing being shamed
as she could be spotted well

I knew her
So killed her- boom
Good she may be
But I thrive

See me now
Shoulders a back
Style I walk
Confidence I speak
Knowledge I stand out
And the hope
Of lifespring ingreens
Is due to come
As I trust me


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The genre is free verse.

Figures of speech:

- 1) Simile: A simile is a figure of speech that, for rhetorical effect, directly refers to one thing by mentioning another. It may provide clarity or identify hidden similarities between two ideas.
In this poem here metaphor is: like breadth of hair
- 2) Onomatopoeia: It is the process of creating a word that phonetically imitates, resembles, or suggests the sound that it describes.
In this poem it is: so killed her boom
- 3) Oxymoron: In this, two contradictory ideas are placed in same sentence.
In this poem it is: salty sweet

Write a short story.

At night 3 a.m. she woke ,although she never slept. The embarrassment haunted her in her sleep. "Let it go, you are a failure and a disgrace to yourself," she repeated to herself. With tears in her eyes she rolled the blanket over as a shield to reality.

"Wake up "said her mother, " it's afternoon already go get yourself a bite to eat"

With a smile on her face she asked if she could eat the food on her bed. Her mother saw the façade, she could clearly see that her daughter was struggling .she knew that because of not being able to clear the entrance exam twice already

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Coordinator
IQAC
College

Dr

she was broken. Couldn't keep it anymore she shouted, "so are you gonna quit on yourself? you had big dreams! so what if you failed! big girls don't cry! the get back up they get busy and they win. and until that is done they keep trying and trying and trying and trying."

Aaya was started. For the first time she cried eyes out. For the first time she let her embarrassment and disappointment come out. And she vowed, she is never gonna quit on herself. She got up sat on her desk and started studying day and night. For 6 months straight books is all she saw. She became confident that this time she's gonna clear it. And if not she will pick herself up, and never stop.

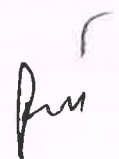
The results came and aaya topped her exam. She understood that it was important for her to fail for her to stand up on her own two feet.

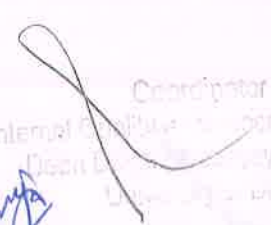
Moral- don't quit on yourself.

Write one poem meant for children.

SLEEP O CHILD! SLEEP!

Like an angel he sleeps,
Peaceful in deep slumber
With his plump cheeks,
And half teeth, I say
I wanna play


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His dinosaur and his world

Makes mine pearled

Yes,

Like an angel he sleeps,

For it is him, who he is.

It is him,

The pure vessel,

Who later,

Fills with poison

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Subject: Re: Creative Writing Assignment

?

Jayini Adhyapak <jayiniadhyapak@ddu.ac.in>
to Maitri Khantwal

Mon, Dec 7, 2020, 2:52 PM

You are viewing an attached message. Gmail can't verify the authenticity of
attached messages.

Dear Maitri

please take care of yourself. if you wish to talk /share you can call me anytime.

Stay Blessed and Best Wishes

Jayini

On Mon, Nov 23, 2020 at 1:01 AM Maitri Khantwal <maitri.khantwal31@gmail.com> wrote:
Greetings ma'am.

Here's my assignment on the Creative Writing SEC. I'd like to mention that I haven't been well, physically and mentally
for the last few weeks, hence the delay.

Sincerely,
Maitri Khantwal

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Creative writing Assignment


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Sector-3, Dwarka New Delhi-78

Submitted to. : Dr. Pramesh Ratnakar.
: Dr . Jayini Adhyapak.

Submitted by : chavatapalli . Raja Kumari .

Roll no : 19 ENG 0505.

Course : BA (Hons) English. 2 nd year.











Activity - 4

Write a review of a movie you have seen.

So, I would like to give review of a movie named "Mahanati". It's a Telugu film .

Mahanati is a visually and emotionally engaging biopic on the life of yesterday actress Savitri. It encompasses the life and career of the artiste in poetic style and reveals the bitter truth and irony behind a glamorous facade.

Our ancient scriptures speaks of heroism and Godly acts, and also how the frailty of a person leads to perdition. The movie draws parallels to this human nature and each character has their persona well crafted. The line from the Avengers movie 'There is grace in their failings' kept popping in my mind as I was watching this movie.

Though many movies were made based on the Titanic, the one that we remember is the James Cameron's movie. It revolves around the love that blossoms on the ship and not the ship itself. Likewise this movie too revolves around the adorable intimacy between Samantha and Vijay.

Taking on the roles of such extraordinary actors is a huge challenge and the cast has done a tremendous job. Samantha's innocence is adorable and Vijay's role is quite the contrary to his famed role in Arjun Reddy.

Dulquer has raised the bar substantially with his performance as 'Gemini Ganesan'. Performance was effortless and his debonair-ish charm shines through. Keerthy Suresh has transformed into a top class actor with her role as 'Savitri'. Scintillating performance and her versatility in emotions leaves us spell bound.

The authenticity to the time periods when the events take place is commendable. The fashion and automobiles in this movie makes one romanticize with the yesteryear. Cinematography is brilliant, the hues and tones make it look right out of the 80s. Music is engaging and also relevant to the times.

Although our grandparents have watched the artist during her prime years, the director has ensured that even few generations later the relevance is intact.

A dazzling star indeed!

Activity - 8

Locate the various types of advertising in different media; identify the purposes of advertisement.

Advertising is a vehicle through which advertisers communicate their messages to customers to induce them to buy the products or services advertised by them. Advertising has evolved into a vastly complex form of communication, with literally thousands of different ways for a business to get a message to the consumer. Today's advertisers have a vast array of choices at their disposal. The internet alone provides many of these, with the advent of branded viral videos, banners, advertorials, sponsored websites, branded chat rooms and so much more.

Here are a few examples of what's available for your media arsenal:

Print advertising :

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Once a huge driver of sales, print is taking a back seat to the many digital forms of advertising now available to marketers. However, if there is one thing that's certain about advertising, it's that being different is good. And when consumers tire of digital ads, a return to printed pieces and the tactile feeling and permanence they provide is definitely in the cards. Typically, print can be split into three subcategories:

- **Periodical Advertising**
- If it's in a magazine, a newspaper, or anything else that comes out at regular intervals, then it's periodical advertising (aka a print ad). For decades, print ads were the gold standard for advertisers and their clients. To grab the center spread of a big magazine or the back cover of a newspaper meant millions of people saw the message.
- **Brochures, Leaflets, Flyers, Handouts, and Point-of-Sale Advertising**

Broadcasting advertisement :

A mass-market form of communication including television and radio, broadcast advertising has, until recently, been the most dominant way to reach a large number of consumers. Broadcast advertising has suffered from the popularity of DVRs and "ad-skipping" technology. However, it is still an effective way to reach millions of people, especially when the Super Bowl comes around.

Public Service Advertising

Unlike traditional commercials, Public Service Advertisements (PSA) are primarily designed to inform and educate rather than sell a product or service. PSAs traditionally appear on TV and radio but are also heavily promoted online.

Outdoor Advertising

Also known as out-of-home advertising, this is a broad term that describes any type of advertising that reaches consumers when they are away from home. Think of billboards, bus shelter posters, fly posters, and even those big digital boards in Times Square.

Standard advertising:

This is the kind of advertising that we see every day in the various media. This type of advertising aims to promote a particular product or service, with the intention of persuading the target audience to purchase them. Soaps, perfumes, clothes, soft drinks, and even advertisements for companies that offer bill-payment services, can all be included within this category. The advertising is paid for by the manufacturer/seller of the product or service, so the only purpose is to promote the product as efficiently as possible.

Purposes of advertising

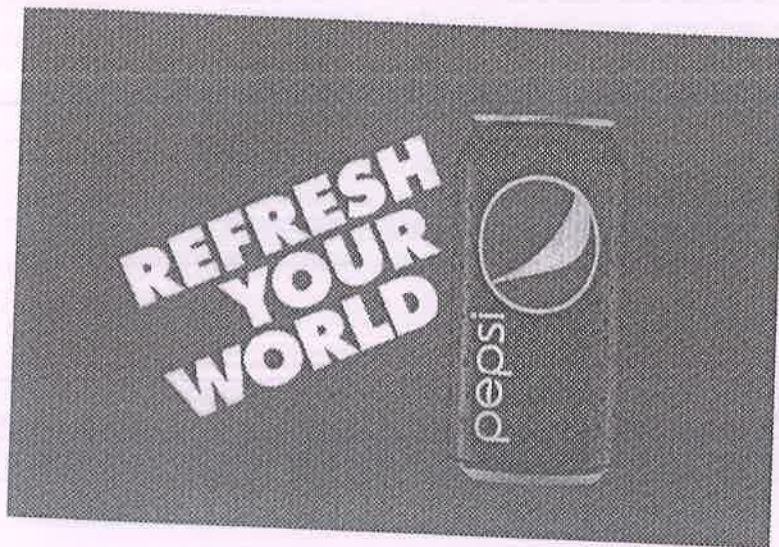
Advertising is at the front of delivering the proper message to customers and prospective customers. The purpose of advertising is to inform the consumers about their product and convince customers that a company's services or products are the best, enhance the image of the company, point out and create a need for products or services, demonstrate new uses for established products, announce new products and programs, reinforce the salespeople's individual messages, draw customers to the business, and to hold existing customers.

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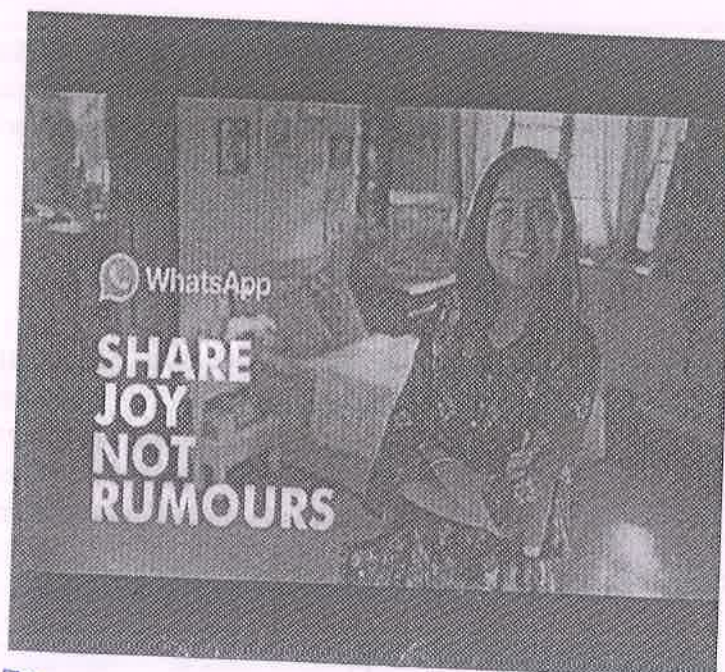
Activity – 11

Scan the print, electronic and new media for examples of advertisements that use the five kinds of 'copy'.

Straight copy



Narrative copy



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Descriptive copy



5. Write five haiku.

1. The night is ending.

Bright sun comes up over the hill.

Morning has started.

2. Ocean waves crash soft.

Rugged sand tickles my feet.

It's heaven on earth.

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3. Footprints on the sand.

Beaming seashells sparkle bright.

Soft waves hit the shore.

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Internal Officer
Deen Dayal Upadhyaya College
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4. Snow falls down gently
Over the town like a blanket
The start of winter

5. When the sun rises
It will shine through my window
Saying good morning .

6 . Make a play out of a joke.

A man walks into a shop and sees a cute little dog.

He asks the shopkeeper

- "Does your dog bite ?"

The shopkeeper says ,

- "No, my dog does not bite."

The man tries to pet the dog and the bites him .

- "Ouch I He says I thought you said your dog does not bite!"

The shopkeeper replies , - " that is not my dog "

1 . Write any poem of your choice.

Just at dawn,
When everyone's asleep,
And you can hear the wind,
That the trees cast at you,
And when the seagulls are flying
Above the sea,
And whispering words of cheer,
Peacefully flying about,
Enjoying the nature,

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When the sun rises,
 And the flowers wake up
 From their sweet sleep,
 Dancing and singing,
 Enjoying their shower,
 And the cool springs,
 Gushing down the mountains,
 And the people are gazing peacefully,
 With a smile on their faces,
 Enjoying the beautiful scenery,
 And when the birds and doves
 Zoom up to the sky and land back down,
 Enjoying the cool air and calmness.
 And when the trees have grown fresh fruits,
 For us to nibble on,
 And when the sun sets, and the moon rises,
 Leaving beautiful colours in the sky,
 Is what nature is called.

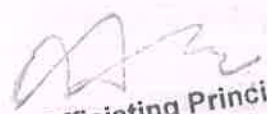
2. Write one poem meant for children.

The mountains tell me, hold your head high.
 Whatever be the problem, look it in the eye.

The rivers tell me, don't look behind.
 March on ahead, till your goal you find.

The sea tells me, have depth of character.
 The waves call out, don't forget your laughter!

The trees tell me, do good to one and all.
 Let go of the past, like I let my leaves fall.


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 Central Office (COAC)
 Deen Dayal Upadhyaya College











(26)

The sun tells me, you must go on shining.
In every dark cloud, be the silver lining.

Have a look at nature, and you will see,
There's so much to learn, just like me!

3. Write a poem in any genre and use at least 3 or 4 figures of speech in it . Identify and write note on the figures of speech used and the genre chosen.

If you always try your best
Then you'll never have to wonder
About what you could have done
If you'd summoned all your thunder .
And if your best
Was not as good
As you hoped it would be ,
You still could say ,
" I gave today
All that I had in me " .

The genre is free verse.

Figures of speech:

Simile :

A simile compares one thing to another by using the words *like* or *as*.

Metaphor :

A metaphor is a figure of speech that, for rhetorical effect, directly refers to one thing by mentioning another. It may provide clarity or identify hidden similarities between two ideas

Personification:

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Deen Dayal Upadhyay
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the attribution of a personal nature or human characteristics to something non-human, or the representation of an abstract quality in human form.

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INTERVIEW OF THE BOARD OF STUDIES (IBS)

DATE: 10/11/2019





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Creative Writing Assignment

Submitted by:-
Nancy Gahlot
BA(hons.) English
Second Year
19ENG0519

Coordinator
Internal Quality
Dean College
University of Delhi

Cell (IQAC)
College

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Ques.1. Write a poem in any genre and use at least 3 or 4 figures of speech in it. Identify and write a note on the figures of speech used and the genre chosen.

Little Heaven

Our heaven was carved with loads of diligent,
A semi- centennial ago with the blessings of the old.
The heaven had experienced ups and downs, lows and highs,
It has witnessed children growing, it has mourned on the death of the old
It saw generations after generations.
It itself started getting venerable,
its elements started getting tired,
Some fell on their own and some were felled off,
The bricks started tattering as if the sky was falling
This marked the end of our little heaven.

Figures of speech used:-

1. Heaven had- Alliteration

In Alliteration certain sounds are repeated at the beginning of words of a sentence. It is used to draw attention to certain phrases and can also provide rhythm and musicality.

2. "As if the sky was falling"- Hyperbole

It makes something sound better, more exciting, dangerous etc than it really is. It is used to over- exaggerate and to add humor.

3. 'ups and downs', 'lows and highs'- Oxymoron

Oxymoron is to pair two words that are opposing or/ and contrary. It is used to add comedy or dramatic effects.

Genre of the poem- Free verse


Free verse gives poets the freedom to express more freely as it doesn't follow any specific meter, syllable counts, rhyming scheme.

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Ques.2. Write any poem of your choice (min.8-10 lines) / Write a short story.

An Alien in an Alienated Place

It's better you kill me
It's better to go to hell
Then relive in the hell
Each bloody day.
Where you have nothing left with you,
Nothing to adore you
You are all alone.
All alone in this alienated place,
You know none,
You have none,
You are new to this place,
Everything is darkened,
All you need is just a ray of light
That would take you from hell to heaven,
From alienation to rejuvenation,
From darkness to light.
You just need a small help,
A help that would endure your pain of loneliness,
That would make you an alien of this alienated place,
That would cut off all the indifferences,
That would make you familiar,
Known, recognizable, usual,
And most importantly "homespun"
Homespun in this unknown place,
You just need to move around,
You just need to be positive
As dawn will soon appear before you,
That all the darkness will dematerialize.
And Dawn will reappear to you in this alienated place.


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Ques.3. Write one poem meant for children.

Poem for Children

Let's stop the fight,
Let's stop the fight,
hug each other tight.

Jump the wall,
jump the wall,
Let's see who catches the ball.

Let's begin the war,
let's begin the war,
At the end of the war,
the two will not abhor.

Let's sleep,
let's sleep,
from the blanket during the sleep,
no one will peep.

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WRITING FOR MEDIA



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Activity-4. Write a review of a movie you have seen.

MOVIE- URI- The Surgical Strike

URI- The Surgical Strike (2019), Hindi action, war, adventure, thriller and drama movie based on true events. It shows how terrorists attacked army camp in Uri near Jammu and Kashmir and how India retaliated with a surgical Strike. It is a film about national Pride without a single shot of the Indian flag. It is very well directed by the debut director Aditya Dhar starring Vicky Kaushal, Paresh Rawal, Yami Gautam and Mohit Raina in Lead roles with the budget of 25 crore rupees and witnessed an estimated box office collection of 342.06 crore. Vicky Kaushal is fully fired up, menacingly calm military mind that is inspiring his peers with an infectious energy that is impossible to resist. Role of Paresh Rawal is also significant. He is being portrayed as national security advisor, Ajit doval, Govind sir can be seen in one of the most influencing dialogue of the movie declared that India is now "Naya Hindustan", "yeh ghar mein ghusega bhi aur marega bhi". It is the smartest war movie with frequent handheld camera movements and the visual effects of long range Sniper attacks which seems real. The thrill and enthusiasm is duly maintained by the films main lead Vicky Kaushal's dialogue- " How is the Josh", " High sir" give



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thrill and literally Goosebumps when you listen to it. The movie is a perfect watch for the one who wants to watch something patriotic, full of energy and full of twists and turns.

Activity- 8. Locate the various types of advertising in different media; identify the purpose of the advertisements.

There are five types of advertisement on the basis of their purpose:-

1. **Standard Advertising**
2. **Public Service/ Social Responsibility Advertising**
3. **Counter- Advertising**
4. **Advocacy Advertising**
5. **Image Advertising**

1. **Standard Advertising-** it aims to promote a particular product or service with the intention of pursuing the target audience to purchase them. Soaps, perfumes, clothes, soft drinks and even advertisements for companies that offer bill payment services, can



all be included in this category.



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2. **Public Service/ Social Responsibility Advertising-** it is generally produced and distributed by government agencies for non profit organisations in cooperation with private advertising and mass media companies. Environmental messages, disease eradication campaigns and announcements by police are kinds of public service advertising.



3. **Counter- Advertising-** It focuses on the alleged fraud and misrepresentation in advertising. The advocates of Counter advertising claim that standard advertising does not inform the public of everything, thus hampering the ability of consumers to make a really informed choice. The Anti- tobacco campaigns by various agencies as well as the campaign for Awareness of rights of consumers are part of Counter advertising.



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4. **Advocacy Advertising-** It is a type of advertising placed by businesses and other organisations that is intended to communicate a viewpoint about a controversial topic relating to the social, political or economic environment. Issues like drug addiction, alcohol consumption, rising crime rate etc, which are perceived as conditions affecting public welfare, are taken up through advocacy advertising.



5. **Image Advertising-** This kind of advertising promotes the name, the image, the personal and also the reputation of the advertiser. The intent is to enhance the image of the company in the eyes of the target audience. The advertisement may choose to emphasize the various areas of human activity in which the company is involved, it may be creating Awareness of different products they produce, the advertisement may also show how the company is a good place to work.



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Handwritten signatures and initials in blue ink, including the name 'naveen' and other illegible marks.

Activity-11. Scan the print, electronic and new media for examples of advertisements that use the five kinds of 'copy' defined.

Following are the five types of copy that are defined:-

1. **Straight Copy-** This states the content in a very simple and short manner.



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2. **Descriptive Copy-** In this kind of copy, the main focus of the advertisement is an extensive description of the product or service being offered.



marcan



3. **Narrative Copy-** In this the copy purports to narrate a story.



4. **Testimonial Copy-** In this kind of copy, a celebrity endorses the brand or the product. This tends to make the advertisement more appealing and believable.



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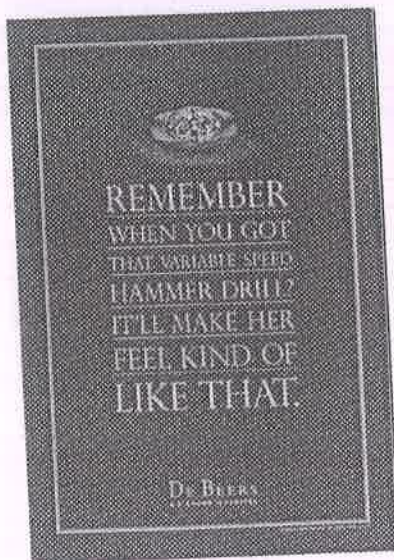
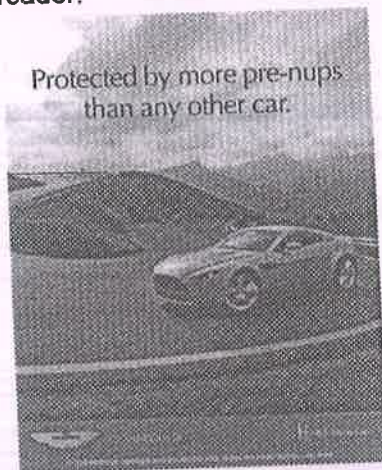
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5. **Humorous Copy-** This helps to make the advertisement more appealing to the viewer/reader.



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University of Delhi

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Activity- Write 5 haikus.

1. Shadow that will never leave
Mirror that always reflects
Best Friend for life.
2. The most troublesome of all
Sometimes uses his heart
A dump brother always.
3. While sleeping you hear a noise
beating of wings come close to you ear
You kill the mosquito with hands.
4. You find yourself shivering
You want the red love
You just want a blanket to sleep.
5. Eyes become red
Skin perspires and temperature rises
Rage demolishes it all.

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Activity- Make a play out of a joke.

After evaluating exams, Teacher Comes to class.

All Students:- Ggggooodddddd Mmmmooorrrrrnnnniiiiinnngggg Sir!!

Teacher:- Good morning students!

Please have a seat.

All students:- Tttthhhhaaaannnnnnkkkkk Yyyoooouuu Sir!!

Nancy:- Sir, have you evaluated our exam sheets?

Teacher:- Yes, Nancy. I have a question for you.

Nancy:- Yes, sir.

Teacher:- Why did you write "etc" at the end of the exam sheet?

Nancy:- (Smiling) Si..Sir be..because it was the end of my thinking capacity.

Teacher:- (Puzzled) Then why did you use "etc"?

Nancy:- Sir, because "etc" is 'End of Thinking Capacity'.

Everyone laughs

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Deen Dayal Upadhyaya College

(University of Delhi)

Sector-3, Dwarka, New Delhi-110078

Nancy

Signature

Signature

Signature

Signature

(54)

SEC ASSIGNMENT

SUBMITTED TO: DR. JAYINI ADHYAPAKA


DR. PRAMESH RATNAKAR

SUBMITTED BY: KIRTI CHAUDHARY

ROLL NO.:19ENG0511

COURSE: BA(HONS.) ENGLISH

YEAR:2ND


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University of Delhi

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Dr. Jayini

Dr

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Write a poem in any genre and use at least 3 or 4 figures of speech in it. Identify and write a note on the figures of speech used and the genre chosen.

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University of Delhi

The Dead

Where do the dead go?

Do they become the stars

to come and meet us at night?


Or, do they get wings to become a bird
and come to us with a flight?

Do they hear the mournings
or their mentions in our talkings?

Do they go not to return ever?

Or, do they stay with us,
seeing us breathing without them?

Probably, they become the granules of sand,
losing themselves to the sands of time;
finding their way back home
coming to us as the footprints of
the forgotten time.


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naveen















Genre: Free Verse

Free verse is a type of poetry that does not contain patterns of rhyme or meter. Free verse is considered an open form of poetry, as opposed to poetry written in structure or form, and tends to follow natural speech patterns and rhythms.

Figure of speech used:-

Simile

A figure of speech in which two essentially unlike things are compared, often in a phrase introduced by *like* or *as*.

E.g. "as the footprints of the forgotten time".

Metaphor

A metaphor is a figure of speech that describes an object or action in a way that isn't literally true, but helps explain an idea or make a comparison.

E.g. "they become the granules of sand".

Interrogation

Interrogation is asking of a question not for the sake of getting an answer, but to put a point more effectively.

E.g. "do they become stars"

"do they get the wings to become a bird".

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**Write any poem of your choice
(minimum 8-10 lines)**

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(University of Delhi)
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Reborn

When I hold the pen,
something inside me is reborn
The girl otherwise dead comes to life
She crawls under my skin,
making me feel alive
She breathes in my body,
purifying the Universe I carry inside
In my ear, she whispers the beauty of the night
and tells me the secrets of the farther side
Her gentle touch tickles my wounds,
making them heal on their own
She holds my hand, entwining her fingers with mine
Gripping the pen, she guides me to write my fears
From under my skin, she lands in my verses transmuting
ink from my tears.





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Write one poem meant for children.

Bringing happiness from the moon,
Children scatter it on the earth,
Asking address from the mountains,
Children brings light to homes,

In front of daily obstacles,
Children compete strongly,
In the opposition of great difficulties,
These children standing steadfast,

To the fame of the parents,
Children make flow like rivers,
With continuous hard work,
Children shine like stars,



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ACTIVITY 4

(Review of Any Movie.)

DANA PAANI

There is no doubt that this movie presents the beautiful relation of a mother and a daughter. The story revolves around mother and daughter who were destined to separate in the beginning so that they can be together till the end. This movie makes me believe strongly that "Everything happens for a Reason"- that in beginning we may not be aware of.

Except this emotional heart touching mother daughter Relation. I was focused to another important phase of life that is "death" . Life is a Journey with a fixed destination, I think. In this era ,when it's the season of death , Everyone is getting stressed and depressed for the loss of their loved ones that is very obvious of human Nature . But what I realised is that life doesn't end when someone leaves us, actually they didn't leave us they just shift to a different place ; where they keep watching us , giving their blessings , and motivating inside of us when we feel down , and most importantly they are waiting for us there. The ending of the movie take my heart ... How beautifully the phases of one's life were shown ; Life starts from childhood with our parents; young-age with husband and old-

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Internal Curriculum Coordinator
Deen College
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age with children; life moves in form of a cycle when the girl meets her parents in the sky she converts from an old women to young girl and then into a child who finally meets her lost parents , waiting for her ; that when she will not end but complete her journey happily.

And her husband was shown as a medium to meet her mother; in broader sense ,marriage is important in order to complete your time on earth happily, not applicable for Everyone as there are also people who are happy alone.

All that I would like to say is that you should watch this movie once in a lifetime to mark a change in your perspective towards life.

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ACTIVITY 8

Locate the various types of advertising in different media, identify the purpose of advertisements.

Advertising is a means of communication with the users of a product or service. Advertisements are messages paid for by those who send them and are intended to inform or influence people who receive them, as defined by the Advertising Association of the UK.

Advertising is always present, though people may not be aware of it. In today's world, advertising uses every possible media to get its message through. It does this via television, print (newspapers, magazines, journals etc), radio, press, internet, direct selling, hoardings, mailers, contests, sponsorships, posters, clothes, events, colours, sounds, visuals and even people (endorsements).

The advertising industry is made of companies that advertise, agencies that create the advertisements, media that carries the ads, and a host of people like copy editors, visualizers, brand managers, researchers, creative heads and designers who take it the last mile to the customer or receiver. A company that needs to advertise itself and/or its products hires an advertising agency. The company briefs the agency on the brand, its imagery, the ideals and values behind it, the target segments and so on. The agencies convert the ideas and concepts to create the visuals, text, layouts and themes to communicate with the user. After

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approval from the client, the ads go on air, as per the bookings done by the agency's media buying unit.

Standard Advertising

practice of advertising the same brand or same product in the same way everywhere around the world. It looks for similarity across countries and segments to catch up a common thread to capitalize on advertising. That opinion shows that human needs and emotions are the same in everywhere. In addition this communication and transportation, technology, create a global market and desires of costumer around the world become homogenized. Global advertising focuses on localization and standardization of the advertising company from a marketing strategy perspective without costumer regarding.

Public service / social responsibility advertising

Public Service Advertising is using the techniques of commercial advertising for non-commercial purposes. It is mainly used as a tool to promote social welfare. When the world is confronted with multiple disorders, communication is the only answer that can create awareness and educate the public by constantly providing information. The first of its kind, this book Public Service Advertising is focusing on the practices of PSA from across the world and India. The Governments, Local Bodies, the NGOs and civil society undertake such advertising for multiple reasons, with the central idea of influencing people. Business concerns may also undertake it in public interest. The book is divided into three sections. Section one deals with the articles that explain the origin, evolution and growth of PSA, while considering the role of the government and the NGOS in propagating for a social cause. Section two critically analyzes the role of celebrities, ad agencies and ad

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professionals in public service ad campaigns. Section three consists of cases that effectively deal with the issues of public interest from across the globe and India.

Counter advertising

Counter advertising is "Advertising that takes a position contrary to an advertising message that preceded it. Such advertising may be used to take an opposing position on a controversial topic, or to counter an impression that might be made by another party's advertising." Counter advertising is often seen informally on controversial topics like smoking.

Advocacy advertising

Advocacy advertising is the use of marketing to support a particular message or cause. Unlike commercial advertising, advocacy advertising is considered to be undertaken in the interest of a group or the public and typically does not promote a product or service. Funding for advocacy advertising can be through nonprofit organizations, corporations, or private advocacy groups. Some governments require that organizations engaging in advocacy advertising clearly state how the funding is provided.

Image Advertising

Image advertising can be understood as a form of native advertising in which ads are placed on the images on web pages or the internet. Image advertising offers less intrusive and more native exposure to ads in comparison to the standard display ads. In this article, we will be talking about what image advertising is, and why it is considered useful for the businesses that want to optimise their presence on the web.

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Purpose of advertisements

For a given market target, there are six purposes which an advertisement seeks to attain. It is possible to achieve more than one type of objective with one campaign; but that is both difficult and costly.

Whenever a company seeks to achieve more than one purpose through advertisements, it must make sure that the various purposes are in conformity with its overall marketing strategy. When a company seeks to increase the recognition of a brand name or product as part of its branding policy in marketing, advertisements are the way to go.

Basic purposes of advertisements:

Awareness;

Reminder to use;

Changing belief about the brand;

To assist salesmen in marketing products;

Generating direct sales;

Building the company's image.

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ACTIVITY 11

Scan the print, electronic, and new media for examples of advertisements that use the five kinds of 'copy'.

Straight copy

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Descriptive copy

Integrated ...
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New Delhi-110078

(42)

THE DARKER SIDE OF BUTTERSCOTCH

A bar of wonderful distinctions if there ever was one. Crunchy taffee and smooth dark chocolate. Treachery and savoury flavours. It's evocative, to say the least, but that's why you're drawn to it in the first place.



Narrative copy

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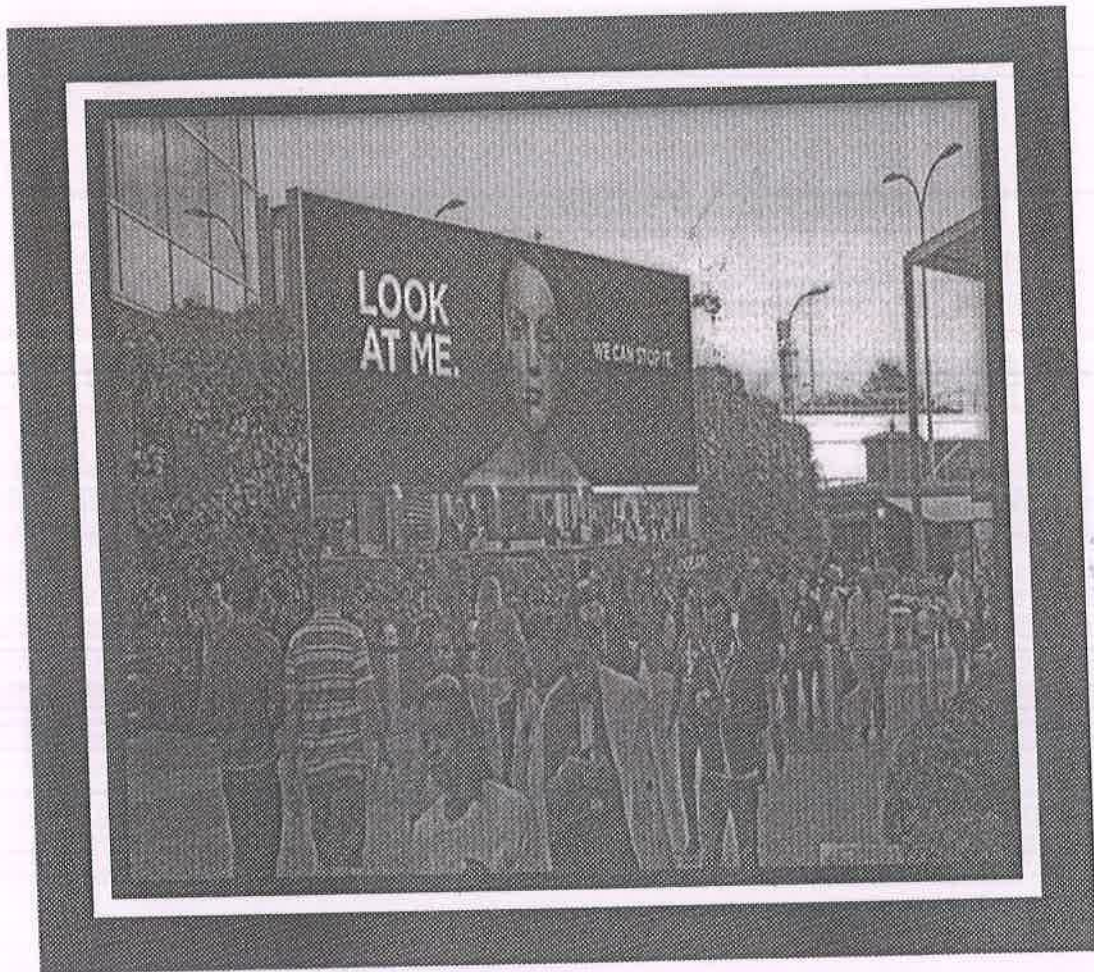
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Internal Quality Assurance Unit (IQAU)
Deputy Director
University of Derby



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Testimonial copy

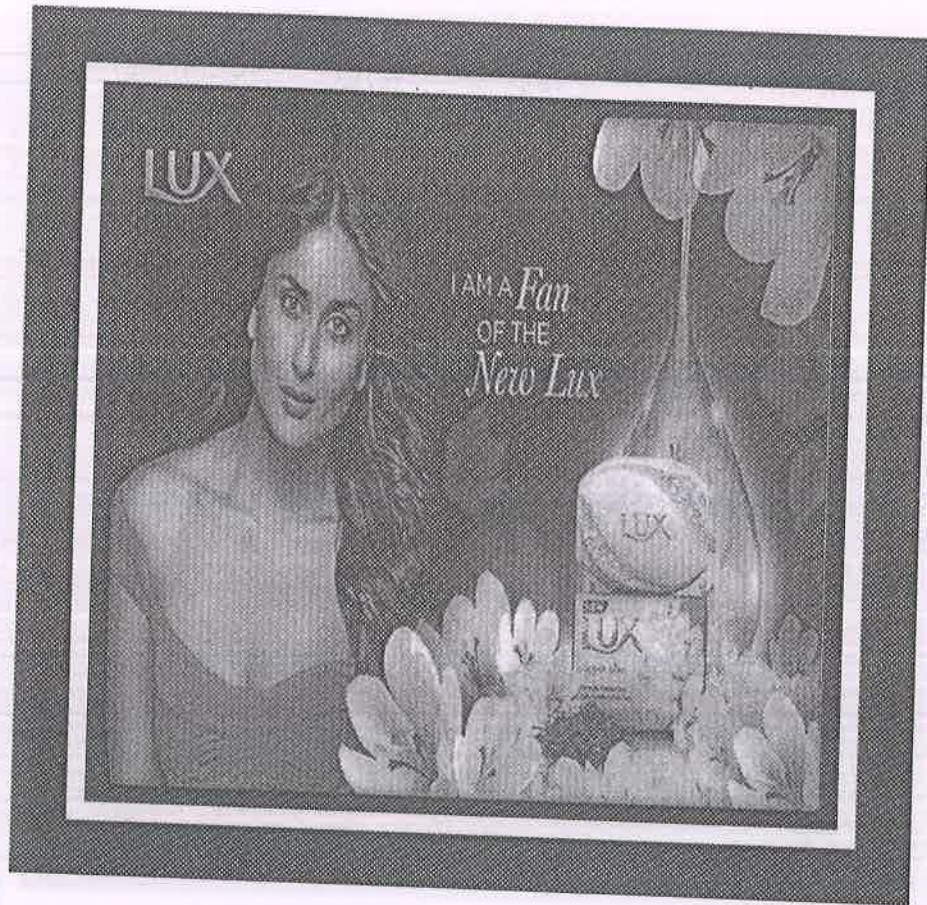
Coordinator
Internal Quality Assurance Cell (IQAC)
Deen Dayal Upadhyaya College
University of Delhi

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Officiating Principal
Deen Dayal Upadhyaya College
(University of Delhi)
Sector-3 New Delhi-78

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Humorous copy

women

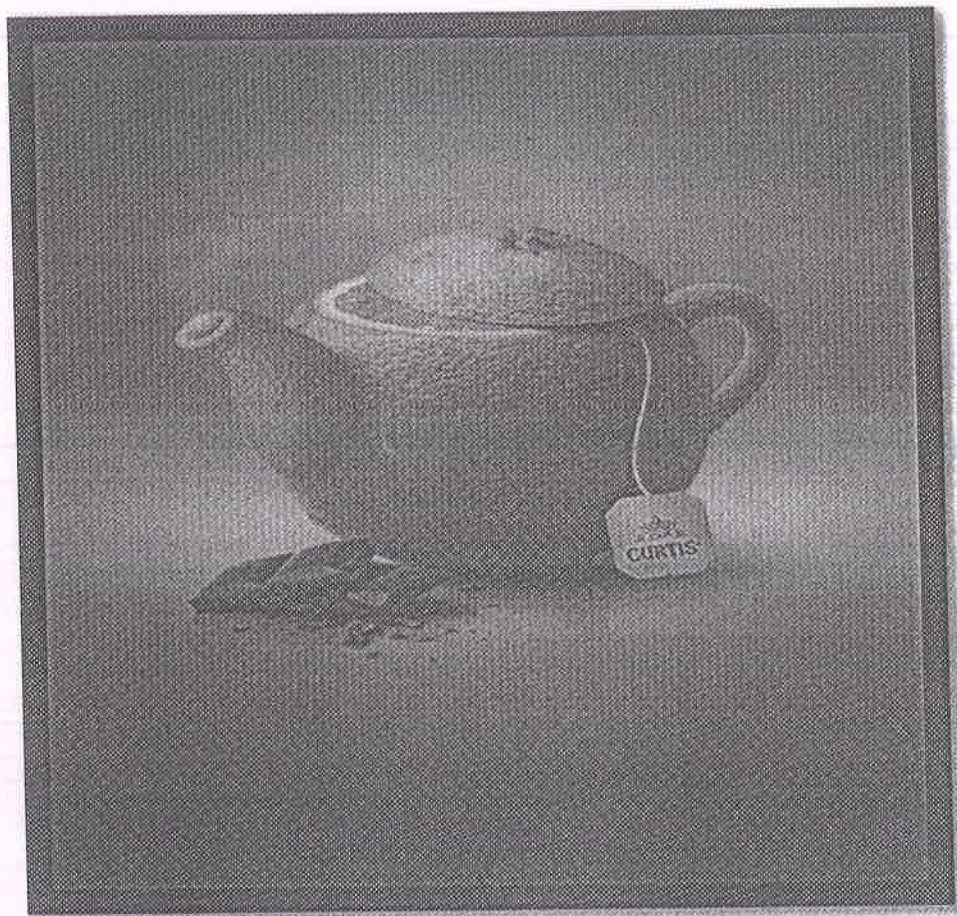
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Write 5 Haikus

We all are locked in ,
Outside corona roams free
Free as the wind blows.

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I am many things

But with you

I am one thing.

I close my eyes and

I live all the

Impossible things.

Two lovers

Can never be one

One is sun other moon.

It's impossible

Yet beautiful what you ask Me

to believe in.

Make a play out of joke.

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University of Delhi

The teacher give the class practice with the past tense of verb. And asks questions randomly to the students and finally asked to a student who was on sick leave in yesterday's exam.

Scene:-Classroom

Teacher: Harshad , what day is today?

Harshad: Today is Tuesday

Teacher: And what day was yesterday?

Harshad: Yesterday was Monday

Teacher: And what day was the day before yesterday?

Harshad: The day before yesterday, was Sunday.

Teacher: was there school the day before yesterday?

Harshad: No, there was no school the day before yesterday.

Teacher: - You seem to know the names of the day of the week very well, Harshad . Incidentally, can you tell me which day of the week is the strongest day?

Harshad:- No, sir, I can't. Which day of the week is the strongest?

Teacher: The strangest day of the week is Sunday because all at the Other days are weak days. Isn't that a good joke, Harshad. .

Harshad: Yes, it is, sir.

(Everyone starts laughing.)

Teacher: Helen, if this is the month of October, what was last month?

Helen. Last month was September.

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Teacher: And the month before last?

Helen: The month before last was August .

Teacher: William, were you at school yesterday?

William: Yes, I was

Teacher: And were you at home last night.

William: No. I was at the movies last night.

Teacher: John, were you at school yesterday?

John: No, I wasn't. I was absent from school yesterday.

Teacher: Were you sick?

John: Yes, I was

Teacher: Don't you know that there was an examination in class yesterday?

John: Yes, sir. Perhaps that is why I was sick

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Coordinator
Internal Quality Assurance Cell (IQAC)
Dean, Department of Education (College)
University of Delhi

Submitted to : Dr. Pramesh
Ratnakar/Dr. Jayini Adhyapak

Submitted by : Vishal

Course : B.A.(H) English

Sem : 3rd


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(University of Delhi)
Sector-3, Dwarka, New Delhi-75

Roll no. : 19ENG0539


Subject : Creative writing











Poem

Pollution: The worst change

Another day is gone
From the day I was born
Nothing is left unchanged
Not even a single stone
I saw and loved the green
but now it can't be seen
Things are turning grey and black
Can anybody tell me where do we lack?
The air I breathed earlier
Now the same is not familiar
I get a cough with every breathe
the dust and smoke just me to sneeze.
I'm scared to have a sip of water
Drinking it seems like third degree torture

Though it's transparent and looks so pure
 believe me, you'll get sick and it don't cure.
 This music you listen on loud speakers
 I hate it whether it's Micheal or Bieber
 Though I like listen music too
 But now the way in which you do
 Pollution is death's synonym
 And will these words I finish my poem

Figure of speech:

- **Alliteration**- The occurrence of the same letter or sound at the beginning of adjacent or closely connected words. In this poem alliteration is "single stone".
- **Simile**- A word or phrase that compares something to something else, using the words 'like' or 'as'. In this poem simile in "the grey and black" and "it seems like third degree torture".

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- **Hyperbole**- A way of speaking or writing that makes something sound better, more exciting, dangerous, etc. In this poem hyperbole presents in "pollution is death synonym".

Children are the future of nation

Children are the future of nation,
If they are nurtured in the beautiful garden.
Upbringing of children in right direction will
determine the country reflection.
Education plays a very important role
Where children understand their various goals
Children have the equal rights as they have very
beautiful sights

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Internal Quality Assurance Cell (IQAC)
Deemed to be University College
University of Delhi

Chacha Nehru loved children a lot

As they believe children will be super future robots.

Children look at this world in a different way that's why Chacha Nehru used to say- "the children of today will be the future of tomorrow"

They will re-invent this world like super heroes.

Figure of speech:

- **Simile**- A word or phrase that compares something to something else, using the words like 'like' or 'as'. In this poem, this figure of speech presents "loved children a lot as they believe", "world like superheroes", "as they have beautiful sights".

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Interpretation

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Short stories

A lasting impression of Bengaluru.
It's mere chance that I happen to visit Begaluru.
I like to call it Bangalore. It was a new city for me.
Within my three days of staying, it totally
enchanted me with it's hospitality, love,
awesome weather, it's deep rooted culture,
grounded people and mouth watering culinary.
Inspite of only three days your, it seems my
take away was huge. It was first time where we
just go unplanned and randomly choose the
places to visit. Being a nature lover, I got the
chance to explore the botanical park.
Thousands varieties of flowers, trees, greenery
all around totally had a soul satisfying effect on
you. The cool breeze added it up giving the
bengaluru a personal touch. Trees of three
hundred years of age with tusks was the beauty
which can only be felt.
Second day we headed to great MG Road. It
more or less reminded me of the city of fashion,

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Paris. You can see all brands of accessories, footwear, clothing.

The memorable and most Adreline shootings sight was National Zoological park, Banerghhata. We went for the Jeep safari. I shouted when I saw a tiger in front of us. My God he looks so chivalric, walking with so sleep and bravery. It reminded me of Aunt Jennifer's tiger. Very true Adreline Rich has described the tigers. We saw flock of elephants, bear, butterfly park and what not. Wild life park is adventurous as well as informative.

A last I want to add that it was the bengaluru people's humble nature, simple living which got my attention the most.

Adieu Bengaluru!!

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Activity

a) Write a review of a movie that you have seen

Ans **Baghban**

The bonding between the parent and child to the
The bonding between the parent and child to the
sad turn of events at the sunset of the parent's
life, have been depicted in various films in the
past. B.R. Chopra's BAGHBAN, directed by Ravi
Chopra, takes a look at the delicate relationship
between parent and child. BAGHBAN works,
mainly because of the rich emotional appeal it has
to offer. BAGHBAN is the story of Raj Malhotra
[Amitabh Bachchan], his wife Pooja [Hema Malini]
and their four sons [Aman Verma, Samir Soni,
Sahil Chadda, Nasir]. Just like a gardener
['baghban'] who plants a sapling and nurses it till
it blossoms into a tree, in the hope that he would
be able to bask in its shade when he grows old,
Raj and Pooja have raised their sons, all well
settled in their lives, with utmost care. But
equations change when Raj retires from his bank

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Dean, College
Unit

job. None of the four sons are ready to take their parents' responsibility. The sons work out a strategy: The father would live with the eldest [Aman], the mother with the second son [Samir]. And after six months elapse, they would shift to the third and fourth sons [Sahil, Nasir]. Raj and Pooja, who love each other dearly, are separated in their old age. If the separation of the parents bears a striking resemblance to ZINDAGI [Sanjeev Kumar and Mala Sinha underwent a similar situation in this 1977 film], the pre-climax [adopted son Salman Khan, an orphan, entering the scene] and the climax [in a turn of events, the parents become rich and the greedy sons re-emerge on the scene] is very similar to AVTAAR. Yet, despite the comparisons and the feeling of d? , vu, BAGHBAN rises to the occasion. The emotional quotient in the film is enough to overcome all shortcomings. Director Ravi Chopra, who has attempted various genres in the past [ZAMEER, THE BURNING TRAIN, MAZDOOR, AAJ KI AWAZ], is most comfortable attempting this

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genre. Not that the film is without its share of flaws. From the script point of view, the reason that compels the parents to live separately looks baseless. For, barely 5 minutes ago, at the farewell party hosted in his honour, Raj Malhotra [Bachchan] had publicly announced that he'd want to spend the remaining life with his wife, not working in an 8.30 a.m. to 5.30 p.m. job. Why, he even refuses a two-year extension by the bank manager on these grounds. Moreover, there is no solid reason for the parents to accept this kind of an arrangement. They have a beautiful house [bungalow] to live, a kind-hearted landlord [Sharat Saxena], good friends [Avtar Gill, Asrani] and most important, the love for each other to walk into the sunset of their lives, holding each other's hands.

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Internal Quality Assurance Cell (IQAC)
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Delhi

Various types of advertising in different media:

Standard Advertising

This is the kind of advertising that we see every day in the various media. This type of advertising aims to promote a particular product or service, with the intention of persuading the target audience to purchase them. Soaps, perfumes, clothes, soft drinks, and even advertisements for companies that offer bill-payment services, can all be included within this category.

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Public Service/Social Responsibility

Advertising :

Public service or social responsibility advertising answers a public need . It generally produced and distributed by government agencies or nonprofit organizations, in cooperation with private advertising and mass media companies.

Handwritten notes and signatures at the bottom of the page, including "noween", "A", "B", "C", "D", "E", "F", "G", "H", "I", "J", "K", "L", "M", "N", "O", "P", "Q", "R", "S", "T", "U", "V", "W", "X", "Y", "Z", and a circled "52".

Image Advertising :

This kind of advertising is designed by businesses to improve their image, rather than to promote a particular product. At one level, this kind of advertising is affiliated more closely with public relations rather than with marketing. This kind of advertising promote the name, the image, the personnel, and also the reputation of the advertiser .

Counter-Advertising :

Counter-advertising focuses on the alleged fraud and misrepresentation in advertising. The advocates of counter-advertising claim that standard advertising does not inform the public of everything, thus hampering the ability of consumers to make a really informed choice.

Purpose of advertising:

- 1) Create artificial product differentiation
- 2) Create a degree of monopoly (which comes from the brand & brand loyalty)
- 3) Create barriers to entry (to prevent competition)



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4) To gain market power so a company can raise prices and increase profits.

Question:- Scan the print , electronic and new media for examples of advertisements that use the five kinds of 'copy' defined above

Answer:- 1. Straight copy:-



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Sector-3, Dwarka, New Delhi

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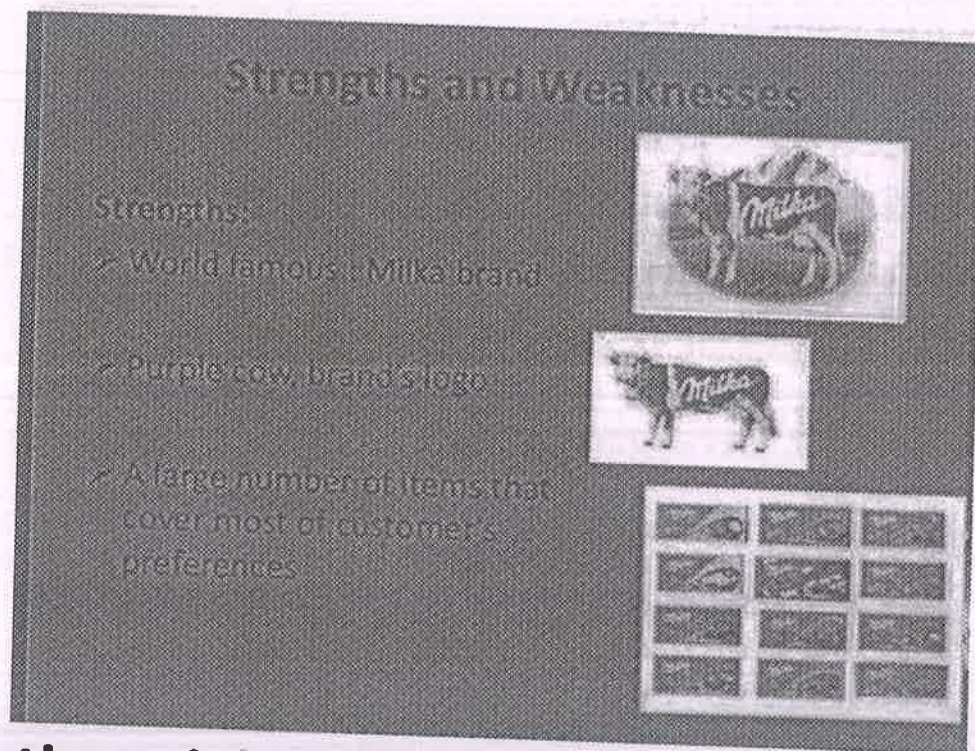
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2. Descriptive copy:-



3. Testimonial copy:-

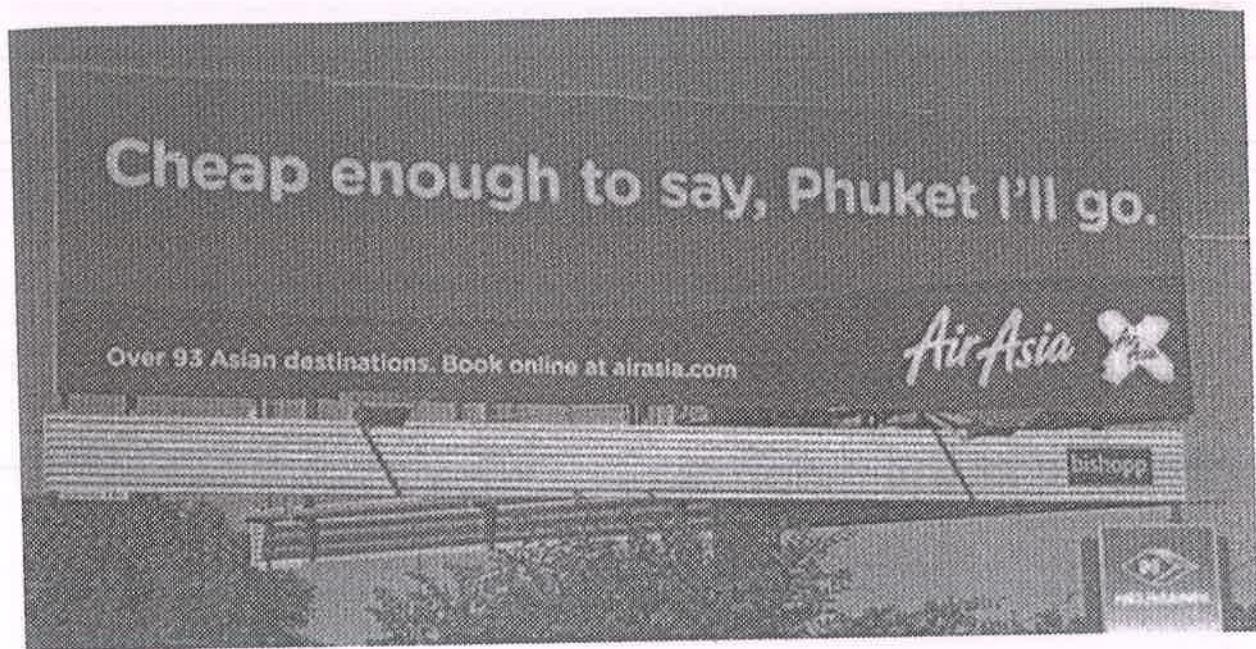
4. Humorous copy:-

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Haiku:

1. Mosquito at my ear

Does he think

I'm deaf ?

2. Old pond.....

A frog leaps in

Water's sound.

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Internal Officer
Deen Dayal Upadhyaya College
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3. A whale !

Down it goes , and more and more

Up goes its tail.

4. Clouds murmur darkly ,

it is a blinking habits –

gazing at the moon .

5. Toward those short trees

We saw a hawk descending

On a day in spring.

Play:

A man slow witted man walked into a patent office. He walked up to the patent officer and said, "Hey, I've got a new idea for a mouse trap." (Draw a box on the blackboard.)

"Here's the box." (Draw a hole in the box.) "Here's the hole." (Draw a circle in the bottom of the hole)

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"Here's the cheese." (Draw a line across the hole in the box.) "Here's the blade. The mouse sticks his head in the hole to get the cheese, the blade drops on his neck and kills him."

The patent officer looks at the diagram. He understands that the man is a little slow so he wants to be kind. He explains to the man that he does not think the design is ready to be patented yet. He tells the man, "Please, work on it some more. Perhaps I will be able to patent it another time." The slow witted man says thank you and leaves the office.

One week later the slow witted man shows up again. (Draw the exact same example on the board in exactly the same way.) The slow witted man says, "This is the box, this is the hole, this is the cheese and this is the wire. The mouse sticks his head in the hole to get the cheese, the wire wraps around his neck and kills him."

The patent officer, still trying to be kind, makes the same excuse as before. The slow witted man leaves.

One week later the slow witted man returns. He approaches the same patent officer and says, (The exact same things)

"Here's the box. Here's the hole. (This time he draws a zig-zag line across the hole and he does not draw a circle for the cheese.) After completing the zig-zag line, the slow witted man proclaims, "and here's the saw blade."

The patent officer notices the design and the fact that that there is no cheese. He asks the slow witted man, "Where's the cheese." "Ah-ha," says the slow witted man.

"That's the point. The mouse sticks his head in the hole and says," "Where did you put the cheese."

(When the mouse speaks you must act like the mouse. Stick your head out as if looking into the trap and swing it back and forth as if looking for the cheese.)

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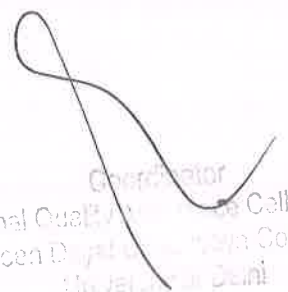
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The implication is that the mouse will saw off his own head while looking for the cheese. Remember the saw blade..

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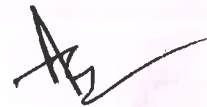
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ASSIGNMENT

OF

Submitted to: Dr. Pramesh Ratnakar and
Dr. Jayini Adhyapak

Submitted by: Sonakshi

19ENG0534

3rd semester

Officiating Principal
Deen Dayal Upadhyaya College
(University of Delhi)
Sector-3, Dwarka, New Delhi-78

Q. never Paul Megha
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ACTIVITY 4

MOVIE NAME: ROOM

Directed by Lenny Abrahamson. With Brie Larson, Jacob Tremblay, Joan Allen, William H. Macy, and Tom McCamus. Distributed by A24.

Parent's guide: R (violence, profanity, adult themes).

Review:-

For Ma and Jack, the mother and just-turned-5 son played with breath taking might and magic by Brie Larson and Jacob Tremblay, reality is a 10-by-10-foot shed, locked from the outside, a small roof window letting in a square of sky.

In Room - written by Emma Donoghue, adapting her bestseller of the same name, and directed by Lenny Abrahamson - this is the place where parent and child live. She has been imprisoned for seven years. He has lived there since birth. His captor, his mother's abductor, has his DNA. Old Nick, as he's called, provides them with food, clothes, supplies. And he still pays nocturnal visits - the boy asleep in a closet as the kidnapper rapes again.

If Room sounds like a horror story, well, it is - and it isn't. Donoghue's riveting drama is a celebration, of the bonds between a mother and a child, as they create their own world, a safe world, within the walls of "Room." This is the only life that Jack has known, and for him, Room and the things in it are reality in its entirety. He addresses the objects and furnishings - Lamp, Sink, Bed, Plant - as if they had souls.

Tremblay, his eyes wide with wonder and curiosity, immerses himself in the pretend life of this kid and his mom. Only 8 when he made the movie last fall, Tremblay's innocence, fearlessness, and commitment are astounding.

Larson, takes things to a whole other level in Room. Her Joy - Joy Newsome is the name she had before she was grabbed off the street and taken away - is a committed parent, making sure her boy eats well (as well as he can, given what Old Nick brings them), does his exercises, brushes his teeth, steers clear of the man who punches in the keypad code to open the door.

And then Room is no longer the only world Jack knows. There is another, bigger, scarier place out there, with other people, families, kids. Joan Allen and William H. Macy play Joy's parents, Jack's grandparents, and Tom McCamus is a family friend whose presence becomes integral to Jack's rehabilitation, his reentry. Only it's not a reentry - he's entering it all for the first time.

In its second half, then, Room becomes a story of recovery and healing, grappling with the aftershocks of trauma, the guilt, the shame. Not just for Joy and Jack, but for the parents who had to endure their daughter's long disappearance, the fear that she might be dead.

Amazingly - and this movie is amazing - Room is a story of hope, of possibility. Sure, your stomach will be in knots, your fingers clenched, your heart racing. But it will also fill that heart with a sense of the goodness, the courage, the enduring love that is out there to be discovered - and to be held onto with the fierceness of life itself.

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ACTIVITY 8

There are several advertising mediums which can be categorized under five heads:

- **Print Advertising**

Newspapers are the most popular form of print media. They are generally delivered at home, or are available at newsstands, and it is the most inexpensive way to reach a huge mass of people quickly.

A **newsletter** is a publication that mostly covers one main topic. Sometimes, people have to subscribe for the newsletters, or many a time, they are even free. Newsletters are generally used as information sources for neighborhood, communities, and groups having an interest about that particular topic, or event. They are also used for promotional purpose, political campaigns, or for causes.

Magazines provide detailed articles on various topics, like food, fashion, sports, finance, lifestyle, and so on. Magazines are published weekly, monthly, quarterly, or annually, and many of them are sold all over the world.

Banners at many places are made of cloth, or paper and are used to show slogans, logos, or some messages. It is also used for advertising brands in exhibitions, giving out the names of products, or services that are being provided. Like banners, posters also come under the same category for the same purpose.

Billboards have mostly become digital, but they qualify under the category of print media—after all, the advertisements are printed on the billboard. These include text and graphics—mostly as a combination—so as to make it more appealing.

Books are the oldest form of print media that are used as a way of communication and information piece. They give an opportunity to writers to spread their knowledge about a particular subject to the whole world. They are a diverse platform comprising varied topics that include literature, history, fiction stories, and many more, that not only increase our knowledge but also entertain us.

A **brochure**, also known as pamphlet, is a kind of booklet that contains the details of the company, or organization. Generally, brochures are for takeaway, so as to keep the audience.

A **normal flyer** is also a part of print media. Some of the big companies may not use this type for advertising of targeting the market, but for small organizations, it can be very useful and can help in generating business. A flyer should always be crisp and eye-catching so that it attracts people's attention.

- **Broadcast Advertising**

1. **Radio Advertising**

Radio advertising is described as "word of mouth advertising on a large scale".

It appeals through the ears. Nowadays all radio stations all over the world broadcast commercial advertising.

The advertisers prepare the programme beforehand keeping in view the interests of the listeners.

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Here, the message is delivered orally, not visually.

2. Television Advertising

It is the latest and novel method of advertising. It provides the coordination of sound, sight, motion and immediacy that no other medium provides.

It combines radio, movies and theatre. It is a colourful presentation.

In this medium, the salesman can present and demonstrate the product. It is like personal selling.

A variety of techniques reused to produce the commercial message like 'line action' cartoon, puppets and stop motion.

It has a promising role to play in the advertising world.

3. Advertising Films

Commercial films are produced to publicize the products with a story.

They prove effective because they give the oral and visual message.

They create interest in younger customers. Advertising films possess entertainment value.

These are shown when the audience is eager to see the main picture.

Films can be used for the concentration of advertising efforts in certain areas.

4. Slides

These are exhibited in cinema houses. They produce the effect like posters.

These are exhibited on the screen for an agreed period.

The slides are shown before the cinema shows or during the intermission.

Generally, bold letters and eye-catching colours are used in slides.

Mostly, local retailers make use of of this medium.

5. Video Advertising

This medium has grown rapidly in advertising circles.

Video commercial films are produced to make publicity of products.

Sometimes, video commercials are linked with film cassettes which are used by video audience.

This advertising is shown in video parlours and clubs.

6. Cable TV Advertising

Cable TV has opened up various avenues for advertisers to promote their products.

It is in the form of spots sold to national advertisers on programming on networks. cable offers the opportunity to create innovative advertisements.

This medium is ideal for products that require demonstration.

This medium gives immediate response. Here, we have some idea of the target audience.

It is a good medium for advertising products like ceasefire meant for the upper-middle and middle classes.

Only national advertisers use this medium.

7. Drama and Music Programme

This medium is used largely for advertising in rural areas.

Advertisement is presented with religious dramas and music programmes.

- Outdoor Advertising

Posters and placards are usually fixed on the walls near the road sides, railway station and bus stands. These posters are made of thick paper or metal plate or wood and carry the advertising message which can be easily read and seen from a distance.

Electric displays or neon signs are also used in order to impress the passerby. These carry a very short message. This is a very costly device.

Sandwich-men move from street to street carrying the posters and peculiarly, they shout and sing praising the concern and the product. Sky writing is also known as air advertising.

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The pilots of the aeroplanes through whom this is carried write the advertiser's message in the form of smoke or illumination. The message is quite visible even from a long distance. Balloons fitted with the message and pictures of the product are also flown in the sky.

- Digital Advertising

Content Marketing

Content marketing is a type of digital marketing that focuses on creating and distributing content for a target audience. The content aims at being valuable, relevant, and (ideally) consistent. Its ultimate goal is to drive a profitable customer action.

Search Engine Optimization (SEO)

SEO, or Search Engine Optimization, is the process of getting quality traffic from free, or organic, search results on the search engines (like Google and Bing).

Search Engine Marketing (SEM)

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Initially, the term "search engine marketing" was used as an umbrella term for the process of gaining both paid and free search traffic. Over time, the industry switched to using the term "SEM", or Search Engine Marketing, solely for paid activities.

Social Media Marketing (SMM)

Simply put, social media marketing refers to the process of using social media platforms to attract traffic and attention. By using social media, you can increase exposure and build meaningful relationships with your customers.

Pay-Per-Click Advertising (PPC)

Pay-per-click is a model of advertising where marketers pay a fee every time people click on their ad. Basically, it's the process of buying visits to your site, as opposed to getting them organically via SEO or other types of digital marketing.

Email Marketing

Email marketing is one of the most popular types of digital marketing. To put it shortly, it's the use of email for promoting one's products or services.

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ACTIVITY 11

THE FIRST FAMILY VCR.

The high performance, full-feature Video Cassette Recorder everyone in the family can use.

Television is a mass medium that everyone enjoys, so why should a machine designed to record and playback television programs be any different? Yet, your average VCR is so confusing that only the family "expert" can begin to operate it.

NEC VCR's are designed so cleverly that every member of the family can enjoy video cassette recording to its fullest.

For instance, to load any NEC VCR, from the least expensive VC-734E to the top-of-the-line, you simply insert the video cassette. The machine does the rest with the safest, easiest, most reliable loading system in the business.

NEC's Full Logic control panel truly lives up to its name; you simply press one button for each function with no steps in between. Plus, the programmable tuner/timer is as easy to set as an electronic clock.

When you consider that NEC VCR's deliver the highest Video Fidelity and are the easiest to use, you'll see that the first family VCR's are also The First Family of VCR's.

NEC Video Equipment India Pvt. Ltd., 100 Park Avenue, 15th Floor, New York, N.Y. 10022, U.S.A.



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A spring bird

On a windy noon, field

A little bird alone sits and sing

With the falling leaves.

A girl in night

On a silent cold night

Girl in blanket sits under the stars

Escaping the noise of her own.

A rat

Windy, timberland

A little, living rat crawls

Despite the giraffe.

Kitten

Icy desolate

A tiny, clear kitten hoots

After the vampire.

Ant

Thirsty wintertime

A tiny, active ant stalks

Enjoying the lake.

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A play out of a joke

Narrator: A chicken runs into a library, goes to the main desk.

Chicken: Book, bok, bok, boook.

Narrator: The librarian hands the chicken a book and it tucks it under its wing and runs out. A while later, the chicken runs back in, throws the book on the desk.

Chicken: Book, bok, bok, bok, boook.

Narrator: Again the librarian gives it a book, and the chicken runs out with it. A few minutes later the chicken is back, and returns the book.

Chicken: Boook, book, bok, bok, boook.

Narrator: The librarian gives the chicken a third book, but this time follows it as it runs out. The chicken runs down the street, through a park and down to the river where a frog is sitting on the bank. The chicken holds up the book to the frog.

Chicken: (holds up the book to the frog) Book, bok, bok, boook

The frog: Read-it, read-it, read-it...

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A Poem for children

My Tom and Jerry

I live in a house,
That's not far away,
Where I have a friend called mouse,
Who sits on my lap when I pray,
But a cat who lives in a cathouse,
Always scares him away,
With teary eyes he runs to his spouse,
Then she shouts at him everyday,
And that cat goes meow from her cathouse,
As if saying 'yay!'

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A SHORT STORY

The Night I Met the Moon...

I was sitting in my room on my bed, but my mind was not shutting off. It's irritating when you lie down and force yourself to sleep, but your mind doesn't cooperate. At that time, it'll even bring the worst of things to your attention, that you feel like now you just can't sleep for 2 days straight. Anyways, whenever this happens to me, I just pick a blanket, a cup of coffee, and will go directly to the terrace to just blurt it out in silence to my favorite listener, Moon. So, that day I did the same ritual. I quickly came out of my apartment and tried to go upstairs on my toes without making any noise. As I opened the terrace gate, the shrilling cold air brushed my cheeks, which gave me goosebumps. Although it was cold out there, it felt so refreshing when I was breathing that air.

Now I started looking for Moon to find a place where I can sit right in front of it. To my surprise, it was nowhere. "Oh, crap!" I whispered to myself when I realized that it was a no moon day. I stood there in that freezing weather, covered in my blanket, with a chaotic mind. I don't know why, but tears started falling off my eyes when I looked up at the sky. That day, I felt the loneliest feeling of my life.

Now I wanted to leave, but that feeling made my limbs weak. So I just sat there in the middle of the terrace, with my head down on my knees. I was on the edge of getting lost in my absurd thoughts; just then, the creaking of the door got my attention away. It was 2 o'clock at night; who's up here at this hour. This thought was weird as I am up right now, but I was still not expecting anyone at that time. I turned around my head to look at the door; a person walked out covered in a blanket. The blanket was shiny white, but it had some black spots on it.

"Oh, Hey!" a sweet female voice said. Her face was not perfectly visible because of her shiny blanket, and that was bothering me. So, I didn't respond to her.

"Are you alright?" she asked again. I nodded with a smile this time because I sensed the awkwardness my suspicious stare created at that time. She smiled, and I returned my head back to my knees.

"So, you are not able to sleep too, right?" she asked, and I sensed her sitting beside me on my left.

"Yeah..." I whispered and nodded in the same position of my head.

"yeah, these bad memories suck, right," as she said, I instantly looked at her.

She doesn't seem sad; she was smiling. Her face was not the prettiest face I have ever seen, but looking at her gave me a sense of peace. It felt like that moment was all I needed at that time. She was looking smilingly at the sky when I said, "yeah... kinda."

She turned towards me, "you know what I feel," she said excitedly, "maybe these bad dreams and memories kick in 'cause we never choose to deal with them, you know. Like would you ever just sit with yourself and say, let's talk? No, right."

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Her thoughts and her words were weird, but I was actually feeling those words inside me like those are the ones I have waited to hear.

"Uh... maybe," I said awkwardly. She nodded and looked away at the stars again.

"So, what do you do when, you know, these kinda thoughts come to your mind," I looked at her again. At first, she smiled and then said, "they never kick in."

I gave her an expressionless face. I know my stare was awkward, but her words made me do it. When she looked right at my strange gaze, she laughed.

"Oh, okay, what I feel is not because of my bad memories. It is because of what I heard from other people. You can say that it is because of their bad memories."

"So, you are a therapist?" I asked inquiringly.

"No, just a listener."

"Is that some kinda job?"

She laughed so hard this time that even I started laughing.

"No..."

"Then what?"

"It's good to listen to someone's misery. It gives them peace. And that peace makes me happy."

"That's what therapists do," and we both started laughing. I laughed wholeheartedly after so many days, and this time I was actually feeling happy.

"Yeah... but sometimes when they don't wanna speak and just stare right at me, I can sense their pain. And I am sure that's not what a therapist does, okay," she smiled.

"Oh... impressive," I said tauntingly and started staring at her.

"Don't try it right now," she chuckled.

"Why? Let's try it, nah. Or your powers don't work at night."

She giggled and looked right into my eyes. I don't know for how many minutes, but all I remember was that it was the most peaceful feeling I have ever had in my life. We kept looking at each other straight, smilingly, but then she said something disconcerting,

"Okay, now I have to leave, sorry."

"No...!", my inner self was screaming after listening to this, but my lips said, "okay."

I don't know why, and I forced myself to blurt anything out to just stop her. Otherwise, this will become the memory that will steal my sleep.

"But what about your superpower? Now you have to tell me. I stared, right? So tell me about my misery."

She smiled but still turned towards the door. I don't know from where I got the courage that I took hold of her hand to stop her.

"At least tell me your name, or apartment no. or anything."

She looked at me and then stared at my hand, holding her hand. So, I loosened the grip and looked at her with pleading eyes.

She shook her head in disappointment, but smilingly.

"So, I am going to finish this real quick. My advice to you, which I never gave to anyone, is that even though you are head to toe full of chaos, you know how to find peace, but what you don't do is going through it. It's normal to feel bad about things or have the worst memories, but it is not running away from it. Talking about it is normal, but ignoring solutions you have or getting, just because you think you don't have the courage, is not. You need to have the courage to understand, to feel every emotion, and that will help you go through all the chaos. Things will be okay, on the day, you will find courage and patience to face all your thoughts and get them right. Don't rush through it; give yourself all the time to heal because you owe yourself this much."

I listened to her with my eyes to the sky. It all felt so right at that time like this was something I have waited to hear. I sat there still with a smile on my face. Just then, I heard the creaking of the door, and I said while looking at my feet, "what's your name or your apartment? Please do this favor."

Just then I heard the closing of the door, I thought she left, but after a few minutes, I listened to her voice from the other side of the door,

"My name is Moon, Anav, and I live in 29th apartment," and I heard her giggling.

I smiled, listening to this, and did a facepalm at her mischievous behavior. I stood up quickly and ran towards the door, and I opened it in amazement, she said my name. I never told her that; how did she know that. This bothered me so much that I ran downstairs, from the terrace to the ground floor, but saw her nowhere. I ran back to the top floor to check the 29th apartment, but the last apartment was 28th. I went back to the terrace but didn't go out. I was frightened, thoughts were rushing in my mind, and I could not breathe; I don't know because of my fear or running on the stairs. I was feeling disappointed now, as I wanted to find her, but I could not.

"Meet you tomorrow, Anav, and now I guess you believe in my superpower, right." I heard her whisper from the other side of the door. I wanted to open it, but the thought of not seeing her there, not finding her real, made my limbs weak. I smiled and said, "yeah, Moon, meet you tomorrow."

I heard her giggling, at which I smiled. I never talked to her ever again, but I stare at her every night, 'cause now I believe in her superpower. I feel terrible every time at the thought of not meeting her again, but at the same time, I am glad that I met the Moon once in my life.

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A POEM WITH FIGURE OF SPEECH

PIZZA

The sausage that's really and,
Above all others is the pepperoni.
Does the pepperoni make you shiver? Does it?

All that is reverse is not sectional slice,
sectional slice, by all account is small.
Small, shaped, sectional slice.
A sectional slice is diminutive. A sectional slice is gnomish, a sectional slice is subgross, however.

How happy is the fat, popular pizzeria!

Ugh. Why is it so fat?

FIGURE OF SPEECH:-

ALLITERATION

Alliteration is the repetition of the beginning sounds of neighboring words.

'Small, shaped, sectional slice.'

ANAPHORA

Anaphora is a technique where several phrases or verses begin with the same word or words.

'A sectional slice is diminutive. A sectional slice is gnomish, a sectional slice is subgross, however.'

ASSONANCE

Assonance is the repetition of vowel sounds (not just letters) in words that are close together. The sounds don't have to be at the beginning of the word.

'How happy is the fat, popular pizzeria!'

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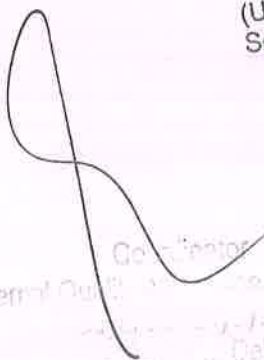
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NAME- Sneha R

COURSE- Ba (Hons) English

SEMESTER- 3rd Semester

ROLL NUMBER- 19ENG0533

SUBMITTED TO-

Dr Pramesh Ratnakar

Dr Jayini Adhyapak


(65)

ACTIVITY 1

Write a poem in any genre and use at least 3 to 4 figures of speech in it.
Identify and write a note on the figures of speech used and the genre chosen.

The Shooting Star

(In the context of the plight of the Uighur Muslims in China; a poem about the children of refugees)

I look at a light ray up above
trying to catch it with my scarred red hands,
But it slips through my fingers sans warmth;
Just like the people standing far away
Waiting to beat us, waiting to help us "learn"; waiting to get us all

My heart bleeds and my eyes rain
the sad yet well-woven tale of a hundred goodbyes; without goodbyes
I yearn as I sleep beside two logs
Crying for the warmth of my mama's hugs

I yearn for that morning sun
But alas! It is the morning moon that shines on me
Devoid of warmth, devoid of light
Devoid of a single ray from the hundred billion I yearn for

Yet in the darkness there flashes a light
Bit by bit I grab it all; My mouth opens and my hands stretch out
As through the broken walls to the empty sky, I see the twinkle in my mama's
eyes (once more),
She falls down as a shooting star and makes me feel loved (just as I had felt in
what seems like a billion years ago)
As on that faithful evening, before everything fell apart
she was patting my head, singing "Lavender's blue"

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"When will I meet you, mama?" I whisper to the shooting star
As the sky above welled up with tears galore
"Wait for me my love" she whispers in silence
"Alright now tell me; how does it feel, my love, when a raindrop trickles down
your face to say hello?"

And finally, my day has come, starved of love, of warmth; of everything
I shall go but alas! Who will cry? (not even me)
As sleep kisses the tired eyes and a familiar voice sings a distant lullaby
A black curtain starts pulling over
But I try to pull back! But slowly relax as I realise
All but the world will be sad without me

GENRE- Free verse: It is poetry whose verse is not based on the recurrence of stress accent in a regular measurable pattern, but rather on the irregular rhythmic cadence of significant phrases, image patterns and the like. It is a literal translation of Vers Libre, a 19th-century poetic innovation that liberated French poetry from its traditional prosodic rules. In English literature, the first famous practitioner of this form is Walt Whitman.

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FIGURES OF SPEECH:

1. **Alliteration-** When the initial consonant sounds of a syllable are repeated, it is called alliteration.

For example- "morning moon"

2. **Hyperbole-** It is the exaggeration or overstatement of something but with the purpose of expressing the truth.

For example- "Devoid of a single ray from the hundred billion I yearn for"

...just as I had felt in what seems like a billion years ago..."

"My heart bleeds and my eyes rain"

3. **Simile**- It refers to comparing things that are essentially different using words like "as" and "like".

For example- "I look at a light ray up above/ trying to catch it with my scarred red hands/ But it slips through my fingers sans warmth/ Just like the people standing faraway"

4. **Pathetic Fallacy**- It is the poetic practice of attributing human emotion or responses to nature, inanimate objects, or animals.

For example- "As the sky above welled up with tears galore"

5. **Personification**- It consists of giving the characteristics of humans to animals, objects and concepts, that is, to non-humans.

For example- "When a raindrop trickles down your face to say hello?"

6. **Anaphora**- It is a figure of speech in which words repeat at the beginning of successive clauses, phrases, or sentences.

For example- "Waiting to beat us, waiting to help us "learn"; waiting to get us all"

"Devoid of warmth, devoid of light/ Devoid of a single ray from the hundred billion I yearn for"

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ACTIVITY 2

Write any poem of your choice (minimum 8-10 lines).

Of Spring

(A poem on how a mother loses her baby a day after it's born)

You came forth with hands so small,
With feet so soft and smile so bright
As spring's sweet glow
It was as if the spring of your life was the spring of mine too

I laid on, in a blue hospital gown
looking at you sleeping on the aisle below
You soon cried hope as the summer winds blew

Then a speck of yellow as bright as a dandelion but with a dusky hue
The nurse cried "Havoc!", I cried red too

For then I promised you a golden charm
That I shall dream a dream for us tonight
But, soon, I could no longer bear to see the autumn leaves cry

She put her hand into mine
And I bid her goodbye
Then a winter breeze swept once more
She coughed once, twice and breathed no more

People came in, took her away but I moved no more.
Up above among the wavering winter winds, *screen*
I saw your soul flying far away
I tried to reach but my hands too short,
With tears in my eyes, I was fading away.

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Fare thee well, Fare thee well
Fare thee well for we shall meet again
Fare thee well! come as spring to me once more

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ACTIVITY 3

Write one poem meant for children.

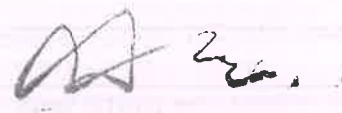
Little Miss Mini

One fine day, little Miss Mini, who is quite skinny,
Came to me for a cup of tea.
You see all the tea leaves in her shop were stolen by bumble the bee.
"I saw her swish and swash and buzz around," she said
"Before she stole and dropped my bag of tea."
I packed and laughed and sent Miss Mini away
For I was quite busy you see.

Do you know a little tale
Of how Miss Mini poured tea leaves onto Kitty's tail?
And how, after getting a secret cookie recipe,
her cookies were stolen and she stopped baking in her oven?

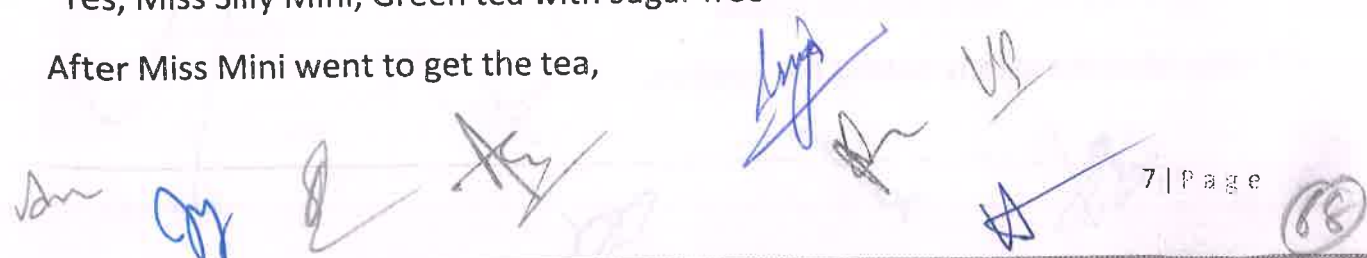
No? It's a pity but wait and see!
So here is the tale told to me by Bumble the bee-

Once Mr Green came along
after sounding his ding and dong
"Mr Green Mr Green would you like some tea?" asked Miss Mini
"Yes, Miss Silly Mini, Green tea with sugar free"
After Miss Mini went to get the tea,


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Sector-3, Dwarka, New Delhi-75

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Mr Green eyed the fresh-baked biscuits in the aisle,
Making sure that Miss Mini wouldn't see
He grabbed one, two and three
And munched and munched and munched them down.
Then when he had finished them all,
Miss Mini came into the hall.
Shocked! She eyed all around
And all Mr Green could do was drink and make no sound!

The next day Pussy the cat came her way
And eyed the milk cookies on the tray.
And when Miss Mini had gone away,
Pussy the cat feasted the cookies away
And when the plate was empty, she jumped out into the alley.
Miss Mini came back and heard a vessel or two
Then grabbing a stick, she went ahead to beat the thief up, black and blue

"A-ha" she cried "You thief! You think you can run away from me?"
Only to see a swarm of flies
That soon buzzed and buzzed around Miss Mini,
As she sat and sang her sad ditty.

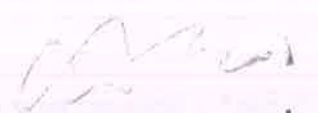
Then one morning I saw Miss Mini puffing behind Kitty.
Who looked all surprised (I am sure it wasn't he)
From that day on, there was no sound
Of Miss Mini the skinny baking her cookies.

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Dean Deyal College
University of Delhi

A curious and scary affair, soothe to say,
I wonder who had eaten up all the cookies that day.

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ACTIVITY 4

Make a play out of a joke

Dramatis Personae

Miss Sandra

Tiger

Lucifer

Miss Sandra's pet dog

Act 1

The street

Enter *Miss Sandra* with her pet golden Retriever *Tiger* covered from head to toe in PPE kits

Music- Arvo Part's Spiegel im Spiegel

Miss Sandra: (To *Tiger*) Goodness me! Tiger, I can barely breathe with all this PPE stuff on. Oh! Goodness me! I dare not say this aloud. The allergy season has had enough witch hunts already.

(*Tiger* looks up and lets out a whelp and continues walking and shaking her tail. Happy to be outside after a long time)

Thunder strikes

Miss Sandra: My my Tiger! The weather surely is 2020. Never in a billion years had I imagined going to the bank manager with a mask on, asking for money.

(A dark smoke slowly takes the shape of a devil in front of them. *Tiger* becomes a frenzy, breaks free from the chain and runs away into one of the bushes by the street.)

Enter *Lucifer*

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Lucknow, India

Miss Sandra: (angrily) Tiger! You scaredy-cat, Um, dog, it's just the pollution. Oh, just come back here. (Tries to go to *Tiger* but stops when the devilish figure comes close.)

Lucifer: (To *himself*) I wonder who this person is. She looks so much like me. Is she my lost sister? (Observes) No, it is another one of the senseless mortals like our old Faustus up there. Let me try to get her soul. Lucifer! Be brave. Don't faint. The worst thing that can happen is getting corona and corona patients no longer roam free. (To *Miss Sandra*) YOU SHALL NEVER WITHSTAND THE STORM FOR THOU AREN'T STRONG ENOUGH!!! HA HA HA.

Miss Sandra: (To *herself*) What do I do now? (An idea flashed in her mind) But will it work? Let me give it a try. After all, you only have one life. (To *Lucifer*, coughing and appearing out of breath) Six *cough* f-f-feet back *cough* Lucifer.

(A look of terror appears in Lucifer's eyes. He frantically starts spraying hand sanitizer all over his body)

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(University of Delhi)

Lucifer: (To *himself*) There we go again. Beelzebub had asked me not to get out. Let me get out of this hell of a place in this hell of a year. 2020!!!

Exit Lucifer

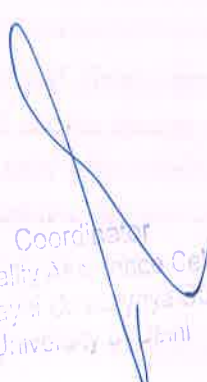
(*Tiger* runs back to *Miss Sandra*)

Miss Sandra: Phew! That was close. (hugging *Tiger*) Tiger! My baby. Don't worry Mommy is here for you. (Lets go of *Tiger* and both of them start walking homeward) My my *Tiger* that experience was 2020 I tell you. Now, *Tiger*, for the travel plans this weekend. To the windooooow...to the waaaaall... then I might go down the haaaall... (faintly) My my *Tiger*! New year's coming. Both of us will stay up till midnight. Why? (pretends to hear her) No-no-no. Not to see the new year in but to make sure that this one leaves.

(*Tiger* lets out a bark or two. Both disappear into the street)

Exit all.




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ACTIVITY 5

Locate the various types of advertising in different media; identify the purpose of the advertisement.

Nescafé—the coffee with life in it!

After a hard day's work—have a stimulating cup of Nescafé
(made in just 5 seconds!)

100% PURE COFFEE made from South Indian coffee beans

Appreciate the aroma of full, rich coffee. Taste Nescafé. You'll find it positively stimulating. Nescafé puts the accent on coffee!

NESCAFÉ
instant
Coffee

A Nestlé Product

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HTA
Calcutta Office

NCE 5751R—30 cts x 5 cots.—General Press
February 1970

Figure 1 Standard advertising

Purpose- Aims to promote Nescafé's instant coffee with the intention of persuading the target audience to purchase it.

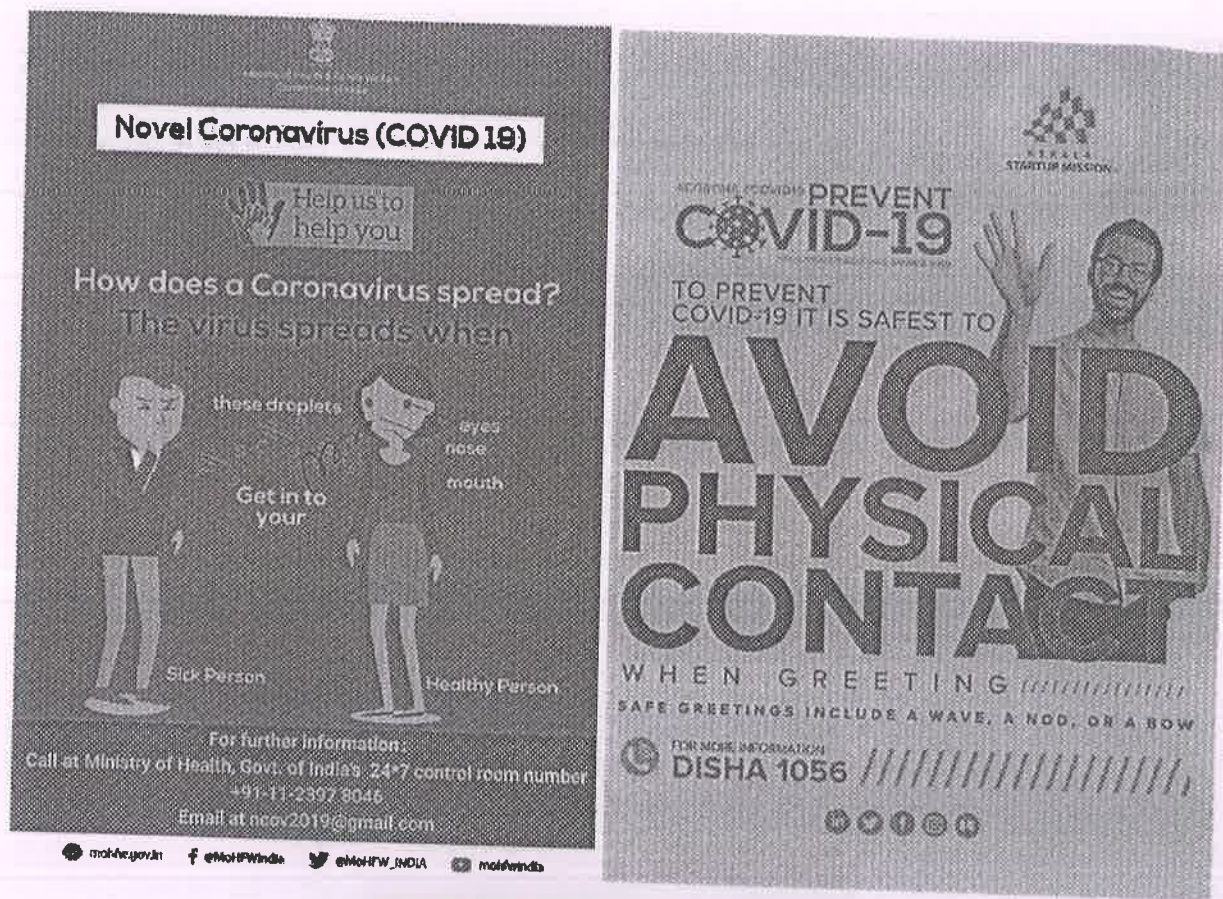


Figure 2 Public Service and Social Responsibility Advertising

Purpose- Aims to disseminate important information related to pertinent issues like Covid-19 to the public.

100% PLACEMENT

कद बढ़ाइय

100% PLACEMENT

SPOKEN ENGLISH COURSE

JAGO GRAHAK JAGO

CAUTION, CARE, AWARENESS
YOUR WEAPON AGAINST
FALSE MISLEADING AD PROMISES

'International MBA in 6 Months!'
'Lose upto 15 Kgs in 20 days!'
'Job Opportunity abroad!'
'Buy 1 Get 5 Free!'

Advertisements such as above can mislead. Your surest weapon against such dubious claims - is your own insight. Read, verify, cross check before taking a decision.

Advertisements that Mislead are Acts of Misdeed

Consumers can also call
National Consumer Helpline No. (1800-11-4000 Toll Free)
(From BSNL/MTNL lines)
011-27662935, 95, 97, 98 (Normal Call Charges Apply)

Issued in public interest by
Ministry of Consumer Affairs, Food and Public Distribution
Department of Consumer Affairs, Government of India
Kirti Bhawan, New Delhi- 110 001
Website: www.consumer.nic.in

For filing of complaints, consumers can also log on to www.consumer.nic.in

Deen Dayal University of Health Sciences
Deen Dayal University of Health Sciences
Deen Dayal University of Health Sciences

Figure 3 Counter advertising

Purpose- It aims to counteract the allegedly false claims and make the consumers aware of their rights.

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Deen Dayal University of Health Sciences



Figure 4 Advocacy Advertising

Purpose- To express a strong point of view of an organisation on issues of public importance and promote itself in the process.

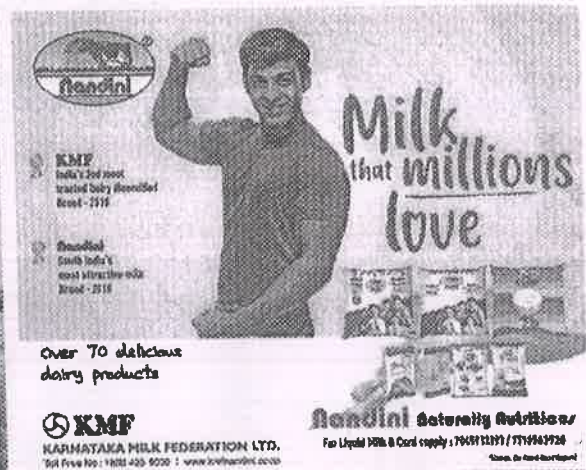
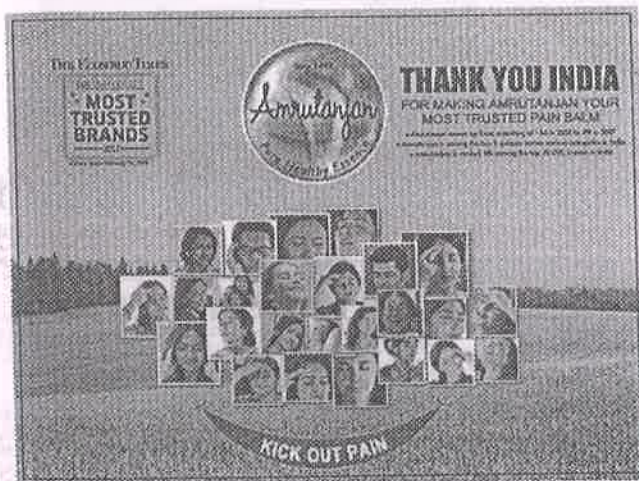


Figure 5 Image Advertising

Purpose- To enhance the image of the company in the eyes of the public rather than to promote a particular product. It is afflicted more closely to public relations rather than with marketing.

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ACTIVITY 6

Scan the print, electronic and new media for examples of advertisements that use the five kinds of 'copy' defined above

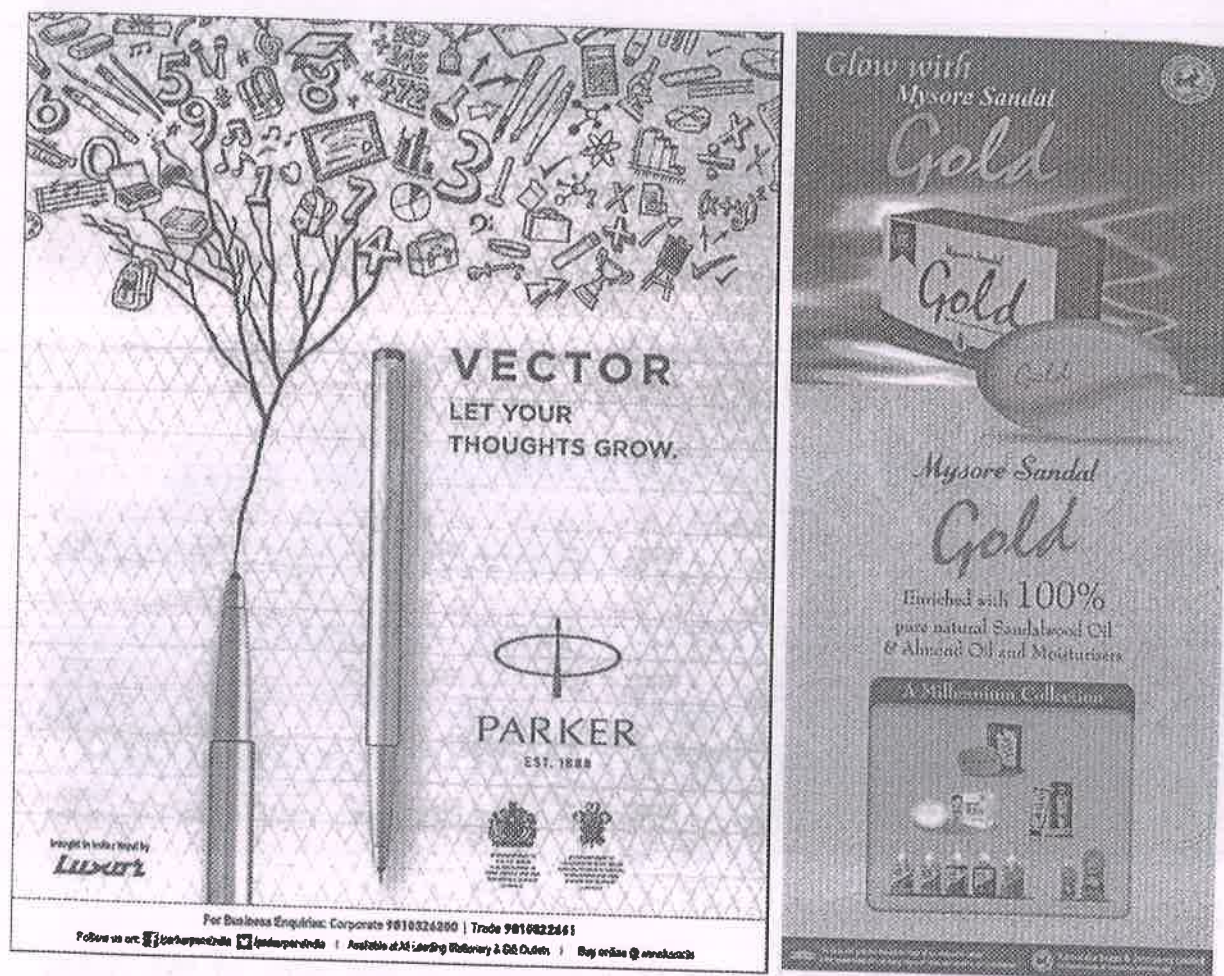


Figure 6 Straight Copy

They state the content in a very simple and short manner.

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University of Calicut

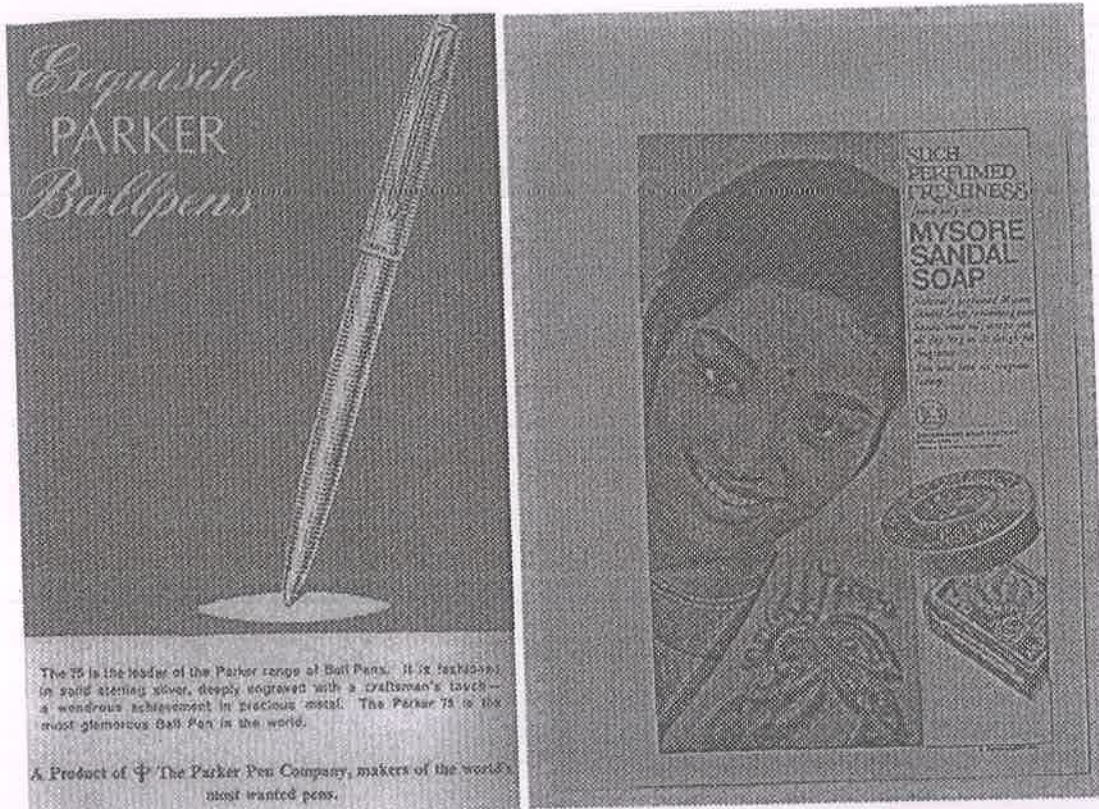


Figure 7 Descriptive Copy

There is an extensive description of the product or service being offered.

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Dwarka
University of Delhi

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(University of Delhi)
Sector-3, Dwarka, New Delhi-78

"It's genuine 'Terene' Cotton Madam!"



You're prepared to pay good money for a 'Terene' pattern fabric. Make sure you're getting your money's worth... and a dress that's smart after two long washes, or a jacket you feel can't wear again... see that the 'Terene' trademark is in the fabric.

The 'Terene' trademark shows that the fabric satisfies our standards:

- It has the right hand - in 'Terene' pattern.
- It costs a minimum of 57% 'Terene'.
- The fabric will retain its smooth finish - it won't look rough and hairy after a few washes.
- The colour is fast... and doesn't get muddy.
- The drape will keep its shape, even after long, frequent use and the iron.

Look for the 'Terene' trademark (in the fabric)

TERENE

'TERENE' is a registered trademark of Crompton and Worcester of India Limited. 'Terene', 'Rene', 'Dorcas', 'Gloria', 'Pamela'.

New jobs often mean tensions... headaches

Strong and trusted Anacin helps you over the bad spots

You have got to get things done within a certain time and there are delays behind your control. That's when tensions build up, giving you a headache. Anacin gives quick relief to help you face the situation better. That's because Anacin removes more of the pain-reliever doctors recommend all over the world.

There is no important meeting in the afternoon and you are keen to do well. But you have this awful headache. Don't let a headache affect your performance. Strong and trusted Anacin not only drives pain, but lifts the depression that accompanies pain. It helps you to be cheerful and confident again.

You have had bad words with your boss. Your division was awarded and you're left with this splitting headache. Strong and trusted Anacin gives fast relief from tension headaches. With your headache gone, you'll be able to think more clearly, work better.

You are included in this formal offer, pretty and keen to make a good impression on the higher-ups and clients. What a day to get a cold and headache! Take Anacin for quick relief. It gets rid of headaches fast and soon cheers you up. Keep Anacin handy and live it up.

strong and trusted
ANACIN
ache most popular pain-killer

Trade Mark of T. M. Geoffrey Manners & Co., Ltd.

Figure 8 Narrative copy

The advertisement promotes the product whilst narrating a story.

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Figure 10 Humorous Copy

This helps to make the advertisement more appealing to the viewer or reader.

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University of Delhi

ACTIVITY 7

Write five Haiku

Rushing in

Through thick and thin

The wavering thoughts

Shining bright

In the Autumn day,

A green leaf

The frosty air

Bouncing back

From a mirror

Dancing among


The rustling leaves

A raindrop

Bouncing around

The empty room

The gentle breeze


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Internal Coordinator
Deen Dayal Upadhyaya College
University of Delhi















ACTIVITY 8

Write a review of a movie you have seen.

Whom do you love more? Mommy or your phone? The helicopter story of Eela

Starting with Sunita Rao's "Pari Hoon Main", the story flies about the life of Eela Raiturker (Kajol) whose life revolves around her 20-year-old son Vivaan (Riddhi Sen). Just as it happens in many of the conventional films in Bollywood, the story shoots up and glides back and forth betwixt the past and the present. We board the helicopter and ride through Eela's past in which, unlike the present single mom with a tiffin box business, she is a budding singer who joyously shoots around singing a remix of Alisha's "Ruk Ruk Ruk" in the good old '90s when Indie Pop and Baba Sehgal's raps were the crazes.

Based on the Gujarati play "Beta, Kaagdo" written by Anand Gandhi, Eela, after a bitter separation from her husband Tota Roy Chowdhury, makes her son's well-being the only purpose of her life and ends up losing herself and makes her love towards Vivaan intoxicating in the process when she ends up joining his college partially to complete her studies but mostly to spend more time with him. Her joining the college does the opposite as Eela finds herself losing her bond with her son.

Director Pradeep Sarkar lights up the ride with slight nuances of the day to day banter of the mother and the son which provide space for comic relief but underlines the unconventional and unwavering love of the single mother for her son. Ramini Khanna manages to do justice to her role as the supportive mother-in-law of Eela. Amitabh Bachchan, Mahesh Bhat, Anu Malik, Ila Arun and Alisha Chinai, the singer of the original Ruk Ruk, tag along to make the story seem almost non-fictional and guide to maintain the superfluous transition into the past. In all, Kajol does justice to her role and gets into it completely.



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The film isn't that deep and in-depth analysing it isn't necessary to dig out the meanings. The reason for the painful separation could've been more realistic although it is understood that it is done so so that it doesn't take up most of the time of the film. The film efficaciously recreates the milieu and the feel of the '90s and we can say that it does take us on a helicopter ride to the past. Speaking about the past and present, the film does very little to let the viewers interpret the future. Does Eela end up becoming famous as she once was or does she end up fading away like the other talented people with no Godfathers, Godmothers or money in the industry?

Overall, the story enamouring with Mumma ki Parchai¹ ends up getting a place in our Yaadon ki Almari².




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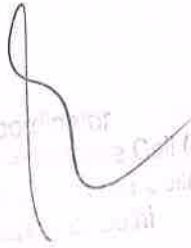
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¹ Mumma ki Parchai is a part of the movie's playlist. It was composed by Amit Trivedi, written by Swanand Kirkire and sung by Ronit Sarkar.
² Yaadon ki Almari is a part of the movie's playlist. It was composed by Amit Trivedi, written by Swanand Kirkire and sung by Palomi Ghosh.

Creative Writing Assignment

Submitted by:-
Nancy Gahlot
BA(hons.) English
Second Year
19ENG0519

  
Officiating Principal
Deen Dayal Upadhyaya College
(University of Delhi)
Sector-3, Dwarka, New Delhi-78

 
Coordinator
Deen Dayal Upadhyaya College
(University of Delhi)

Ques.1. Write a poem in any genre and use at least 3 or 4 figures of speech in it. Identify and write a note on the figures of speech used and the genre chosen.

Little Heaven

Our heaven was carved with loads of diligent,
A semi- centennial ago with the blessings of the old.
The heaven had experienced ups and downs, lows and highs,
It has witnessed children growing, it has mourned on the death of the old
It saw generations after generations.
It itself started getting venerable,
its elements started getting tired,
Some fell on their own and some were felled off,
The bricks started tattering as if the sky was falling
This marked the end of our little heaven.

Figures of speech used:-

1. Heaven had- Alliteration

In Alliteration certain sounds are repeated at the beginning of words of a sentence. It is used to draw attention to certain phrases and can also provide rhythm and musicality.

2. "As if the sky was falling"- Hyperbole

It makes something sound better, more exciting, dangerous etc than it really is. It is used to over- exaggerate and to add humor.

3. 'ups and downs', 'lows and highs'- Oxymoron

Oxymoron is to pair two words that are opposing or/ and contrary. It is used to add comedy or dramatic effects.

Genre of the poem- Free verse

Free verse gives poets the freedom to express more freely as it doesn't follow any specific meter, syllable counts, rhyming scheme.

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Ques.2. Write any poem of your choice (min.8-10 lines) / Write a short story.

An Alien in an Alienated Place

It's better you kill me
It's better to go to hell
Then relive in the hell
Each bloody day.
Where you have nothing left with you,
Nothing to adore you
You are all alone.
All alone in this alienated place,
You know none,
You have none,
You are new to this place,
Everything is darkened,
All you need is just a ray of light
That would take you from hell to heaven,
From alienation to rejuvenation,
From darkness to light.
You just need a small help,
A help that would endure your pain of loneliness,
That would make you an alien of this alienated place,
That would cut off all the indifferences,
That would make you familiar,
Known, recognizable, usual,
And most importantly "homespun"
Homespun in this unknown place,
You just need to move around,
You just need to be positive
As dawn will soon appear before you,
That all the darkness will dematerialize.
And Dawn will reappear to you in this alienated place.

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Ques.3. Write one poem meant for children.

Poem for Children

Let's stop the fight,
Let's stop the fight,
hug each other tight.

Jump the wall,
jump the wall,
Let's see who catches the ball.

Let's begin the war,
let's begin the war,
At the end of the war,
the two will not abhor.

Let's sleep,
let's sleep,
from the blanket during the sleep,
no one will peep.

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WRITING FOR MEDIA

Activity-4. Write a review of a movie you have seen.

MOVIE- URI- The Surgical Strike

URI- The Surgical Strike (2019), Hindi action, war, adventure, thriller and drama movie based on true events. It shows how terrorists attacked army camp in Uri near Jammu and Kashmir and how India retaliated with a surgical Strike. It is a film about national Pride without a single shot of the Indian flag. It is very well directed by the debut director Aditya Dhar starring Vicky Kaushal, Paresh Rawal, Yami Gautam and Mohit Raina in Lead roles with the budget of 25 crore rupees and witnessed an estimated box office collection of 342.06 crore. Vicky Kaushal is fully fired up, menacingly calm military mind that is inspiring his peers with an infectious energy that is impossible to resist. Role of Paresh Rawal is also significant. He is being portrayed as national security advisor, Ajit doval, Govind sir can be seen in one of the most influencing dialogue of the movie declared that India is now "Naya Hindustan", "yeh ghar mein ghusega bhi aur marega bhi". It is the smartest war movie with frequent handheld camera movements and the visual effects of long range Sniper attacks which seems real. The thrill and enthusiasm is duly maintained by the films main lead Vicky Kaushal's dialogue- " How is the Josh", " High sir" give

thrill and literally Goosebumps when you listen to it. The movie is a perfect watch for the one who wants to watch something patriotic, full of energy and full of twists and turns.

Activity- 8. Locate the various types of advertising in different media; identify the purpose of the advertisements.

There are five types of advertisement on the basis of their purpose:-

1. **Standard Advertising**
2. **Public Service/ Social Responsibility Advertising**
3. **Counter- Advertising**
4. **Advocacy Advertising**
5. **Image Advertising**

1. **Standard Advertising-** it aims to promote a particular product or service with the intention of pursuing the target audience to purchase them. Soaps, perfumes, clothes, soft drinks and even advertisements for companies that offer bill payment services, can



all be included in this category.



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Coordinator

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2. **Public Service/ Social Responsibility Advertising-** it is generally produced and distributed by government agencies for non profit organisations in cooperation with private advertising and mass media companies. Environmental messages, disease eradication campaigns and announcements by police are kinds of public service advertising.



3. **Counter- Advertising-** It focuses on the alleged fraud and misrepresentation in advertising. The advocates of Counter advertising claim that standard advertising does not inform the public of everything, thus hampering the ability of consumers to make a really informed choice. The Anti- tobacco campaigns by various agencies as well as the campaign for Awareness of rights of consumers are part of Counter advertising.



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4. **Advocacy Advertising-** It is a type of advertising placed by businesses and other organisations that is intended to communicate a viewpoint about a controversial topic relating to the social, political or economic environment. Issues like drug addiction, alcohol consumption, rising crime rate etc, which are perceived as conditions affecting public welfare, are taken up through advocacy advertising.



5. **Image Advertising-** This kind of advertising promotes the name, the image, the personal and also the reputation of the advertiser. The intent is to enhance the image of the company in the eyes of the target audience. The advertisement may choose to emphasize the various areas of human activity in which the company is involved, it may be creating Awareness of different products they produce, the advertisement may also show how the company is a good place to work.



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Activity-11. Scan the print, electronic and new media for examples of advertisements that use the five kinds of 'copy' defined.

Following are the five types of copy that are defined:-

1. **Straight Copy-** This states the content in a very simple and short manner.



[Handwritten signature]

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2. **Descriptive Copy-** In this kind of copy, the main focus of the advertisement is an extensive description of the product or service being offered.



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Interim Officer
Deen Dayal Upadhyaya College
Sector-3, Dwarka, New Delhi-78



3. Narrative Copy- In this the copy purports to narrate a story.



4. Testimonial Copy- In this kind of copy, a celebrity endorses the brand or the product. This tend to make the advertisement more appealing and believable.

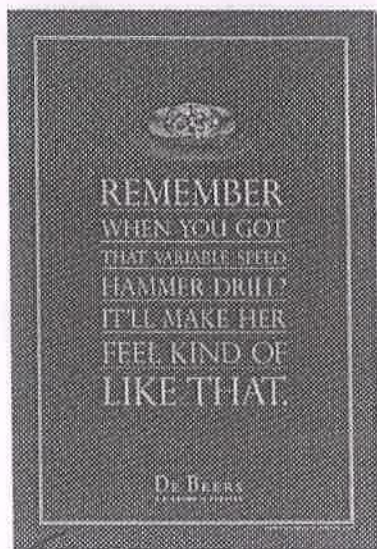
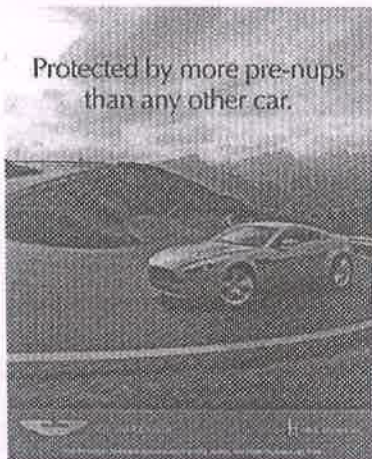


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University of Delhi

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5. **Humorous Copy-** This helps to make the advertisement more appealing to the viewer/reader.



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Activity- Write 5 haikus.

1. Shadow that will never leave
Mirror that always reflects
Best Friend for life.
2. The most troublesome of all
Sometimes uses his heart
A dump brother always.
3. While sleeping you hear a noise
beating of wings come close to you ear
You kill the mosquito with hands.
4. You find yourself shivering
You want the red love
You just want a blanket to sleep.
5. Eyes become red
Skin perspires and temperature rises
Rage demolishes it all.

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Activity- Make a play out of a joke.

After evaluating exams, Teacher Comes to class.

All Students:- Ggggooodddddd Mmmmooorrrrrnnnniiiiinnnngggg Sir!!

Teacher:- Good morning students!

Please have a seat.

All students:- Tttthhhhaaaannnnkkkkk Yyyoooouuuu Sir!!

Nancy:- Sir, have you evaluated our exam sheets?

Teacher:- Yes, Nancy. I have a question for you.

Nancy:- Yes, sir.

Teacher:- Why did you write "etc" at the end of the exam sheet?

Nancy:- (Smiling) Si..Sir be..because it was the end of my thinking capacity.

Teacher:- (Puzzled) Then why did you use "etc"?

Nancy:- Sir, because "etc" is 'End of Thinking Capacity'.

Everyone laughs

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Submitted to : Dr. Pramesh
Ratnakar/Dr. Jayini Adhyapak

Submitted by : Vishal

Course : B.A.(H) English

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(University of Delhi)
Sector-3, Dwarka, New Delhi-78

Sem : 3rd

Roll no. : 19ENG0539

Subject : Creative writing

65

Poem

Pollution: The worst change

Another day is gone
From the day I was born
Nothing is left unchanged
Not even a single stone
I saw and loved the green
but now it can't be seen
Things are turning grey and black
Can anybody tell me where do we lack?
The air I breathed earlier
Now the same is not familiar
I get a cough with every breathe
the dust and smoke just me to sneeze.
I'm scared to have a sip of water
Drinking it seems like third degree torture

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Internal Quality Assurance Cell (IQAC)
Deen College
(Hassan)

[Signature]

Though it's transparent and looks so pure
believe me, you'll get sick and it don't cure.
This music you listen on loud speakers
I hate it whether it's Micheal or Bieber
Though I like listen music too
But now the way in which you do
Pollution is death's synonym
And will these words I finish my poem

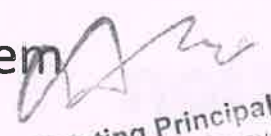
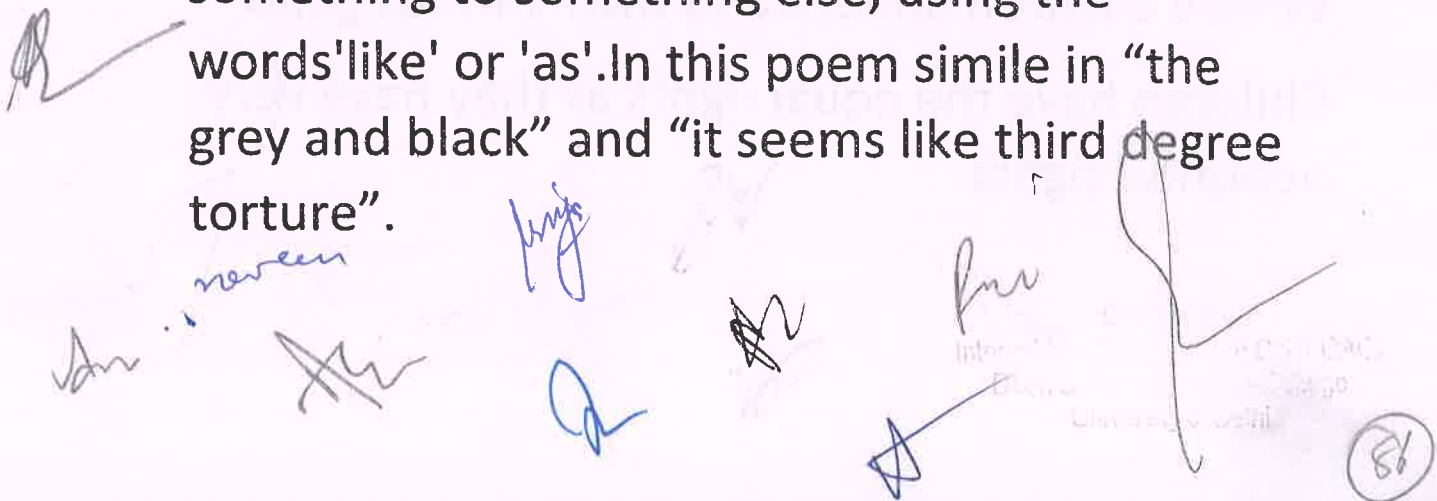

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Figure of speech:

- **Alliteration**- The occurrence of the same letter or sound at the beginning of adjacent or closely connected words. In this poem alliteration is "single stone".
- **Simile**- A word or phrase that compares something to something else, using the words 'like' or 'as'. In this poem simile in "the grey and black" and "it seems like third degree torture".



- **Hyperbole**- A way of speaking or writing that makes something sound better, more exciting, dangerous, etc. In this poem hyperbole presents in "pollution is death synonym".

Children are the future of nation

Children are the future of nation,
If they are nurtured in the beautiful garden.
Upbringing of children in right direction will
determine the country reflection.
Education plays a very important role
Where children understand their various goals
Children have the equal rights as they have very
beautiful sights

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Chcha Nehru loved children a lot

As they believe children will be super future robots.

Children looks this world in different way that's why chcha Nehru use to say- "the children of today will the future of tomorrow"

They will re-invent this world like super heroes.

Figure of speech:

- **Simile-** A word or phrase that compares something to something else, Using the words like 'like' or 'as'. In this poem this figure of speech presents "loved children a lot as they believe", "world like superheroes", "as they have beautiful sights".

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Short stories

A lasting impression of Bengaluru

It's mere chance that I happen to visit Begaluru.

I like to call it Banglore. It was a new city for me.

Within my three days of staying, it totally enchanted me with it's hospitality, love,

awesome weather, it's deep rooted culture, grounded people and mouth watering culinary.

Inspite of only three days your, it seems my take away was huge. It was first time where we just go unplanned and randomly choose the places to visit. Being a nature lover, I got the chance to explore the botanical park.

Thousands varieties of flowers, trees, greenery all around totally had a soul satisfying effect on you. The cool breeze added it up giving the bengaluru a personal touch. Trees of three hundred years of age with tusks was the beauty which can only be felt.

Second day we headed to great MG Road. It more or less reminded me of the city of fashion,

Paris. You can see all brands of accessories, footwear, clothing.

The memorable and most Adreline shootings sight was National Zoological park, Banerghhata. We went for the Jeep safari. I shouted when I saw a tiger in front of us. My God he looks so chivalric, walking with so sleep and bravery. It reminded me of Aunt Jennifer's tiger. Very true Adreline Rich has described the tigers. We saw flock of elephants, bear, butterfly park and what not. Wild life park is adventurous as well as informative.

A last I want to add that it was the bengaluru people's humble nature, simple living which got my attention the most.

Adieu Bengaluru!!

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Activity

a) Write a review of a movie that you have seen

Ans **Baghban**

The bonding between the parent and child to the sad turn of events at the sunset of the parent's life, have been depicted in various films in the past. B.R. Chopra's BAGHBAN, directed by Ravi Chopra, takes a look at the delicate relationship between parent and child. BAGHBAN works, mainly because of the rich emotional appeal it has to offer. BAGHBAN is the story of Raj Malhotra [Amitabh Bachchan], his wife Pooja [Hema Malini] and their four sons [Aman Verma, Samir Soni, Sahil Chadda, Nasir]. Just like a gardener ['baghban'] who plants a sapling and nurses it till it blossoms into a tree, in the hope that he would be able to bask in its shade when he grows old, Raj and Pooja have raised their sons, all well settled in their lives, with utmost care. But equations change when Raj retires from his bank

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job. None of the four sons are ready to take their parents' responsibility. The sons work out a strategy: The father would live with the eldest [Aman], the mother with the second son [Samir]. And after six months elapse, they would shift to the third and fourth sons [Sahil, Nasir]. Raj and Pooja, who love each other dearly, are separated in their old age. If the separation of the parents bears a striking resemblance to ZINDAGI [Sanjeev Kumar and Mala Sinha underwent a similar situation in this 1977 film], the pre-climax [adopted son Salman Khan, an orphan, entering the scene] and the climax [in a turn of events, the parents become rich and the greedy sons re-emerge on the scene] is very similar to AVTAAR. Yet, despite the comparisons and the feeling of d? vu, BAGHBAN rises to the occasion. The emotional quotient in the film is enough to overcome all shortcomings. Director Ravi Chopra, who has attempted various genres in the past [ZAMEER, THE BURNING TRAIN, MAZDOOR, AAJ KI AWAZ], is most comfortable attempting this

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genre. Not that the film is without its share of flaws. From the script point of view, the reason that compels the parents to live separately looks baseless. For, barely 5 minutes ago, at the farewell party hosted in his honour, Raj Malhotra [Bachchan] had publicly announced that he'd want to spend the remaining life with his wife, not working in an 8.30 a.m. to 5.30 p.m. job. Why, he even refuses a two-year extension by the bank manager on these grounds. Moreover, there is no solid reason for the parents to accept this kind of an arrangement. They have a beautiful house [bungalow] to live, a kind-hearted landlord [Sharat Saxena], good friends [Avtar Gill, Asrani] and most important, the love for each other to walk into the sunset of their lives, holding each other's hands.



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Various types of advertising in different media:

Standard Advertising

This is the kind of advertising that we see every day in the various media. This type of advertising aims to promote a particular product or service, with the intention of persuading the target audience to purchase them. Soaps, perfumes, clothes, soft drinks, and even advertisements for companies that offer bill-payment services, can all be included within this category.

Public Service/Social Responsibility

Advertising :

Public service or social responsibility advertising answers a public need . It generally produced and distributed by government agencies or nonprofit organizations, in cooperation with private advertising and mass media companies.



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Image Advertising :

This kind of advertising is designed by businesses to improve their image, rather than to promote a particular product. At one level, this kind of advertising is affiliated more closely with public relations rather than with marketing. This kind of advertising promote the name, the image, the personnel, and also the reputation of the advertiser .

Counter-Advertising :

Counter-advertising focuses on the alleged fraud and misrepresentation in advertising. The advocates of counter-advertising claim that standard advertising does not inform the public of everything, thus hampering the ability of consumers to make a really informed choice.

Purpose of advertising:

- 1) Create artificial product differentiation
- 2) Create a degree of monopoly (which comes from the brand & brand loyalty)
- 3) . Create barriers to entry (to prevent competition)

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4) To gain market power so a company can raise prices and increase profits.

Question:- Scan the print , electronic and new media for examples of advertisements that use the five kinds of ' copy'definedabove

Answer:- 1. Straight copy:-



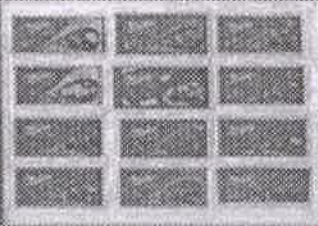


Handwritten signatures and stamps are present below the advertisement. The central stamp reads: "Officiating Principal Deen Dayal Upadhyaya College (University of Delhi) Sector-3, Dwarka, New Delhi-78". To the right, there is a stamp that reads "Internal No. 1" and "Date: 1/1/2011". A circled number "91" is visible in the bottom right corner.

2. Descriptive copy:-

Strengths and Weaknesses

Strengths:

- World famous - Milka brand
- Purple cow brand's logo
- A large number of items that cover most of customer's preferences

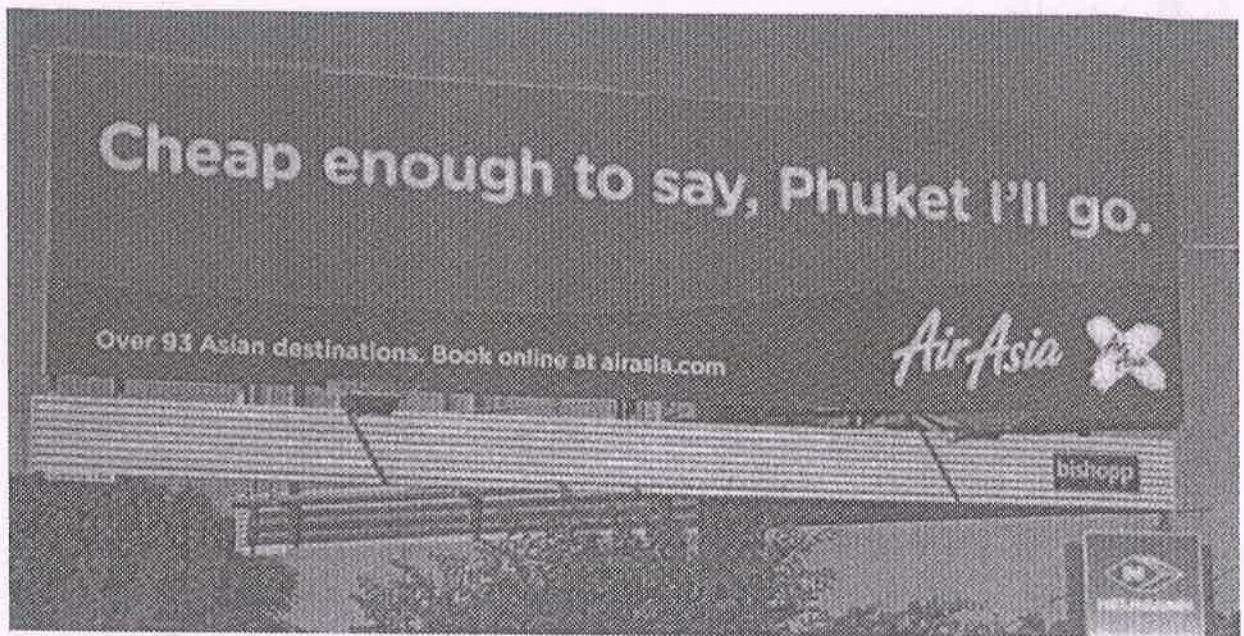


3. Testimonial copy:-

4. Humorous copy:-



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Haiku:

1. Mosquito at my ear

Does he think

I'm deaf ?

2. Old pond.....

A frog leaps in

Water's sound.

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3. A whale !

Down it goes , and more and more
Up goes its tail.

4. Clouds murmur darkly , it is a blinking habits – gazing at the moon .

5. Toward those short trees

We saw a hawk descending
On a day in spring.

Play: 

A man slow witted man walked into a patent office. He walked up to the patent officer and said, "Hey, I've got a new idea for a mouse trap." (Draw a box on the blackboard.)

"Here's the box." (Draw a hole in the box.) "Here's the hole." (Draw a circle in the bottom of the hole)

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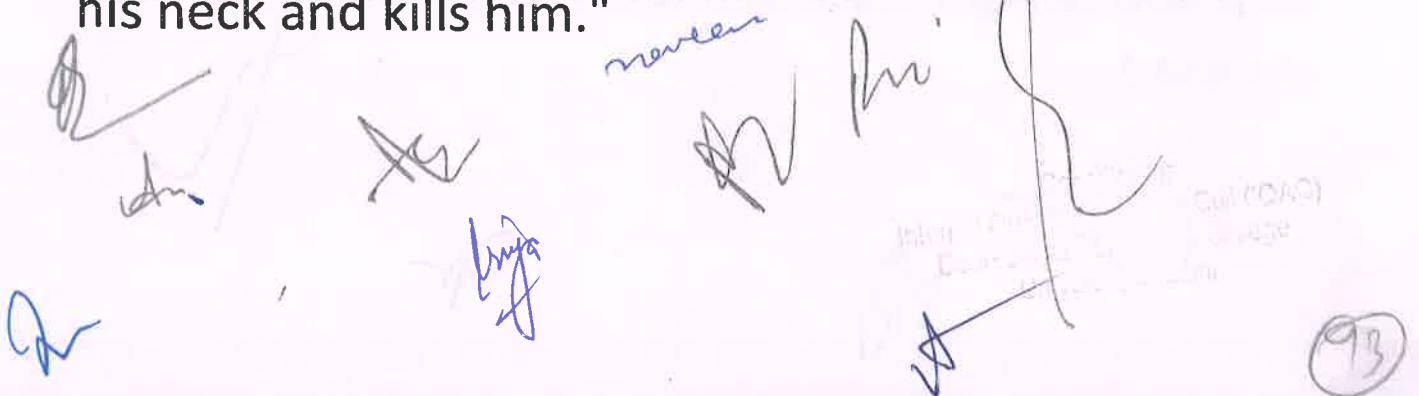
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"Here's the cheese." (Draw a line across the hole in the box.) "Here's the blade. The mouse sticks his head in the hole to get the cheese, the blade drops on his neck and kills him."

The patent officer looks at the diagram. He understands that the man is a little slow so he wants to be kind. He explains to the man that he does not think the design is ready to be patented yet. He tells the man, "Please, work on it some more. Perhaps I will be able to patent it another time." The slow witted man says thank you and leaves the office.

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One week later the slow witted man shows up again. (Draw the exact same example on the board in exactly the same way.) The slow witted man says, "This is the box, this is the hole, this is the cheese and this is the wire. The mouse sticks his head in the hole to get the cheese, the wire wraps around his neck and kills him."



The patent officer, still trying to be kind, makes the same excuse as before. The slow witted man leaves.

One week later the slow witted man returns. He approaches the same patent officer and says, (The exact same things)

"Here's the box. Here's the hole. (This time he draws a zig-zag line across the hole and he does not draw a circle for the cheese.) After completing the zig-zag line, the slow witted man proclaims, "and here's the saw blade."

The patent officer notices the design and the fact that there is no cheese. He asks the slow witted man, "Where's the cheese." "Ah-ha," says the slow witted man.

"That's the point. The mouse sticks his head in the hole and says," "Where did you put the cheese."

(When the mouse speaks you must act like the mouse. Stick your head out as if looking into the trap and swing it back and forth as if looking for the cheese.)

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The implication is that the mouse will saw off his own head while looking for the cheese. Remember the saw blade..

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CREATIVE WRITING ASSIGNMENT

NAME: Shifali Shivgotra

ROLLNO: 19ENG0531

SUBJECT: BA English (Hons.)

YEAR: Second

SEMESTER: Third

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Exercises:

1. Write a poem in any genre and use at least 3 or 4 figures of speech in it. Identify and write a note on the figures of speech used and the genre chosen.

'Why Me?'

If you have to ask Why me?
When you're feeling really blue,
When the world has turned against you
And you don't know what to do,
When it pours colossal raindrops
And the road's a winding mess,
And you're feeling more confused
Than you ever could express,

When the saddened sun won't shine,
When the stars will not align,
When you'd rather be
Inside your bed,
The covers pulled
Above your head,
When life is something
That you dread
And you have to ask Why me?

Then when the world seems right and true,
When rain has left a gentle dew,
When you feel happy being you,
Please ask yourself, Why Me? then, too.



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A genre is a particular type of literature, painting, music, film, or other art form which people consider as a class because it has special characteristics. There are different genres of Poetry are Lyrical, Narrative and Dramatic. Here, I have used the Lyrical genre of poetry. Lyric poetry uses song-like and emotional words to describe a moment, an object, a feeling, or a person. Lyric poems do not necessarily tell a story but focus on the poet's personal attitudes and state of mind. They use sensory language to set the scene and inspire emotions in the reader. When we read a lyric poem, we are transported to a different time or place. Writing lyric poems is an effective way to illustrate our perspective and share a special moment with others as

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I have done in my poem "Why Me?" which is written in a sad tone following the rhyme scheme.

Figures of speech is any expressive use of language, as a metaphor, simile, personification, or antithesis, in which words are used in other than their literal sense, or in other than their ordinary locutions, in order to suggest a picture or image or for other special effect. In the poem there are a few figures of speech which are as follows:

1)Assonance- It is a figure of speech in which the same vowel sound repeats within a group of words. An example of assonance is the 4th line of Stanza 1 where it says 'And you don't know what *to do*'.

Assonance occurs when sounds, not letters, repeat. In the example above, the "o" sound is what matters, not the different letters used to produce that sound. Assonance does not require that words with the same vowel sounds be directly next to each other. Assonance occurs so long as identical vowel-sounds are relatively close together. Assonant vowel sounds can occur anywhere (at the beginning or end, on stressed or unstressed syllables) within any of the words in the group.

2)Imagery- It can be defined as a writer or speaker's use of words or figures of speech to create a vivid mental picture or physical sensation. A good example of imagery and figurative language can be found in the line 'When the saddened sun won't shine, When the stars will not align' This image of sun not shining and stars not aligning helps in perceiving the reader through the 5 senses, to make him see the image.

3)Enjambment- It is a term used in poetry to refer to lines that end without punctuation and without completing a sentence or clause. When a poet uses enjambment, he or she continues a sentence beyond the end of the line into a subsequent line or lines. An example of this can be seen in the lines 'When the world has turned against you, And you don't know what to do' Here, the cause is continued in the next line, runs over from one poetic line to the next.

4)Repetition- It is a literary device in which a word or phrase is repeated two or more times. Repetition occurs in so many different forms that it is usually not thought of as a single figure of speech. Instead, it's more useful to think of repetition as being a category that covers a number of more specific figures of speech, all of which use repetition in different ways. The figure of speech Repetition usually repeats single words or short phrases, but some can involve the repetition of sounds while others might involve the repetition of entire sentences. A good example of this is the phrase 'Why me?' that has been used throughout the poem in each Stanza.

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2. Write any Poem of your choice.

'A Dreamer'

Dreams we keep in sealed boxes,
are both alive and dead,
until we peek inside.
The dream comes calling,
as the dusk falls,
Timeless stars shine,
on old and new dreams alike.
What beautiful a sight of a caterpillar,
changing into a butterfly.
They asked her to follow the herd,
but she always aspired to carve
her own niche.
She belonged neither here nor there,
Not to a place but her dreams.
Like a wild horse free and untamed.
She believed she could live her dreams,
and so she did.

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3. Write one poem meant for children.

"Hug O' War"

I will not play at Tug O' War,
I'd rather play at Hug O' War,
Where everyone hugs
Instead of tugs,
Where everyone giggles
And rolls on the rug,
Where everyone kisses,
And everyone grins,
And everyone cuddles,
And everyone wins.

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Activity 4: b) Write a review of a movie you have seen.

'Dil Bechara' will always be remembered as Sushant Singh Rajput's last movie and I recently watched it and he was one of the finest actors in Bollywood. He knew how to lift even poorly written scenes by just performing them & an extremely controlled Sanjana Sanghi who played the role of Kizie Basu who's suffering from Thyroid Cancer and has her best friend in her Oxygen cylinder, which she has named as Pushpinder. She likes visiting funerals and hugs strangers over there who have lost someone close to them. She's aware her life will end someday, and she just wants to feel the melancholy attached with it.

On the other side, we've Immanuel Rajkumar Junior aka Manny (Sushant Singh Rajput) who is full of life and has his best friend in an Eye Cancer patient Jagdish Pandey aka JP (Sahil Vaid). Manny, too, is a cancer survivor and has lost his leg to the disease. He somehow knows the formula to stay happy which he wants to pass it to Kizie. They get together and try completing each other's dreams before life happens.

Hats off to Sushant for those classic and stylish moves, as he believed to have finished the whole song sequence in a single shot!

While you go gaga over his dance steps or attractive and cute smile, his acting would simply blow your mind away.

Sushant Singh Rajput brings every frame to life for most of the time. Though his character Manny is a straight lift, adding the filmy quirks in it helps it to grow gradually. His exhilarating liveliness goes straight through your heart because of the fact that this is the last time you'll see it. An ironic end to the journey of an artist who will be remembered for the great human being and actor he was. There's a scene in which Manny says, "Let's pretend that I'm not dying." Yes, Sushant, we all will pretend this forever for you!

Sanjana Sanghi's screen-presence demands to be felt! She's a live bomb waiting to explode. A very subtle transition from Shailene Woodley's Hazel Grace and Sanjana manage to adapt all the traits very well.

All said and done, Dil Bechara is not the Bollywood remake 'The Fault In Our Stars' deserved. The Fault In Our Stars itself wasn't the remake Hollywood deserved compared to its classic book, but it had substance. If you haven't watched the original, don't watch it and then you might enjoy the story along with the brilliant performances it has.

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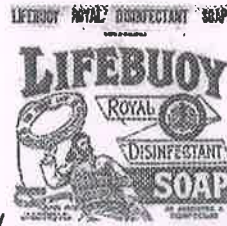
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Activity 8: Locate the various types of advertising in different media; identify the purpose of the advertisements.

There are five types of advertisement on the basis of their purpose:-

1. **Standard Advertising**
2. **Public Service/ Social Responsibility Advertising**
3. **Counter- Advertising**
4. **Advocacy Advertising**
5. **Image Advertising**

1. **Standard Advertising-** it aims to promote a particular product or service with the intention of pursuing the target audience to purchase them. Soaps, perfumes, clothes, soft drinks and even advertisements for companies that offer bill payment



services, can all be included in this category.



2. **Public Service/ Social Responsibility Advertising-** it is generally produced and distributed by government agencies for non profit organisations in cooperation with private advertising and mass media companies. Environmental messages, disease eradication campaigns and announcements by police are kinds of public service advertising.



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3. **Counter- Advertising-** It focuses on the alleged fraud and misrepresentation in advertising. The advocates of Counter advertising claim that standard advertising does not inform the public of everything, thus hampering the ability of consumers to make a really informed choice. The Anti- tobacco campaigns by various agencies as well as the campaign for Awareness of rights of consumers are part of Counter advertising.



4. **Advocacy Advertising-** It is a type of advertising placed by businesses and other organisations that is intended to communicate a viewpoint about a controversial topic relating to the social, political or economic environment. Issues like drug addiction, alcohol consumption, rising crime rate etc, which are perceived as conditions affecting public welfare, are taken up through advocacy advertising.



5. **Image Advertising-** This kind of advertising promotes the name, the image, the personal and also the reputation of the advertiser. The intent is to enhance the image of the company in the eyes of the target audience. The advertisement may choose to emphasize the various areas of human activity in which the company is involved, it

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may be creating Awareness of different products they produce, the advertisement may also show how the company is a good place to work.



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Activity 11: Scan the print, electronic and new media for examples of advertisements that use the five kinds of 'copy' defined.

Following are the five types of copy that are defined:-

1. **Straight Copy-** This states the content in a very simple and short manner.



2. **Descriptive Copy-** In this kind of copy, the main focus of the advertisement is an extensive description of the product or service being offered.



3. **Narrative Copy-** In this the copy purports to narrate a story.

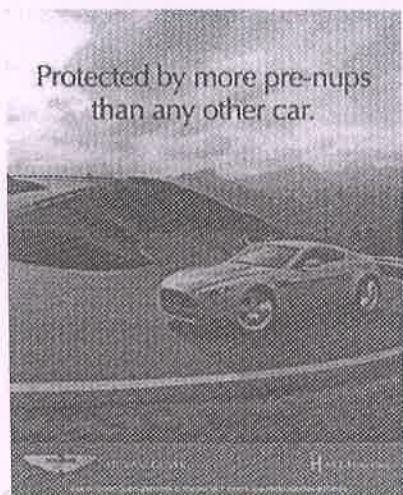
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4. **Testimonial Copy-** In this kind of copy, a celebrity endorses the brand or the product. This tends to make the advertisement more appealing and believable.



5. **Humorous Copy-** This helps to make the advertisement more appealing to the viewer/ reader.



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Write five Haikus.

- 1) Fell in love
Broke my heart
Blended into the universe.
- 2) Tired eyes through the days
Nights keeping me awake
My disturbing Nightmares.
- 3) Creating mirages of you everywhere
Calling itself a beautiful mess
My Delusional Heart.
- 4) Hot tea, chilly breeze
Give me my warm and fuzzies
Cozy autumn feels.
- 5) High noon déjà vu
Imminent October skies
Low hanging sunshine.

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Make a play out of a joke.

Scene at the bar- John enters into the bar, makes himself sit on the counter as the bartender makes him his drink. He sees 3 pieces of meat hanging from the ceiling. Filled with curiosity, John asks the bartender-

John- I am new in this town and I don't know about the rituals of these bars. Can you please tell me why these 3 pieces of meat are hanging ? What's this about ?

Bartender: Do you really wanna know ?

John: Yes! (with excitement in his eyes)

Bartender: It's a challenge that a lot of people take but no one actually wins.

John: Try me.

Bartender: Well, if you can jump up and slap the meat, you get free drinks for the rest of the night. But if you miss, you pay for everyone's drinks for the next hour. You wanna do it ?

John: Nah!

Bartender: Why ? You were so excited to know.

John: The steaks are too high!

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PORTFOLIO

SUBMITTED TO :- DR. JAYINI ADHYAPAK

SUBMITTED BY:- RITIKA SOOD

ROLL NO. :- 19ENG0527


SEM:- 3RD


Poem: The last journey

The sun smiled at us,
As we got on the bus.
through the window,
a gust of wind blew.
The sky looked beautiful and so did you.
Dear best friend,
I really love you.

Then you told me that you are moving to Mumbai.
I was Numb and couldn't reply.
Clearly I was not ready for a goodbye.
I know you as a sister and as a friend.
Just remember this is not the end.

Our bond is strong,
strong as a rock.
I had you in the darkest Storm.
The river of memories that we made together.


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You may forget them, but I will never.
Our friendship is Brighter than the shiniest star.
Oh What a lovely friend you are.

Whenever I felt no one will understand,
I always had you holding my hand.

I know this is a tragic end ,
But no matter where you are,
You will always be my best friend.
Our friendship will never die,
But for now, I need to say goodbye.

Figure of speech:

1) Personification :- It is attribution of personal qualities especially : representation of a thing or abstraction as a person or by the human form. Its like a divinity or imaginary being representing a thing or abstraction.

" The sun smiled at us " is an example of personification.

2) Simile:-A simile is a figure of speech in which two essentially dissimilar objects or concepts are expressly compared with one another through the use of "like" or "as." Simile is used as a literary device to assert similarity with the help of like or as, which are language constructs that establish equivalency. A proper simile creates an explicit comparison between two things.

" The sky looked beautiful and so did you."

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" strong as a rock"

Are examples of simile.

3) Hyperbole:-Hyperbole, derived from a Greek word meaning "over-casting," is a figure of speech that involves an exaggeration of ideas for the sake of emphasis.

" The river of memories"

" Our friendship is brighter than the shiniest star" Are examples of hyperbole.

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Poem: Dreams

All I need is a break,
To switch the glum into Merry.

Forget the past ,
cause everything is changing so fast.
People come and go,
but their influence change our life.

Wondering how much I miss being a kid.
I still need a fairy,
to switch the solitariness into Cherry.

I wish I could go to the times,
When all I needed to learn were nursery rhymes.

I wish I could fall asleep,
to have a dream of being a kid again,
But now I am teen,
stress do not let me fall asleep.

Reality is an illusion,
but dreams are deep.

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Dr

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Poem meant for children: Wobbly wiggly jelly


Wobbly wiggly Jelly.
I want you in my belly.
Gummy ,plummy and yummy.
I want you in my tummy.


You are green,
you are yellow,
and sometimes you are red.
I love spreading you on my bread.

When I go out to play
With my clay.
I come back to you,
Because I want you in my belly.
My wobbly wiggly jelly.

You are my little packet of treasure,
And I eat you for pleasure .
You come in different flavours,
Sometimes Cherry and sometimes Raspberry.

My wobbly wiggly jelly.
I want you in my belly.
Gummy ,plummy and yummy.
I want you in my tummy.


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Internal Quality Assurance Cell (IQAC)
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University of Delhi

PORTFOLIO

SUBMITTED TO :- DR. PRAMESH RATNAKAR

SUBMITTED BY:- RITIKA SOOD

ROLL NO. :- 19ENG0527

SEM:- 3RD

HAIKU:

- Sun got lost
As the water beads sang
Twilight rain.
- He held my finger tight
I have become a big sister
I realised.
- In darkness and chaos
Glows a beam of hope
A Deepak
- Road trip at night
Road a ribbon of moonlight
The wind whispers.
- Amid the filth
Grows a blossom

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Lotus of joy.

- "Mumbai will be nice"
I sighed
Our last goodbye.

Play out of joke:

Topic: Ranjeet and his crazy girlfriend

[Sheetal is sitting on her couch. Ranjeet enters.]

Ranjeet : Hii Sheetal.

Sheetal: Hii.

Ranjeet :What are you doing ?

Sheetal: Nothing much, just organising my thoughts in my mind.

Ranjeet: ohh. Thoughts plural?


[Ranjeet laughs]

Sheetal: Listen, I was thinking of changing my name into "Jodha Rukaiya Begam".

Ranjeet :[confused] huh?

Sheetal :Do you like it?

Ranjeet: NO! why do you want to change your name into "Jodha Rukaiya Begum".


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[Signature]
Internal Quality Assurance
Director (QAAC)
University of Delhi

Sheetal: Because it is unique. My name will not match with anyone and it is funny too.

Ranjeet: But I don't like it.

Sheetal: But I do.

Ranjeet: ok ! Then I will change my name into "Trash" then you can introduce me to everyone as your boyfriend whose name is "Trash".

Sheetal: hmm hmm....and why "Trash".

Ranjeet: Because it is unique. My name will not match with anyone and it's funny too.

Sheetal: okay. I got your point.

Ranjeet: :So you are not changing your name?

Sheetal : No. I am changing my name into "Trash Can". Then our names will match.

Ranjeet: Damn it!

Movie Review :

Movie: The Sky Is Pink

Cast: Priyanka Chopra, Zaira Wasim ,Farhan Akhtar, Rohit Suresh Saraf.

Director: Shonali Bose

The Sky Is Pink is a phenomenal movie. It is inspirational and overwhelming. This movie will take you through an emotional roller coaster. It is a sad movie but it is also full of life, happiness and comedy. The title is the apt description of the movie. You can fill any colour in your life. It depends on you which colour you choose. It is one of my favourite movie. The movie taught me life lessons. The first lesson that

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it taught me is that how long you live doesn't matter in comparison to how much you love and live your life. Love every moment of your life. Live your life to the fullest. Second lesson that it taught me is how to handle toughest situation of life with courage and smile on your face. Light can be found in the darkest situation we just need to search for it and lastly it taught me that you win or lose doesn't matter in comparison to whether you have given your hundred percent or not.

The movie is all about togetherness, love, courage, sadness, undying efforts and hope. It is a family movie. The movie is based on the life of a motivational speaker Aisha Chaudhary, who died in 2015 when she was 18. Aisha Chaudhary narrate the story of her parents. I love how she called her parents by cute nicknames moose (her mother) and panda (her father). She tells how her family made her life beautiful. The life of her parents revolves around her, trying to give her a normal upbringing by making adjustments in their daily routine which eventually becomes a habit over time. The fact that it is based on a true story makes the movie even more soul-touching and overwhelming.

All the actors have portrayed their respective character really well. The role of Aditi Choudhary is played by Priyanka Chopra. she looks stunning. She has shown a brilliant performance. In the specific moment when Aditi experiences psychotic attack due to severe sleep deprivation, Priyanka Chopra brilliantly shows off vulnerability in her personality with her powerful performance.

The role of niren chaudhary is played by Farhan Akhtar. He played the role of both lover and father very gracefully. The scene where Farhan Akhtar doesn't say anything and speaks through his eyes and expression is amazing.

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Coming to the role of Aisha Chaudhary which is played by actress Zaira wasim. She looks so stunning and charming. She outshines every scene in the movie.

All the locations of the movie are aesthetic and makes the movie even more beautiful and pleasant to watch.

The music is by Pritam Chakraborty and he has done a great job. The music is kept low, sweet and flawless. There is also a special album by Memba and Evan giia called "FOR AISHA" which is featured in "The sky is pink". I really loved that song and the song was stuck in my mind for a long time.

ACTIVITY 8:-

Various types of advertising in different media are:

- 1) standard advertising
- 2) Public Service/ social responsibility advertising
- 3) counter advertising
- 4) advocacy advertising
- 5) image advertising

Purpose of advertisements:

1) standard advertising is the kind of advertising that we see everyday in various media. It aims to promote a particular product or service as effectively as possible. The purpose of this advertisement is to persuade the audience to purchase it.

2) Public Service/ social responsibility advertisement answers of public need. It focuses at public services such as environment messages,

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disaster education campaign and announcements by police .It is generally produced and distributed by government agencies or non-profit organizations, in cooperation with private advertising and mass media companies

3) counter advertising focuses on alleged fraud and misrepresentation in advertising. It intends to counteract the alleged false claims, to ensure that consumer is made aware of certain aspects which are hidden. Anti-tobacco campaign, campaign for awareness of rights of consumers are part of counter-advertising.

4) Advocacy advertising related to social responsibility advertising as well as counter-advertising, except that advocacy advertising is a type of advertising placed by businesses and other organizations that is intended to communicate a viewpoint about a controversial topic relating to the social, political, or economic environment. It is concerned with the propagation of ideas and clarification of social issues of public importance in a manner that supports the position and interest of the sponsor. It expresses a strong point of view on behalf of an organization. Issues like drug addiction, alcohol consumption, rising crime rate, etc.

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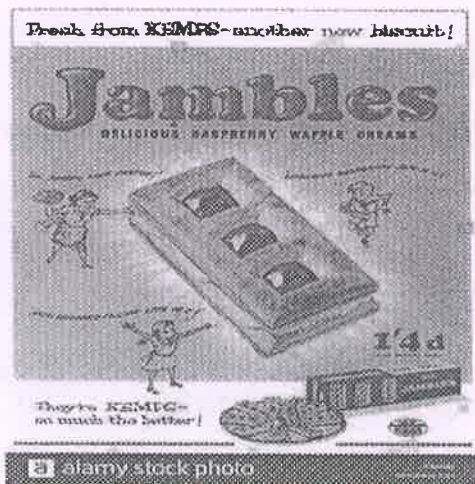
5) image advertising is designed by businesses to improve there image rather than to promote a particular product. It promotes the name the image the personnel and the reputation of the advertiser. The intent is to enhance the image of the company in the eyes of the target audience.

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ACTIVITY 11:-

Copy or Body Text is the main textual content of the advertisement, which expands on what the slogan and/or the headline declares about the product. It provides all details and answers all questions, which may be indicated in the slogan or the headline.

1. Straight Copy. This states the content in a very simple and short manner.



2. Descriptive Copy. In this kind of copy, the main focus of the advertisement is an extensive description of the product or service being offered.

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3. Narrative Copy. In this the copy purports to narrate a story

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<https://youtu.be/viQYAFA6olw>

4. Testimonial Copy. In this kind of copy, a celebrity endorses the brand or the product. This tends to make the advertisement more appealing and believable.

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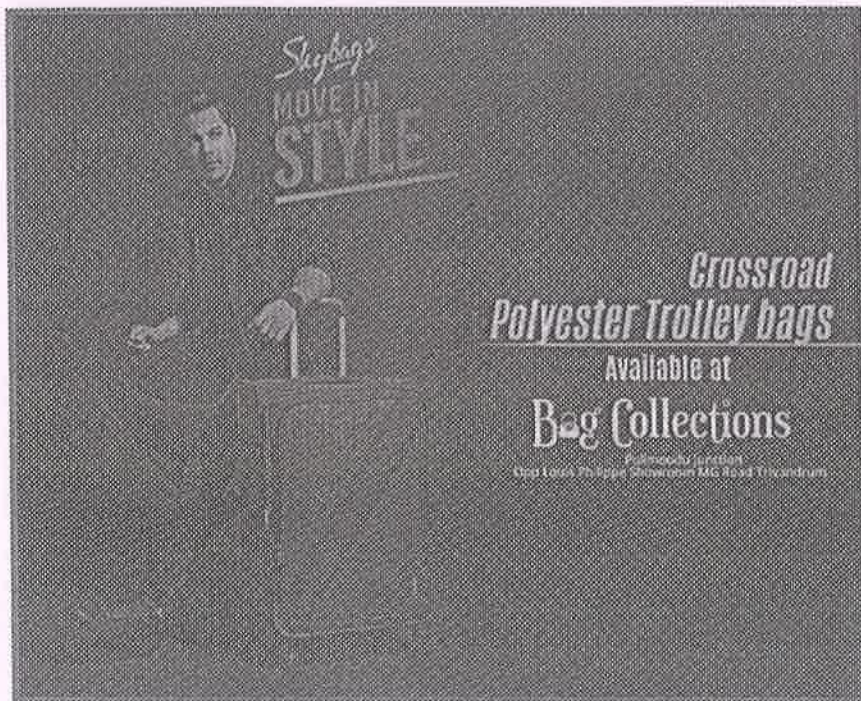
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5. Humorous Copy. This helps to make the advertisement more appealing to the viewer/reader.



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Name- Manisha

Roll no. - 19ENG0515

Semester- 3rd

Course- B. A (Eng hons.)

Paper name- Creative writing

Activities:

1. Film review:

3 idiots

I love films that draw me into the lives of the pro

take me on a ride with them. To me a good film

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Internal Officer
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characters and I cannot imagine them in any other film that did exactly this. Released in 2009, 3 Idiots drama surrounding the lives of three College friends Rancho. It is loosely adapted from the novel Five Point Someone by Chetan Bhagat.

The film starts some years after the trio have graduated. Rancho has somehow vanished along the way. In the next sequences, word emerges of Rancho's whereabouts. The trio, who are pants-less and Farhan pulls a stunt worthy of Hollywood as they charge off hot on the trail of their missing friend. The film follows the three friends from when they first met at the Imperial College of Engineering. In between, there is a lot of usual mischief. The film explains that each of the

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because he is passionate about engineering.

This sets the stage for the plot later on. At College, there are various characters. The Dean of the College, Professor Sahastrabuddhe is an overachiever, having taught his hands to save time, among other skills. He has his over student and routinely patronizes students who do not come down to most of the students at the College. "Silencer" Ramalingam, provides the comedic element, ambitious and believes that textbook memorization is the way to success. He considers himself superior at university, taking shortcuts to impress the Dean. His the butt of jokes and pranks among the trio, one of his nickname "Silencer". Of course, no film is complete w

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operating table, settle a bet, fall in love and have ho
all in Bollywood style. The film draws on themes of f
friendship and the importance of following your hea
that perhaps while we study, not all of us learn. The
with each other while discovering more about them:
dancing, music, drama, a catchy phrase and soaring l
The film ends with several twists and leaves you insp
at your life.

The message of the film, which is that our education
free thought and knowledge, is an easy one to relate
school and college days, all of us have felt boxed in;
physics professor was a little more human. But the s
and Abhijat Joshi, hammers it in. The vehicle is Ranc
self-help guru, science genius, man of the world, loy

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Standard Advertising:

This is the kind of advertising that we see every day. This type of advertising aims to promote a particular product. The intention of persuading the target audience to purchase perfumes, clothes, soft drinks, and even advertisements offer bill-payment services, can all be included within advertising is paid for by the manufacturer/seller of the product. The only purpose is to promote the product as efficiently as possible.

Public Service/Social Responsibility Advertising

Public responsibility advertising answers a public need. It is distributed by government agencies or non-profit or in cooperation with private advertising and mass media. A government or non-profit organization provides the

public service advertising.

Counter-Advertising

Counter-advertising focuses on the alleged fraud and mis advertising. The advocates of counter-advertising claim that it does not inform the public of everything, thus hampering their ability to make a really informed choice. Counter-advertising intends to counter allegedly false claims, to ensure that the consumer is made aware of aspects which are hidden. The anti-tobacco campaigns, as well as the campaign for awareness about tobacco agencies, are part of counter-advertising. **Advocacy Advertising** is related to social responsibility advertising as well as public service advertising, except that advocacy advertising is placed by businesses and other organizations to communicate a viewpoint about a controversial

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importance in a manner that supports the position of the sponsor. It expresses a strong point of view on behalf of the organization. Issues like drug addiction, alcohol consumption, crime rate, etc., which are perceived as conditions affecting the welfare, are taken up through advocacy advertising.

Image Advertising This kind of advertising is designed to improve their image, rather than to promote a product. At one level, this kind of advertising is affiliated more with public relations rather than with marketing. This kind of advertising focuses on the name, the image, the personnel, and also the reputation of the advertiser. The intent is to enhance the image of the advertiser in the eyes of the target audience. The advertisement is

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Handwritten signature

good place to work.

Purpose of advertising:

Advertising has three primary objectives: to inform, to persuade, and to remind.

Informative Advertising creates awareness of brands, services, and ideas. It announces new products and educates people about the attributes and benefits of products.

Persuasive Advertising tries to convince customers that its services or products are the best, and it works to enhance the image of a company or product. Its

service, or the features and benefits it will provide promptly.

Haiku:

1. See the mountains
Lived adventurous life
With hand soaked in washing dishes.
2. Don't want to wait
No need to go
Still running to escape from reality.
3. I wanna die
Don't wanna live
Just want someone to make these lies.

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Handwritten signature in blue ink above the stamp.

Official stamp:
Officiating Principal
Deen Dayal Upadhyaya College
(University of Delhi)
Sector-3, Dwarka, New Delhi-78

5. Puzzled head and freezed heart
Residing in profound conviction
Screaming stifle.

Handwritten signature in blue ink to the right of the stamp.

Play :

Are these plates clean?

John said to his mother, " I want to go to the Gra
Her mother replied, "ok, but you have to be care
He said, "it's ok mom, i love dogs. "

John then visited his 90-year-old grandpa who li
country. When he entered the house, his dog we
his tail." He also played with dog.

On the first morning of the visit, John's grandpa

go ahead and finish your meal."

For lunch, Grandpa made hamburgers. Again, John asked about the plates, as his appeared to have specks on them. "You sure these plates are clean?" he asked.

Without looking up, Grandpa said, "I told you before to be as clean as cold water can get them!"

Later, as John was leaving, his grandpa's dog started barking. The dog wouldn't let him pass.

John said, "Grandpa, your dog won't let me get back in." Grandpa yelled to the dog, "Cold Water, go lie down!"

Poem (figure of speech)

Mom

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You are lovely always in her eyes,
She cries if your love dies.
She also feels hunger, she also feels sleepy,
Still she denies, still she lies,
"I'm alright".

'Mom' is a comfort to your nightmare,
'Mom' is a motivation to your dare,
Always keep you in her sight,
yet still she smiles, still she lies,
" I had a good night".

Genre:

This poem contains theme of love. This poem sh

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Alliteration

Alliteration is the repetition of the beginning sound of words. Example: 'still she denies, still she likes.'

Metaphor

A metaphor makes a comparison between two unlike things. Example: 'you are prince/princess of her heart.'

Simile

A simile is a comparison between two unlike things using "like" or "as." Example: 'as beautiful as a flower' or 'like a flower.'

Poem:

Was it her mistake!

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Was it her mistake!
She was walking alone at night,
That made you chase her on the way.
Was it her mistake!
She got gifted with people like you,
Who ruined her life, putting her in the cage.

Poem (for children) :

I want to go to school

Papa, papa I want to go to school,
Papa said shut up your mouth fool
Now go to work with your lunch and tool
Before the sun melts the dawn cools



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I can hear the song of skylark,
As I gaze longingly at the children park
After my long stroll ,I reach the mine,
Where I have to work till nine..

I pretend everything is fine
And start to work , otherwise I won't have
Anything to dine.

My greatest dream is to learn,
And to get a job by it and earn,
When I see other school going boys,my
Hearts burns

With desire to study,and my heart only can yea

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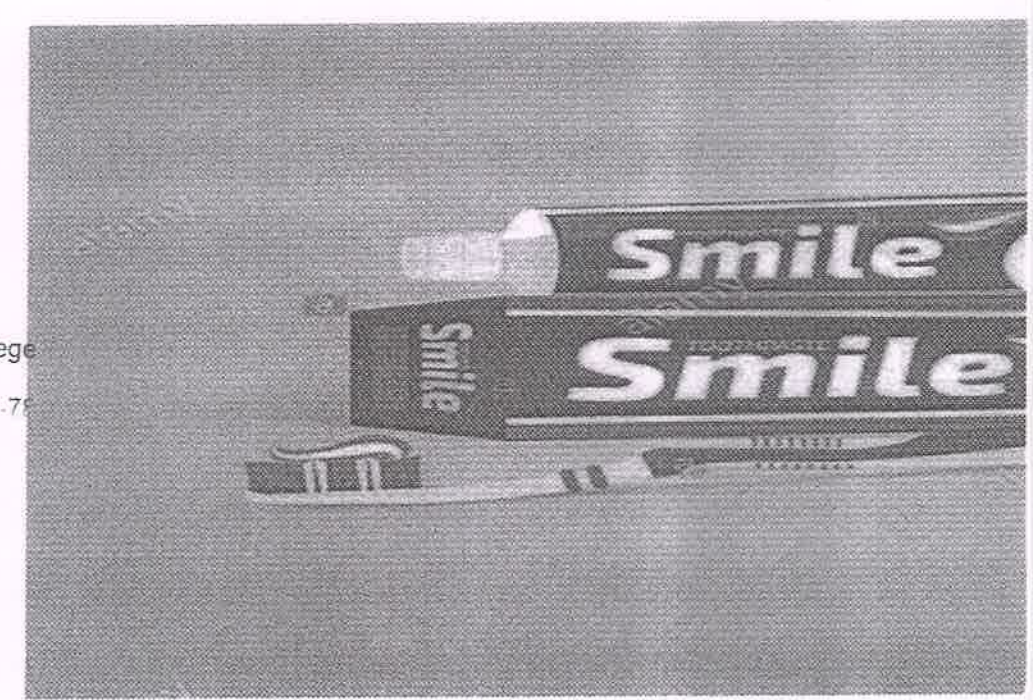
Naresh

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(University of Delhi)
Sector-3, Dwarka, New Delhi-75



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Sector-3, Dwarka, New Delhi

2. Descriptive copy:-

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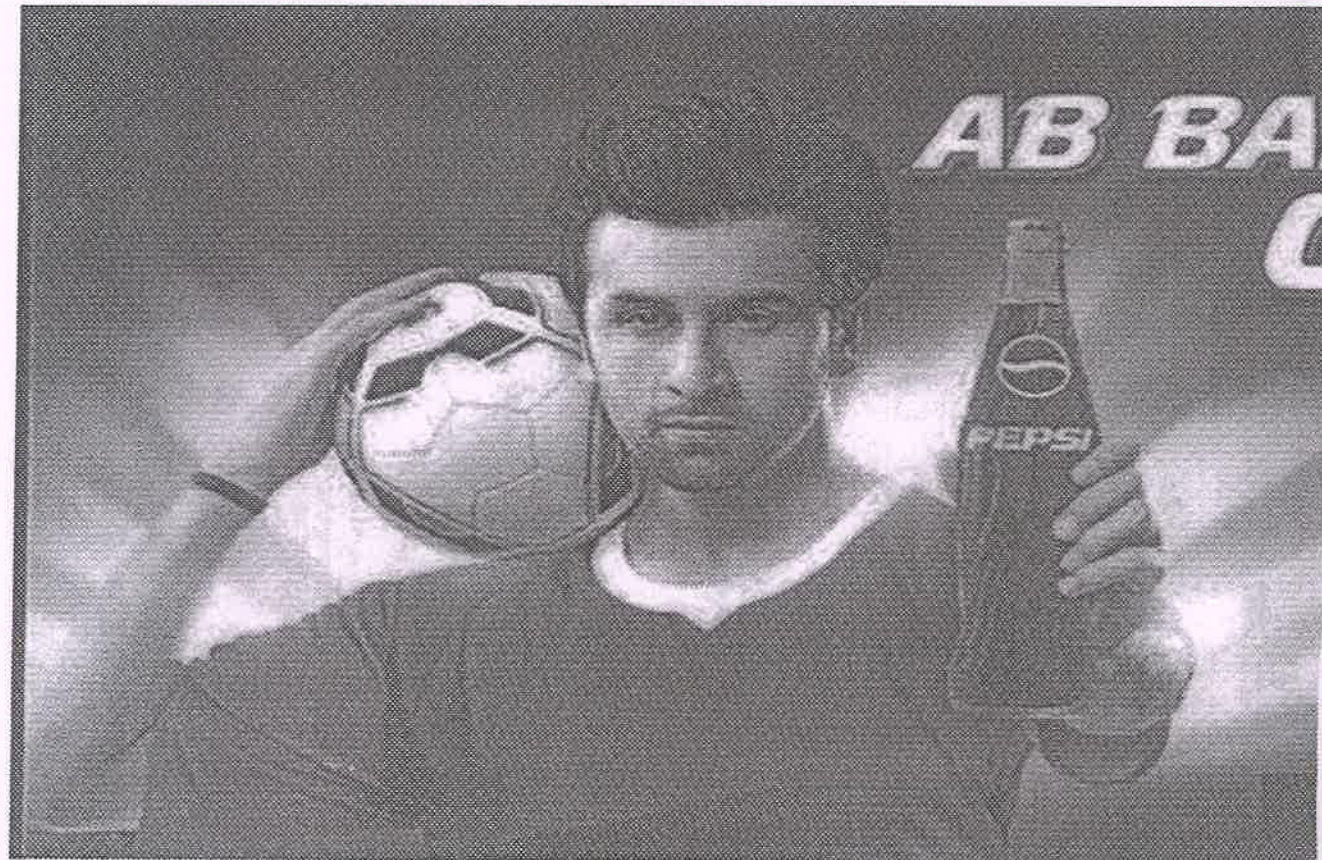
BOD Product Descripti

1. Contains of bar
absorb micro dirt
remove excess sk
2. Cococa oil ess
Cocoate, Charcac
Dihydroxyacetoni
3. Contains of na
ingredients which
refreshing, moist
smoothen. ☐
4. For neutral and
recommended fo

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 Deen Dayal Upadhyaya College
 Sector-3, Dwarka, New Delhi-72

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Officiating Principal
Deen Dayal Upadhyaya College
(University of Delhi)
Sector-3, Dwarka, New Delhi-78

3. Testimonial copy:-



4. Humorous copy:-




[Handwritten signature]
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(University of Delhi)
Sector-3, Dwarka, New Delhi-78

[Handwritten signature]
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Deen Dayal Upadhyaya College
Sector-3, Dwarka, New Delhi-78

SKILL ENHANCEMENT COURSE ASSIGNMENT

(Creative writing)


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Submitted by :

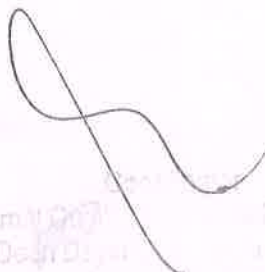
Yashika Satija

19ENG0540

B.A. ENGLISH HONS(SEMESTER-3)













Activity 1. Write a poem in any genre and use at least 3 or 4 figures of speech in it. Identify and write a note on the figures of speech used and the genre chosen.

Terrace night

It was night, Once again I found myself here,
Sitting on the wide boundary wall ,my comfort space,
The terrace's railings glinted of the full moon light,
The hard concrete glowed softly, my dim heart smirked at it's sight,
Like everyday, my fathomless eyes tried to read the language of stars,
But today I felt illiterate because of my scars,
I mindlessly mirrored the sway of plant's leaves in the breeze,
The slow music took me back to the moments I had wanted to freeze,
We were on a call as I paced around tracing patterns in the wall,
The corner staircase reminded me, to reach this phase, we climbed
these steps,
The small bulb flickered and went off, it echoed the action of my hope,
Your thoughts overflowed from my memory bank, brimming like the
overhead tank,
Then I look at the crushed jasmine flower, fallen, yet smelling nice,
And I smile again, the memories though crushing, are full of fragrance,
The moon was bright with it's spots, it told me, it's my turn to shine at
all costs.

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Notes:

1. **Genre** used in above poem is Dramatic poetry, more specifically a monologue.

The dramatic monologue is a poem consisting of the words of a single speaker who reveals the dramatic situation and his or her own character. Robert Browning is one of the finest original practitioners of this form. Here, the speaker is mourning the loss of loved one, she is no longer in alliance with him. Towards the end, she tries to find positivity and assures herself that she is enough.

2. **Figure of speech** used :

- a. Personification - "my dim heart smirked"

Personification is a type of metaphor and a common literary tool. It is when you assign the qualities of a person to something that isn't human or that isn't even alive, such as nature or household items. Like here, the heart, a organ is personified and is said to have smirked.

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- b. Metaphor - "small bulb flickered"

A metaphor is a figure of speech that, for rhetorical effect, directly refers to one thing by mentioning another. It may provide clarity or identify hidden similarities between two ideas. Like here, flickering of bulb directly signifies flickering hopes of speaker.

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c. Symbolism - "crushed jasmine flower"

Symbolism is a literary device that uses symbols, be they words, people, marks, locations, or abstract ideas to represent something beyond the literal meaning.

Here, crushed jasmine flower symbolises crushed hopes of speaker once she gets know about the truth that their relationship is over.

d. Alliteration - " mindlessly mirrored"

In literature, alliteration is the conspicuous repetition of identical initial consonant sounds in successive or closely associated syllables within a group of words, even those spelled differently.

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Activity 2. Write any poem of your choice (minimum 8-10 lines)/
Write a short story.

A cold winter morning

Flipping through the pages, i found a letter,
A letter kept there from ages, 'twas next to my sweater.

"I love you darling, I'll come back soon",
It was inked in blue, always made me swoon.

Thirty years have now passed, I am sitting next to the window,
My daughter stood there aghast, for now I was a widow.

She looked me up and down, her face held a frown
As the queen she always looked upto was there without a crown

The queen was sad, she sat there,
Flipping through the letter,
A letter that was next to her sweater.

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on 5-12-20
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Activity 3. Write one poem meant for children.

Rise and Shine

Good morning my love,
Hope your night was sweet.
Sun is out and above,
And little birds tweet

Wash you face,
And brush your teeth.
Say your grace,
And don't be mean.

Go to school,
Learn new things.
Studying is cool,
It gives you wings.

Now the clock struck one,
It's time for home, hon.
The school was fun,
And you learned how to sum.

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Internal Quality Assurance Cell (IQAC)
Deen Dayal Upadhyay College
University of Delhi

Time will pass,
You'll grow old.
Then you'll think, 'Alas!
Childhood was gold.'

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Activity 4 (b). Write a review of a movie you have seen.

Review on movie - Extinction

Like the name suggests, this movie talks about a particular branch of biology that disappeared from the face of earth. The movie starts with Peter's nightmare wherein he sees that some power is taking over the earth and destroying the habitat and planet. It further develops into a family setup and how his nightmares are affecting his relationship with his wife, Alice and his daughters, Lucy and Hanna. Alice tries to convince Peter to go and see the psychiatrist so as to know the reason behind these dreams but he refuses and states that he is okay. He was struggling to find answer to the question of who is he. He was searching for truth, which was expected to destroy and change everything. Amongst this chaos, Alice got promoted and was looking forward to throw a party to her friends and colleagues and on other hand, Peter's nightmares were getting worst. He was suggested a good psychiatrist by his boss, David, because his performance at work was diminishing as well. Upon visiting the clinic, he was greeted by one of the fellow patients who too was seeing the same nightmares as him and told him not to see the doctors as all they are doing is erasing their memory, which could be useful in saving the planet later on. His confrontation at clinic got him all worked up and he ran away from there without seeing the doctor. On his way home, he got a telescope to find answers to his nightmares and as sort of a

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gift for his girls, as an apology of getting home late and forgetting about the party last night.

As he reached home, his home was filled with guests which overwhelmed him and he maintained his distance from everyone and stayed at the balcony overlooking the sky with his telescope. While he was looking for the answers, he was met by a numerous lights dazzling in the sky, ready for the attack on the planet. He got terrified upon seeing his nightmares coming true and was thinking of all the future possibilities of what may happen according to his nightmares. He quickly changed his role from a confused man to a family man who was ready to do anything to save his family and friends from the foreign attack. He did everything in his power to save his family, be it hiding his daughters in a closet or fighting the foreign creature with the gun. As the story develops, we see that he lost his friend to attack and was running to his factory as his nightmares suggested. Here we come to know, that the aforementioned aliens are actually humans who were evacuated from the planet earth and are now living on Mars. We get to know that all the nightmares he was seeing were actually the flashbacks of the "human invasion" that occurred 50 years ago and when he "adopted" Hanna and Lucy.

This movie paints the picture of a utopian world, where being a human is considered as an alien concept and synthetics are a new normal.

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Activity 8. Locate the various types of advertising in different media, identify the purpose of the advertisement.

Advertising does not constitute a separate medium. It is present in all media, but the factors which control it are different from other modes of communication. Advertising is commercially oriented, it spreads information about products and services. The motive of advertising is to make the audience aware of the existence of a particular product or service, and persuade them to use that product or service. At a very basic level, advertising tries to create a need in the consumer for the product which is being advertised.

There are various kinds of advertising, classified according to their purpose. These range from those advertising products to those which serve public/social interests.

Standard Advertising

This is the kind of advertising that we see everyday in various media. This type of advertising aims to promote a particular product or service with the intention of persuading the target audience to purchase them. Soaps, perfumes, soft drinks and even n advertisements for companies that offer bill-payment services, can all be included within this category. The advertising is paid for by the manufacturer/seller of the product or service, so the only purpose is to promote the product as efficiently as possible.

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Public Service/Social Responsibility Advertising

Public service or social responsibility advertising answers a public need. It is generally produced and distributed by government agencies or non-profit organizations in co-operation with private advertising companies. While the government organization provides the information that is to be broadcast, the media agencies provide the creative services and the space and time for the display of the advertisement. Environmental messages, disease eradication campaigns, and announcements by police are kinds of public service advertising.

Counter-Advertising

It focuses on the alleged fraud and misrepresentation in advertising. The advocates of counter-advertising claim that standard advertising does not inform the public of everything, thus hampering the ability of consumers to make a really informed choice. Counter-advertising intends to counteract the allegedly false claims, to ensure that the consumer is made aware of certain aspects which are hidden. The anti-tobacco campaigns by various agencies, as well as the campaign for awareness of rights of consumers are part of counter-advertising.

Advocacy Advertising

This is closely related to social responsibility advertising as well as counter-advertising, except that advocacy advertising is a type of advertising placed by businesses and other organizations that is intended to communicate a viewpoint about a controversial topic

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relating to the social, political, or economic environment. It is concerned with the propagation of ideas and clarification of social issues of public importance in a manner that supports the position and interest of the sponsor. It expresses a strong point of view on behalf of an organization. Issues like drug addiction, alcohol consumption, etc.

Image Advertising

It is designed by businesses to improve their image, rather than to promote a particular product. At one level, this kind of advertising is affiliated with public relations rather than with marketing.

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Activity 11. Examples for advertisements that use the five kinds of copy.

(Due to non availability of newspaper due to covid times I couldn't put the scanned copy of advertisement)

A. Straight Copy - stating the content in short and crisp manner.



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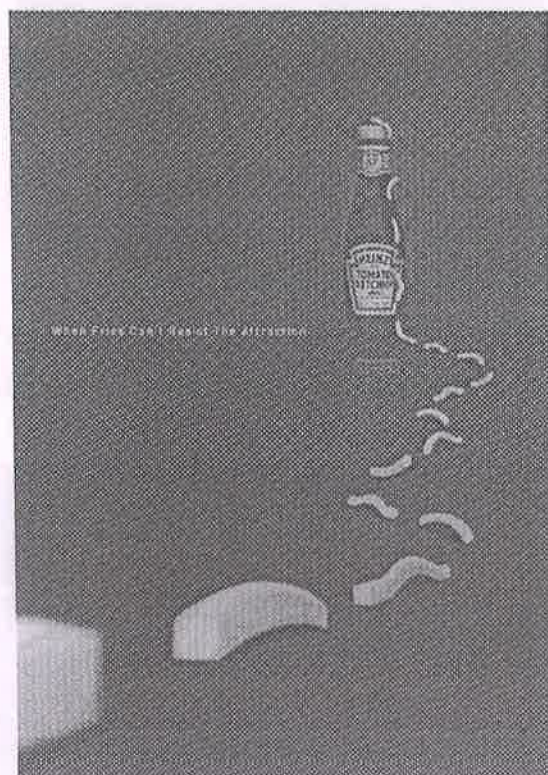
B. Descriptive Copy - in detail description of the product.



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C.Narrative Copy - aiming to deliver a story.



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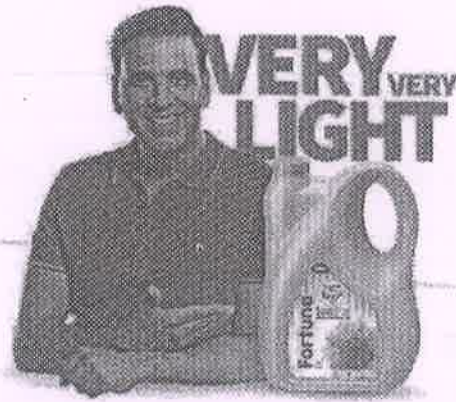
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D. Testimonial Copy - collaborating with a celebrity to make advertisement and product believable and reliant.



E. Humorous Copy - making advertisement appealing and attractive to viewer and reader

OH DEER
ITS HARD TO SPEL
WHEN YOUR HUNGRY

IF YOU KEAP MAKING TYPING MISTAKES
GRAB YOURSELF A SNIKKERS FAST

SNIKKERS

VISIT OUR FACEBOOK PAGE IF YOUR NOT SHAKING TO HUTCH

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Question. Write 5 haikus.

HAIKUS

1. Haunted by darkness
He gave up
Trying to find a way out of wild
2. Snuggled in blankets
She was at peace
Sipping hot cocoa from cute mug
3. As the rain fell, tears shed
Cause she slipped on road she
Fell face first, head bump
4. Clock went tik tock ting
Finally wait was over
As Cookies just finished baking

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5. Horror and terror

I stay quiet as they say

"Turn on your mic"

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Question. Write a play out of a joke.

Don't let the cat out of the bag

Scene - 1

Setting : Curtain rises, the stage is set in a driveway, a cab in middle, Klara is sitting in cab waiting for Mark, her husband to come. There are slight whispers to be heard. Mark enters.

Mark: Sorry it took so long but that stupid missy was hiding under the bed and I had to poke her big fat belly with a coat hanger to get her to come out! She tried to run off so I grabbed her by the neck and wrapped her in a blanket so she wouldn't scratch me like she did last time. But it worked! I hauled that ugly lady down the stairs and threw her into the backyard. She had better not pooped in the vegetable garden again.

Klara: (uncomfortably) Sir please drive.

(Funny music is heard in the background, cab driver starts the car and with the roar of engine, lights fade out.)

Scene - 2

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Setting: Light fade in, scene is set in a driveway again but without cab this time. It's a Friday night. Mark just got home. He leans in to hug Klara. She stops him.

Klara : Step back Mark! Can't you see what time is it? Honestly, I am tired of this. You never show up on time. You were supposed to be here by 7. It's almost 9!

Mark : So you forgetting to carry your keys to work is also my fault now?

Klara : (frustrated) Of course it is. Only if you would have been helpful enough to take the kids to school or forget that, if only you could have been helpful enough to wake up on time and get kids ready to go to school , I would have finished my chores on time and wouldn't have forgotten the keys.

Mark :(shouting) I work late shifts Klara! How do you expect me to wake up on 6.

Klara : (defeated) You know what, it's exhausting to have this fight over and over again. I know you work late shifts but don't you see I work shifts too. If you have late shifts don't you see I have early shifts too. On top of that I do the cleaning and cooking, taking care of kids. I am tired of it Mark.

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Mark : I know, darling, I know. Its just ----- forget it. I am sorry.

Klara: It's okay. Its just that I need a little break.

Mark : Kids are at your mother's tonight, right? We can just put Angelica in the backyard and be on our way. (Flirtatiously)
Oh wait, Mrs. Klara Stephens, Will you go on a date with me?

Klara : You sure it's a good idea?

Mark : (juggling things in hand and trying to open the door) Yes, I am sure. (Louder) Angelica, where are you babygirl? (Meowing is heard) Here you are my sweet girl,-----ow ow don't don't scratch me, you ugly missy!

Klara : Here I'll handle her
....(cooing) hey babe, we missed you too. Yes we did...now mummy daddy have to go..so you'll be fine in backyard. Yes? Good girl. (in distance to Mark) Hurry up! Before she gets all riled up again.

(Fade out)

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Scene-3

Scene opens, only half part of stage is lit, Klara is standing in front of front gate

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Klara : (shouting) Mark. You're late again. Cab will be here any moment.

Mark: Coming love, this missy won't cooperate.

(Sound of car pulling over is heard....the other part of stage also lit up)

Klara : I am waiting inside the cab. You better hurry up mister.

(Mimes to sit in cab)

Klara : Hello. How are you?

Cab driver : I am good, thank you Ma'am. Should we go?

Klara : Just a minute, my husband is coming. (Aside) I shouldn't let him think that we are leaving the house empty. (to driver) He's actually just saying bye to my mother.

Cab driver : Sure Ma'am.

Mark: Sorry it took so long but that stupid missy was hiding under the bed and I had to poke her big fat belly with a coat hanger to get her to come out! She tried to run off so I grabbed her by the neck and wrapped her in a blanket so she wouldn't

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scratch me like she did last time. But it worked! I hauled that ugly lady down the stairs and threw her into the backyard. She had better not pooped in the vegetable garden again.

Klara: (uncomfortably) Sir please drive.

(Funny music is heard in the background, cab driver starts the car and with the roar of engine, lights fade out.)

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ASSIGNMENT

ON

CREATIVE WRITING

SUBMITTED BY – NEESHA KUMARI

COURSE- BA(HONS) ENGLISH

SEMESTER- III

ROLL On -19ENG0521

SESSION-2020-21

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PART I

**Mode of Creative Writing: Poetry, Fiction and
Drama**

SUBMITTED TO- DR. JAYINI ADHYAPAK

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Question 1:- Write a poem in any genre and use at least 3 or 4 figures of speech in it. Identify and write a note on the figures of speech used and the genre chosen.

Answer:- New Acceptance

In the days of pestilence, we all are confined
enclosed with the wall of gravest concern.

Restricted to limited ones.

Now, can feels the pangs like caged animals.

This danger is subverting human minds,
outraging out inner conscience

All are going through mode of inertia

Perhaps , scratching the rusted mind.

The misery keeps on ordealing us

Testing the exultant human power

Destroying the self obsessed nature

But , we are with endless hopes,

Yes, there is delay in mirth ,

As now is overture of sadness.

But, we are firmly resolved

Believe in cooperate to comfort lives.

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Figure of speech used:-

1. Alliteration (Latin, meaning ' move letters') :When the initial consonant sounds of a syllable(which consists of a vowel sound that is either preceded or followed by consonant sounds) are repeated, it is called alliteration. Example of alliteration in the poem is ' cooperate comfort'.

2. Assonance : (Latin, meaning ' to answer the) : This involves the repetition of the vowel sounds at close intervals such 'outraging out' in the poem is an example of it.

3. Simile (Latin, meaning 'like') :Simile, like metaphor is a means of comparing things that are essentially different. The distinction is that in simile the comparison is explicit and is expressed by the use of some word or phrase such as ' like', 'as', 'that's', 'similar to', 'resembles', or 'seems'. In the poem, the example of simile in the poem is ' pangs like caged animals'.

The genre used in the poem is free verse. This is poetry whose verse is not based on the recurrence of stress accent in a regular, measurable pattern, but rather on the irregular rhythmic cadence of significant phrases, image patterns, and the like. It is the refusal of English to conform to standard prosody that has given rise to free verse, but that does not mean that this form doesn't have any limitations or guiding principles. The crux of the question here is measure. In free verse the measure has been loosened to give more play to vocabulary and syntax- hence, to the mind in its excursions.

Question 2:- Write any poem of your choice(minimum 8- 10) lines/ Write a short story.

Answer:- Because It's Life

Because you are kind,
doesn't mean you're weak.

Because you are honest,
doesn't mean you're fool.

Because you care a lot,
doesn't mean you're pretending.

Because you smiles a lot,
doesn't mean you never cry.


Because you're strong,
doesn't mean you have no weakness.

Because you're talkative,
doesn't mean you have no secrets.

Because you're silent,
doesn't mean you're innocent.

Because you see good in everything,
then you are rare.

Because you're novice
soon will be master in that field.


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Question 3:-Write one poem meant for children.

Answer:-

Five Senses

Eyes helps us to see
the beautiful monuments and sea.
It helps to see the colourful rainbow too.
Ears helps us to hear
The buzzing bee and crowd near.
It helps to hear the teachers too.
Nose helps us to smell
the aroma of flowers and food.
It helps to smell the scent of rain too.
Tongue helps is to taste and speak
The food is tasty or not;
we tell with the help of the tongue.
Skin helps us to feel and perceive
The tea is hot and ice is fold
We say by touching it.

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PART II

WRITING FOR THE MEDIA







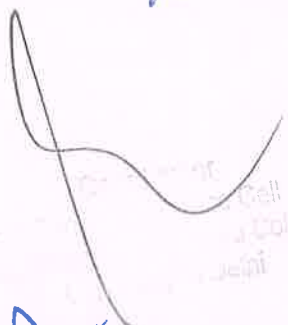


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SUBMITTED TO - DR. PRAMESH RATNAKAR

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Question 1:- Write five haikus.

Answer:-

1. The transpired drop
leaving the tip of a leaf
enticing odyssey.
2. The crimson coloured
butterfly; escape out of sight
Lost touch.
3. Midst of the pond
suddenly ,a quack arrived
Strayed path.
4. The cold mid night
a sheet of transparent fog
Voice struggled.
5. A breeze blown
The petals bend to the earth
Memories retrieved.

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Question 2:- Write a review of a movie you have seen.

Answer:-

Movie Review: Sholay

Sholay is a 1975 , Indian action- adventure film written by Salim-Javed , directed by Ramesh Sippy and produced by his father G. P. Sippy.

The film is about two criminals, Veeru and Jai(played by Dharmendra and Amitabh Bachchan respectively), hired by a retired police officer (Sanjeev Kumar) to capture the ruthless dacoit Gabbar Singh(Amjad Khan). Hema Malini and Jaya Bhaduri also, as Veeru's and Jai's love interests, Basanti and Radha, respectively .

Sholay is considered as a classic and one of the best Indian films. Sholay is a defining example of the masala film, which mixes several genres in one work. The film is mix of action, comedy, romance and melodrama.

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There are seven songs in the film. R. D. Burman composed the film's music, and the lyrics were written by Anand Bakshi.

" Yeh Dosti" has been called the ultimate friendship anthem, sung by Kishore Kumar. The songs would never going to fade . It inhabits a special position in our heart. This song makes us nostalgic and we went back to our past ,old good memories.

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More than songs , the dialogue attracts our attention- which is rare in Bollywood. Usually when remember a movie, we try to recall by the songs. But in this case, we remember this movie by the recalling their dialogues. Dialogues like –“ kitne aadmi they “ , “itna sannata kyun hai bhai” , “yeh haath mujhe de de Thakur “ and many more to applaud. The minors character contribute through their dialogues. Javed Akhtar was largely responsible for writing the dialogue. Thanks to him, he inspired a lot and add to the contemporary memes culture.

This movie entertains us. The action sequence thrilled us. But the point is -what we learnt from it. What is the output of seeing a picture of 198 minutes. The question is worth to ask as we invest our precious time in seeing it. For me, the film is about friendship of two male friends, chasing the dacoit and action meanwhile. The critic claimed that it revolves around murder – revenge-murder cycle, which is true. But the movie taught us the lesson to never tolerate injustice. And friendship is through thick and thin.

If one want to explored the 70s should watch this movie. And should realise how the angry man image came up in that era.

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Question 3:-Make a play out of joke and perform it.

Answer:-

The Assembly.

{ The school morning. Everything in hurry. The time running like water. The girl(Disha) in a hurry too. Getting ready for school. Packing her bag. Picking everything that she can grab, while combing her hair. Finally settled, with her bag and hair. Now putting her socks of two different shades. Go out of the house. Started polishing her socks with full speed. Dust around her. Voice arrived from inside. }

Disha:- Mummy, I am going. It's already 6:59 am.

Mummy:-I am not allowing you to step out of the house without doing breakfast.

Disha:- I will do it in the lunch period.

Mummy:- Do, it right now.

Disha:- But, I am running late.

Mummy:- Because of yourself.

Disha:- Mummy (grinning).

Mummy:- Eat first. How will you focus on your studies, with empty stomach?

Disha:- Yes,, And they keep us standing there in the assembly ground for hours. It's too hot.

Mummy:-Finish quickly(strictly) .

Disha:- Done it. Bye.

(Crossing road and buildings, correcting her hair plates. Suddenly saw her friend (Madhu). Both approaching towards each other).

Disha :- Hey! Madhu, what's going ? (smiling)

Madhu:- All good. What about you?

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Disha:- I am fine. Thank you. (Hears the drum sound coming from the school). Let's speed up. It seemed that the assembly going to start.

{Both the girls reached the class put their bag. And entered the assembly ground}.

Disha:- The assembly has not started yet.

Madhu:- Yes, thank god!

Disha:- And thanks to the students who are still not making the queues.

(Teachers arrived one by one. PT. Teacher holds the mic.)

PT. Teacher:- Good morning students. Get ready for the exercise.

Madhu:- Exercise, Oh! Today is Wednesday .

{ Disha stands behind Madhu, so that she can hear her }

PT. Teacher:-Keep one hand distance(exercise started). Hands up and hands down. Move to the right. And now to the left. (One student move to the wrong direction and many behind him repeat the same).

Don't you even know the direction(strictly). Concentrate on the commands. Back to your position. Now, relax.

Madhu:- Exercise is good for health.

Disha:- It helps to learn the direction too(giggles both).

{Now yoga teacher came to the stage}

Yoga Teacher:- All of you sit down on your place, will start with pranayama today.

Disha:- Let's clean the place first. I have heard dog too sit after cleaning it's place. We still are humans!(giggles both)

Yoga Teacher:- Take a deep breath. Sit in the right posture. Before starting the pranayama. Students who have cold are not allowed to do pranayama. (the whole school applauds).

Disha:- I love doing yoga.

Madhu:- Yes, it's always fun.



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{Yoga session ends. Everyone stands without permission on their position, dusting their clothes. Breaking the queues, making noises. And disturbed the whole scenario}

PT. Teacher:- Why you all stand up without my permission(angrily). Now sit again and stand only when I say so.

Disha:- This seems like the sit-in up game. (laugh both).

{ Finally the prayer started in a gentle manner}

(After few minutes, announcement time. The teacher on the stage asked the principal to say two words to congratulate students for those who win the drawing competition)

Principal:- It's a matter of great pride, that the students take part excitedly in every competition. Fifty student participated in the drawing competition, three are selected as winners. As rule to select three only. But... . . . (he continued)

(One student faints)

Disha:- Thank god! I have done my breakfast (paused for a moment)

Hope, she is fine.

Madhu:- Hope so, her classmates taken her to the medical room. She will be okay.

Disha:- This is going to happen if they say two thousands words instead of two(serious tone) .

{ Assembly ended. The school marched to the class. Both reached the class. First period' s bell rang}

Madhu :- Did you completed your homework?

Disha:- Yes. (triumphantly)

{ Teachers enter the class}

Teacher:- Students, be ready with you homework.

Madhu:- Let's open our notebook, our turn is going to come.

Disha:- (searching for her notebook). Did you take my notebook?

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Handwritten signatures and marks at the bottom of the page, including a large signature on the right and several smaller ones on the left.

Madhu:- No, why.

Disha :- Because it's not in my bag. O god! (scaring).How can I?

Madhu:- How can you?

Teacher:- Disha! Come with your notebook.

Disha:- Coming ma'am!(hesitantly)

Teacher:- I said come with your notebook.

Disha:- Ma'am...

Teacher:- What? Your notebook is on invisible mode?

Disha:- I forgot to bring the notebook.

Teacher:- Ever forgot to eat?

Disha :- No, ma'am. Never miss my breakfast too.

Teacher:-No, ma'am! Always saw you talking in the prayer. No discipline. Go back to your seat. Stand and raise you hands.

(Disha crying . Controlling her motions)

(Teacher started to teach the class. Ask Disha to sit.)

Teacher:- Today will continue the history lesson(looking towards Disha). What happened to in 1809.

Student:- Abraham Lincoln was born

Teacher:- (to Disha) What happened in 1819?

Disha:- Abraham Lincoln was ten years old. (whole class laugh)

Teacher:- You always stand on my expectations. Well done. (class laugh)

never { She feels that it is important to teach Disha a lesson to follow a discipline life. And she came out with a plan}.

Teacher:- So, it's the time to select new monitor for the next month. And Disha going to be new monitor.

(Everyone shocked, so Disha.)

Disha:- Ma'am but I didn't done my homework today too. How can I?

Teacher:- I don't know but from now you have to come early in the school, manage the blackboard. And lots of opportunity.

Disha:- Okay ma'am(thinking the reason behind it.)

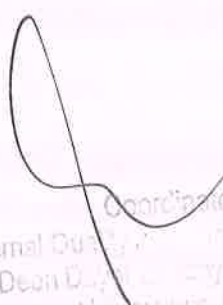
{ Days past. She started coming early in the morning. Having her breakfast timely. Packed her bag on one night before the school. So, that never forgot to carry the notebook. And she changed day by day. She start concerning about the things. Not making excuses. It seems the teacher's motive of making her monitor succeeded. }

Few days later, at school.


Teacher :- Did you done your homework?

Disha:- Yes, ma'am.(triumphantly)

End of the Play



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Question 4:- Locate the various types of advertising in different media; identify the purpose of the advertisement.

Answer:- There are various kind of advertising, classified according to their purpose. These range from advertising products to those which serve public/ social interests. These are discussed below-

Standard Advertising:- This is the kind of advertising that we see every day in the various media. This type of advertising aims to promote a particular product or service, with the intention of persuading the target audience to purchase them. Soaps, perfumes, clothes, soft drinks, and even advertisement for companies that offer bill- payment services, can all be included within this category.

Public Service/ Social Responsibility Advertising:- Public service or social responsibility advertising answers a public need It is generally produced and distributed by government agencies or non-profit organizations, in cooperation with private advertising and mass media companies. While the government or non-profit organization provides the information that is to be broadcast, the advertising and media agencies provide the creative services and the space and time for the display of the advertisement. Environment messages, disease eradication campaigns, and announcements by police are kinds of public service advertising.

Counter Advertising:- Counter advertising focuses on the alleged fraud and misrepresentation in advertising. The advocates of counter – advertising claim that standard advertising doesn't inform the public of everything, the hampering the ability of consumers to make a really informed choice. Concert advertising intends to counteract the allegedly false claims, to ensure that the consumer is made aware of certain aspects which are hidden. The anti- tobacco campaigns by various agencies, as well as the campaign for awareness of rights of consumers are part of country advertising

Advocacy Advertisement:- This is closely related to social responsibility advertising as well as country advertising, except that advocacy advertising is a type of

advertising placed by business and other organizations that is intended to communicate a viewpoint about a controversial topic relating to the social, political, or economic environment. It expresses a strong point of view on behalf of an organization. Issues like drug addiction, alcohol consumption, rising crime rate, etc., which are perceived as conditions affecting public welfare, are taken up through advocacy advertising.

Image Advertising:- This type of advertising is designed by business to improve their image, rather than to promote a particular product. This kind of advertising promotes the name, the image, the personnel, and also the reputation of the advertiser. The intent is to enhance the image of the company in the eyes of target audience. The advertisement may choose to emphasize the various areas of human activity in which the company is involved; it may be creating awareness of the different products which they produce; the advertisement may also show how the company is a good place to work.

Purpose of Advertisement:- Advertising has three objectives: to inform, to persuade, and to remind.

Informative Advertising:- creates awareness of brands, products, services, and ideas.

Persuasive Advertising:- tries to convince customer that a company's services or products are the best, and it works to alter perceptions and enhance the images of a company or products.

Reminder Advertising:- reminds people about the need for a product or service, or the features and benefits it will provide when they purchase promptly.

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(University of Delhi)
Sector-3, Dwarka New Delhi-76

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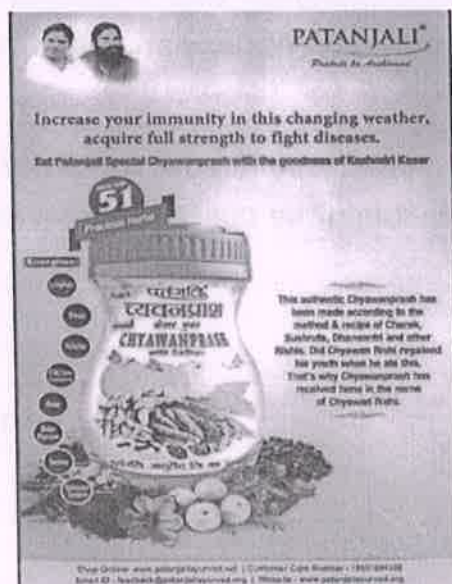
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Sector-3, Dwarka New Delhi-76

Question 5:- Scam the print, electronic for new media for examples of advertisement that use the five kinds of 'copy'.

Answer:- 1. Straight Copy- This states the content in a simple and short manner.

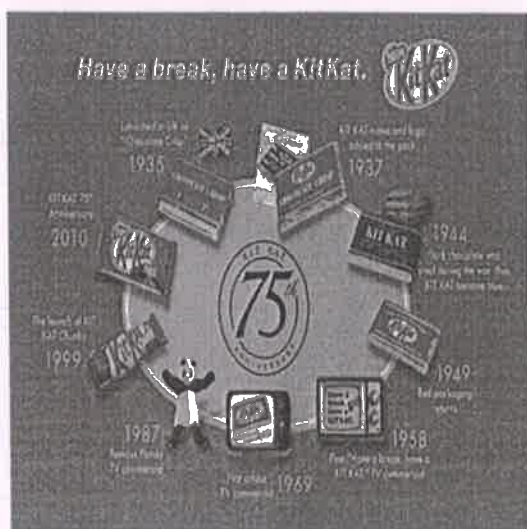


2. Descriptive Copy- In this kind of copy, the main focus of the advertisement is an extensive description of the product or service being offered.



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3. Narrative Copy- In this the copy purports to narrate a story.



4. Testimonial Copy- In this kind is copy, a celebrity endorses the brand or the products. This tends to make the advertisement more appealing and believing.



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5. Humorous Copy- This helps to make the advertisement more appealing to the viewer/ reader.



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saddened by the loss of four anna money, as much as for the collapse of this character of the society.

Submitted by- Neesha Kumari

Course- B. A(Hons.) English

Roll no. -19ENG0521

Semester- IV

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Translate a poem or short story from your mother tongue into English.

कल शाम को चौक में दो-चार जरूरी चीजें खरीदने गया था।
पंजाबी मेवाफरोशों की दूकानें रास्ते ही में पड़ती हैं। एक
दूकान पर बहुत अच्छे रंगदार, गुलाबी सेब सजे हुए नजर
आये। जी ललचा उठा। आजकल शिक्षित समाज में विटामिन
और प्रोटीन के शब्दों में विचार करने की प्रवृत्ति हो गई है।
टमाटो को पहले कोई सेंट में भी न पूछता था। अब टमाटो
भोजन का आवश्यक अंग बन गया है। गाजर भी पहले गरीबों
के पेट भरने की चीज थी। अमीर लोग तो उसका हलवा ही
खाते थे; मगर अब पता चला है कि गाजर में भी बहुत
विटामिन हैं, इसलिए गाजर को भी मेजों पर स्थान मिलने लगा
है। और सेब के विषय में तो यह कहा जाने लगा है कि एक
सेब रोज खाइए तो आपको डाक्टरों की जरूरत न रहेगी।
डाक्टर से बचने के लिए हम निमकौड़ी तक खाने को तैयार हो
सकते हैं। सेब तो रस और स्वाद में अगर आम से बढ़कर नहीं
है तो घटकर भी नहीं। हाँ, बनारस के लंगड़े और लखनऊ के
दसहरी और बम्बई के अल्फाँसो की बात दूसरी है। उनके
टक्कर का फल तो संसार में दूसरा नहीं है मगर; मगर उनमें
विटामिन और प्रोटीन है या नहीं, है तो काफी है या नहीं, इन
विषयों पर अभी किसी पश्चिमी डाक्टर की व्यवस्था देखने में
नहीं आयी। सेब को यह व्यवस्था मिल चुकी है। अब वह
केवल स्वाद की चीज नहीं है, उसमें गुण भी है। हमने
दूकानदार से मोल-भाव किया और आध सेर सेब माँगे।

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दुकानदार ने कहा-बाबूजी बड़े मजेदार सेब आये हैं, खास कश्मीर के। आप ले जाएँ, खाकर तबीयत खुश हो जाएगी।

मैंने रूमाल निकालकर उसे देते हुए कहा-चुन-चुनकर रखना।

दुकानदार ने तराजू उठाई और अपने नौकर से बोला-लौंडे आध सेर कश्मीरी सेब निकाल ला। चुनकर लाना।

लौंडा चार सेब लाया। दूकानदार ने तौला, एक लिफाफे में उन्हें रखा और रूमाल में बाँधकर मुझे दे दिया। मैंने चार आने उसके हाथ में रखे।

घर आकर लिफाफा ज्यों-का-त्यों रख दिया। रात को सेब या कोई दूसरा फल खाने का कायदा नहीं है। फल खाने का समय तो प्रातःकाल है। आज सुबह मुँह-हाथ धोकर जो नाश्ता करने के लिए एक सेब निकाला, तो सड़ा हुआ था।

एक रुपये के आकार का छिलका गल गया था। समझा, रात को दूकानदार ने देखा न होगा। दूसरा निकाला। मगर यह आधा सड़ा हुआ था। अब सन्देह हुआ, दुकानदार ने मुझे धोखा तो नहीं दिया है। तीसरा सेब निकाला। यह सड़ा तो न था; मगर एक तरफ दबकर बिल्कुल पिचक गया। चौथा देखा। वह यों तो बेदाग था; मगर उसमें एक काला सूराख था जैसा अक्सर बेरों में होता है। काटा तो भीतर वैसे ही धब्बे, जैसे किड़हे बेर में होते हैं। एक सेब भी खाने लायक नहीं। चार आने पैसों का इतना गम न हुआ जितना समाज के इस चारित्रिक पतन का।

Kashmiri Apple

By Munshi Premchand

Went to buy some essential in the Chowk yesterday evening. Punjabi's fruit sellers shops fall on the way. Very nice colored pink apple were seen adorned in a shop. I was tempted. Nowadays, educated society has a tendency to think in terms of vitamins and proteins. Earlier, tomatoes were not asked even by the saints. Now tomatoes has become an essential part of food. Carrot was also a thing to fill the stomach of the poor. Rich people used to eat it's pudding only; but now as found that carrots have a lots of vitamins; therefore, carrots also started getting place on the table. And about apple, it is being said that if you eat an apple everyday, you will not need a doctor. To avoid the doctor, we are ready to eat even neemkodi .

If the apple is not more than the juice and taste with the mango, then it is not even less. Yes, Langra of Banaras, Dashehara of Lucknow and Alphonso of Mumbai are different. No fruit in the world to their competition, but do they have vitamin or not; is it enough or not, no western scientists has given such report on these subject. Apple has got this label. Now, it is not about the taste, it

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Department (QAC)

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has the qualities too. I negotiated with the shopkeeper and asked for a pao apple.

Shopkeeper said, " Babuji, very good apple have arrived, especially from Kashmir. Buy them, you will be happy after eating. " I take out my handkerchief and hand him, asked him to chose selectively. The shopkeeper raised the scales asked his servant to bring a pao Kashmiri apple. Chose precisely said he. The boy bring four apples. The shopkeeper weighed, put them in an envelope and tied in a handkerchief and gave it to me. I hand him four annas. Came home and kept the envelope as it was. It is not the rule of eating apple or any other fruit at night. The time to eat fruit is early morning.

This morning by washing hands as I pulled out an apple for breakfast, it was rotten. A peel to the size of one rupee was spoiled. Seemed that the shopkeeper would not have seen it at night. Picked another. But it was half rotten. Now suspected, hasn't the shopkeeper cheated me. Picked the third apple. It was not rotten, but pressed aside and got spoiled. Looked for the fourth. It was immaculate but there was a black hole in it, as found in ber. After cutting, found the same spot again, as often found in ber infected with insects. Not an apple was worth eating. Not

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Course Objectives

In a multicultural country like India, translation is necessary for better governance and for greater sensitivity to other cultural groups. As the world shrinks further due to increased communication, translation is required for smooth flow of knowledge and information. The course will sensitise students to the processes involved in translation. Students will be familiarised with various methods, strategies and theories of translation. Further they will learn to recognise a translated text as a product of its cultural, social, political and historical contexts.

Learning Outcomes

Through the study of this course the student will develop the ability to

- sensitively translate literary and non-literary texts including official and technical documents from one language to another;
- interpret from one language to another;
- examine what is translated and why;
- discern the difference in language systems through the practice of translation;
- understand the processes involved in translation in mass media, especially news reporting, advertising and films;
- engage with the demands of subtitling and dubbing;
- compare translations;
- evaluate and assess translated texts; and
- edit translated texts.

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Facilitating the Achievement of Course Learning Outcomes

Unit No.	Course Learning Outcomes	Teaching and Learning Activity	Assessment Tasks
1.	Understanding concepts	Interactive discussions in small groups in Tutorial classes	Reading material together in small groups initiating discussion topics participation in discussions
2.	Expressing concepts through writing	How to think	Writing essay length assignments
3.	Demonstrating conceptual and textual understanding in tests and exams	Discussing questions and answering techniques	


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TRANSLATION STUDIES

Unique Paper Code- 12033904

STUDENTS' LIST

ROLL NO	NAME
19ENG0502	AKANSHA
19ENG0503	Akshat Mahajan
19ENG0504	Anju Meena
19ENG0505	CHAVATAPALLI RAJAKUMARI
19ENG0508	GUNJITA PASSI
19ENG0509	Harsh Yadav
19ENG0510	Harshi Chahar
19ENG0511	Kirti Chaudhary
19ENG0512	KUNAL ROY
19ENG0513	MAITRI JAIN
19ENG0514	Manish Bharti
19ENG0515	MANISHA
19ENG0516	MANISHA KANDULNA
19ENG0517	MANVI TYAGI
19ENG0518	Muskan Singh
19ENG0519	NANCY GAHLOT
19ENG0520	Nandinii Goel
19ENG0521	NEESHA KUMARI
19ENG0522	PAWAN KUMAR SONI
19ENG0523	Pooja Meena
19ENG0524	Prachi Khushalani
19ENG0525	Richa Sharma
19ENG0526	Ritika Jangra
19ENG0527	RITIKA SOOD


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19ENG0528	RUCHI NEGI
19ENG0529	Sahaj Nair
19ENG0530	saloni
19ENG0531	SHIFALI SHIVGOTRA
19ENG0532	SIMRAN KHAN
19ENG0533	Sneha R
19ENG0534	Sonakshi
19ENG0537	VANSHIKA YADAV
19ENG0538	VARSHA RAWAT
19ENG0539	VISHAL
19ENG0540	Yashika Satija
19ENG0542	Maitri Khantwal
19ENG0543	Anjali Jha
19ENG0544	Manushi
19ENG0545	KHUSHBOO
19ENG0546	W.A.D. O. SEHANI UTHPALA

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Sector-3, Dwarka, New Delhi-78

2

PROJECT DETAILS- TRANSLATION STUDIES

SUBMITTED TO- Dr Jayini Adhyapak and Dr Lalit Kumar

UNIQUE PAPER CODE- 12033904

QUESTION- Translate a poem or a short story from your mother tongue into English.

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UNIVERSITY OF DELHI
DELHI SCHOOL OF ECONOMICS
DEPARTMENT OF ECONOMICS

Minutes of Meeting

Course : B.A. (Program) Semester IV, CBCS. .
Subject : Research Methodology (SEC for B.A Program Students).
Date of Meeting: 9th January, 2018
Venue: Department of Economics, Delhi School of Economics.

Attended by :

S.No.	Name	College
1	Meenakshi Sinha Swami	Mata Sundri College
2	Hema Nagpal	Sri Aurobindo College (M)
3	Suneyana Sharma	RLA College
4	Ajad Singh	MLN College
5	Shilpa Chaudhary	JDMC
6	Sakshi Jindal	Mata Sundri College
7	Harneet Kaur	SGTB Khalsa College
8	Gurpreet Kaur	Mata Sundri College

The recommended text books for the course are listed below.

1. Ranjit Kumar (2014), Research Methodology: A step-by-step Guide for Beginners, 4th Edition, Sage Publications. (3rd Edition available online can be used as reference if the 4th edition isn't available)
2. Uwe Flick (2012), Introducing Research Methodology: A Beginner's Guide to Doing a Research Project, Sage Publications.
3. C.R. Kothari, Research Methodology: Methods and Techniques, New Age International Publishers, Fourth Edition **(for teacher's reference)**

The following topic-wise reading list is recommended for the course:

- I. Nature of Research: Kumar (2014) Chapter 1 and 2.
- II. Formulating the Research Topic: Kumar (2014) Chapter 4.
- III. Review of Literature: Flick (2012) Chapter 3.
- IV. Approaches to Research and Research Strategy: Kumar (2014) Chapter 5, 6, 7, 8 and 13.
- V. Research Ethics: Kumar (2014) Chapter 14.
- VI. Using Secondary data
- VII. Using Primary data (collecting data through observations/interviews/questionnaire): Kumar (2014) Chapter 9, 10 and 11 (for VI & VII units both)

- VIII. Sample Selection Methods: Kumar (2014) Chapter 12.
IX. Analysing data: Kumar (2014) Chapter 15 and 16.
X. Writing Project Report - Referencing Styles: Kumar (2014) Chapter 17.

Pattern of Evaluation:

Internal Assessment: 25 Marks

5 Marks: Attendance


20 Marks: Research Paper or Project Report

Main Examination: 75 Marks (15*5=75 marks).

Students will have to do 5 questions out of a set of 8 questions, each of 15 marks.



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University of Delhi

SUBJECT- RESEARCH METHODOLOGY

SUBMITTED TO-Meenakshi Yadav

UNIQUE PAPER CODE-62273426

PROJECT PAPER-Select a research topic of your interest and accordingly prepare a research synopsis. You have to prepare a project report with the following instructions:

1. First, main introduction page giving your project paper name with your name and roll number.
2. Then give background/introduction about the topic chosen.
3. Then literature review.
4. Then research gap under definition, rationale and scope.
5. Then research questions (atleast 5) followed by hypothesis (atleast one).
6. Then research methodology and finally the conclusion.
7. On last page, bibliography/references.
8. It has to be typed in Times new roman with size 12.

STUDENT'S LIST

ROLL NUMBER	NAME	
19BAP9009	DEEKSHA	EDUCATION DURING PANDEMIC: A STUDY FROM A STUDENT'S PERSPECTIVE IN INDIA
19BAP9010	HARSH SINHA	GLOBAL SEMICONDUCTOR SHORTAGE
19BAP9012	JAYASH	INDIA-CHINA TRADE RELATIONSHIP
19BAP9014	KARAN MEENA	CRISIS OF URBAN GOVERNANCE IN INDIA
19BAP9017	LAKSHAY YADAV	EASE OF DOING BUSINESS IN INDIA
19BAP9020	NITU BISHNOI	BLACK LIVES MATTER MOVEMENT AND ITS WORLDWIDE IMPACT , 2013-2018

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19BAP9023

PRATEEK PAL

DECODING ROLE OF
INDIAN MARITIME
LAWS' IN DISTURBING
MARINE ECOLOGY
AND SIGNIFICANCE IN
ESTABLISHING
RELATIONS WITH
COUNTRIES OF
WORLD

19BAP9030

SHRUTI

CORONAVIRUS AND

DOMESTIC VIOLENCE

OR INCREASE IN THE

DOMESTIC VIOLENCE

19BAP9031

SHRUTI KHANDELWAL

CORPORATE
GOVERNANCE FAILURE AT
YES BANK, 2018-2019

19BAP9032

SIDDHARTH SRIVASTAVA

FOREIGN DIRECT
INVESTMENT IN INDIA

19BAP9036

VISHWAJEET KUMAR

AI AND THE FUTURE OF
POWER

19BAP9043

TEJASWITA SAHOO

ANALYSING THE
IMPACT OF
PRECONCEIVED
PERCEPTIONS UPON
GENDER GAP IN THE
FIELD OF STEM AND
HUMANITIES

19BAP9044

MAHIMA RATHORE

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19BAP9101

ABHIMANYU GARG

EDUCATION SYSTEM
IN INDIA AND ITS
IMPACT ON THE
STUDENTS

*19BAP9103

*ADITYA KUMAR KATARIA

GENDER DIMENSIONS OF
THE INFORMAL SECTOR
AND INFORMAL
EMPLOYMENT IN INDIA

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19BAP9205	ASHUTOSH KUMAR YADAV	FINANCIAL ACCENTUATION OF THE SUSTAINABLE DEVELOPMENT GOALS (SDG's) IN INDIA, 2014-2021
19BAP9206	AYUSH YADAV	ROLE OF WOMEN IN INDIA'S ECONOMIC DEVELOPMENT
19BAP9107	BRIJESH YADAV	VEHICLE SCRAPPAGE POLICY AND ITS EFFECT ON INDIAN ENVIRONMENT, AUTOMOBILE INDUSTRY AND ECONOMY
19BAP9113	KATAKAM SAI SAMPATH	SLOW AGRICULTURAL GROWTH AND AGRARIAN CRISIS IN INDIA
19BAP9114	KESAR BARANWAL	IMPACT OF VARIOUS HEALTH CRISIS ON MANKIND
19BAP9117	MAYANK SINGHAL	ROAD ACCIDENTS AND ITS EFFECT ON LIVES AND LIVELIHOODS

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 Dean DDU
 Institute of Health

19BAP9121	NEHA VASHIST	EDUCATION SYSTEM IN INDIA AND IT'S IMPACT ON THE MINDSET OF STUDENTS
19BAP9122	NIKHIL SRIVASTAVA	CHARGING INFRASTRUCTURE FOR ELECTRIC VEHICLE-A SUSTAINABLE DEVELOPMENT IN INDIA
19BAP9124	PRACHI LUNA	HEALTH AND ITS IMPACT ON ECONOMIC GROWTH
19BAP9129	RIYA RAI	INCREASE IN DIVORCE RATE IN INDIA
19BAP9130	ROHIT MEENA	MGNREGA-IMPACT ON INFRASTRUCTURE DEVELOPMENT AND WOMEN EMPOWERMENT IN RURAL AREAS
19BAP9131	SAKSHI PRIYADARSHINI	Official stamp: Principal, Deen Daya College (University of Delhi), Sector-3, Dwarka, Delhi-78 PANDEMIC AND THE CHANGE IN PROSPECTS, USAGE AND CREDIBILITY IN THE FIELD OF ONLINE OR DIGITAL TRANSACTIONS
19BAP9133	SATYAVRAT	INDUSTRIAL NETWORK: A REALIST APOLOGIA
19BAP9138	TIKSHITA VERMA	THE IMPACT OF GOVERNMENT EXPENDITURE ON ECONOMIC GROWTH: A STUDY OF ASIAN COUNTRIES
19BAP9140	TWINKLE ROY	FARMER BILLS IMPACT ON INDIAN ECONOMY

19BAP9144

NEHA YADAV

SWEATSHOP-A
HIDDEN CHALLENGE
TO INDIAN SOCIETY
AND GOVERNMENT

19BAP9211

GANDHARV SEHGAL

Effect Of Covid 19 on the
Hospitality Industry

19BAP9214

HIMANSHI SHARMA

THE SOCIAL IMPACTS
OF MIGRATION IN
INDIA

19BAP9219

KANISHK SEHRAWAT

HUMAN-WILDLIFE
CONFLICT

19BAP9230

RAGGHAV SHARMA

INDIA'S RELATIONSHIP
WITH CHINA

19BAP9233

RAJNANDINI KUMRE

MEDICAL

TERMINATION OF

PREGNANCY
Deen Dayal Upadhyaya College
(AMRINDIA) ACT
Sector-3, Dwarka, New Delhi-78

2021

19BAP9236

SACHIN KUMAR PATEL

WOMEN

PARTICIPATION IN

MODERN DAY INDIAN

POLITICS

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Research Methodology

ASSIGNMENT

TOPIC :

GENDER DIMENSIONS OF THE INFORMAL SECTOR AND INFORMAL EMPLOYMENT IN INDIA

PREPARED UNDER THE SUPERVISION OF

PROF. MEENAKSHI YADAV

SUBMITTED BY

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DEFINITION, RATIONALE, AND SCOPE OF THE STUDY

The division of labour by gender, referring primarily to allocation of paid and unpaid work Between women and men in private and public life, also reflects the traditional division of Women's and men's roles in society, which result in women's work being often invisible and Therefore undervalued in national accounts and labour statistics.

Informal EMPLOYMENT

Informal employment and the related concept of the informal sector are relatively new Topics in labour force statistics. In 1993, the International Conference of Labour Statisticians (ICLS) adopted an international definition of the informal sector to refer to employment and Production that take place in unincorporated small and/or unregistered enterprises. In 2003, the ICLS broadened the definition to include certain types of informal employment outside informal Enterprises, for example casual or day workers, industrial out workers and unregistered or Undeclared workers. Those working in informal wage employment generally are without formal Contracts, worker benefits or social protection and therefore, have little economic security.

Informal employment comprises a large and diverse category of workers, which can be divided Into the more homogeneous categories, informal self-employment and informal wage-Employment, according to status in employment.

Informal self- employment includes:-

- *Employers in informal enterprises.*
- *Own-account workers in informal enterprises.*
- *Unpaid family workers (in informal and formal enterprises)*

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- *Members of informal producers' cooperatives (where they exists).*
- *Own-account workers engaged in the production of goods exclusively for own Final use by the households*

Informal wage-employment covers employees holding formal jobs, employed by formal or Informal enterprises or households:

Employees are considered to have informal jobs, if their employment relationship is, in law or in Practice, not subject to national labour legislation, income taxation, social protection or Entitlement to certain employment benefits (e.g. advance notice of dismissal, severance of pay, Paid annual or sick leave). Informal wage employment is common among the following Categories of employees:

- *Employees of informal enterprises.*
- *Casual or day labourers.*
- *Temporary or part-time workers.*
- *Paid domestic workers.*
- *Unregistered or undeclared workers.*
- *Industrial out workers (home workers).*

The concept of 'Informal economy' has recently come into use to incorporate informal Employment even outside the 'informal sector'. In other words, informality of both the enterprises And employment relations is incorporated in the concept of informal economy. A conceptual Framework of informal employment was presented in the Fifth meeting of Delhi Group at New Delhi during 19-21 September 2001. It is, essentially a classification of jobs by status of Employment of various categories of workers in different types of production units consisting of (a) sector enterprises (b) informal sector enterprises and (c) households, which produce goods for their own final use and/or those employing domestic workers. They may be performing

the jobs as (a) own account workers (b) employers (c) contributing family workers, (d) employees

or (e) member of producers co-operatives. The status of employment formal or informal in many of the above categories. The framework, thus, recognizes informal employment in the formal sector, informal sector and households and consists of the following

o Informal jobs both in informal and formal enterprises and in households

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o Employees are considered to have informal jobs if their employment relationship is, by law or in practice, not subject to standard labour legislation, taxation, social protection or entitlement to certain employment benefits.

As a consequence of rapid economic development and specialization of services and the Increase in demand for labour resources in the recent past, the business community has moved Towards outsourcing of services. This phenomenon has contributed to the development of more Casual arrangements between owners of enterprises and those contributing labour services.

The SNA (1993) characterized the informal sector as consisting of units engaged in the Production of goods or services with the primary objective of generating employment and income To the persons concerned. They form part of the household sector as unincorporated enterprises Owned by households. The broad characteristics of the informal sector are that these are:

: Private Un-incorporated Enterprises (Enterprises owned by individuals or households that Are not constituted as separate legal entities independent of their owners)

: For which no complete accounts are available that would permit a financial separation of The production activities of the enterprise

: Produce at least some of their goods or services for sale or barter

: The employment size of the enterprise is below a certain threshold (to be determined According to national circumstances)

: And/or not registered under specific form of national legislation

The conceptual framework of the informal employment endorsed by the 17th ICLS relates The enterprise-based concept of employment in the informal sector in a coherent and consistent Manner with a broader, job-based concept of informal employment.

India's Informal Sector

IN India the term 'informal sector' has not been used in official statistics. The term used is 'un-Organised sector' which consists of the units, which are not covered under the regular statistical Reporting mechanism in each segment of the economy. The organised sector (covered through Annual Survey of Industries (ASI)) mainly Comprises manufacturing units registered under section 2m(i) and 2m(ii) of the Factories Act, Employing 10 or more workers using power; and those employing 20 or more workers without Using power. The ASI also covers bidi and cigar manufacturing establishments registered under The Bidi & Cigar Workers (Conditions of Employment) Act, 1966 with coverage as above. All Electricity undertakings engaged in generation, transmission and distribution of electricity Registered with the Central Electricity Authority (CEA) are covered under ASI irrespective of their Employment size. Certain servicing units and activities like water supply, cold storage, repairing Of motor vehicles and other consumer durables like watches etc. Are covered under the survey. Defence establishments, oil storage and distribution depots, restaurants, hotels, café and computer Services and the technical training institutes, etc. Are excluded from the purview of the survey.

The units not covered under the Annual Survey of Industries are treated as part of un-Organised sector in respect of manufacturing activities. Apart from these, the units belonging to The Trade, Hotels and Restaurants are treated as un-organised sector except those in the public and Private corporate sector and co-operatives.

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The use of the term 'organised' and 'unorganized' as used in India is internationally known As 'formal' and 'informal'. In the Indian context the enterprise concept (i.e. to define the Unorganized sector) and the employment concept (i.e. to define unorganized employment) lack in Conceptual clarity and uniformity across the sub-sectors of the economy. For example, the Central Statistical Organisation uses the term 'organised enterprise' as small units with ten or more Workers with power or 20 or more workers without power for the manufacturing sector.

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However, The absence of similar statistical data till now prevented this definition being extended to the Service sector. Employment in the unorganized sector has hitherto been derived as a residual of the Total workers minus workers in the organised sector as Reported by the Directorate General of Employment and Training (DGET). The DGET figures, however, fail to capture the Informal/unorganized employment in the formal/organised sector – a phenomenon, which is Becoming increasingly significant in the Indian economy.

However, certain attempts have been made in the 55th and 61st round of NSS, to collect data on Informal Sector and Informal Employment keeping in view the recommendations of the Delhi Group to the extent possible.

REVIEW OF THE LITERATURE

The literature review is a very crucial part of any research. In the context Of present study, the review of the literature has been discussed under the Following two themes:

National Commission for Enterprises in the Unorganized Sector (NCEUS)

The National Commission for Enterprises in the Unorganized Sector was constituted in September, 2004. The commission has treated unorganized & informal sector as the same . It Has defined the unorganized or Informal Employment as follows:

“Unorganized workers consist of those working in the unorganized enterprises or Households, excluding regular workers with social security benefits, and the workers in the Formal sector without any employment/ social security benefits provided by the employers”.

The employees with informal jobs generally do not enjoy employment security (no protection Against arbitrary dismissal) work security (no protection against accidents and illness at the work Place) and social security (maternity and health care benefits, pension, etc.) and therefore any one Or more of these characteristics can be used for identifying informal employment.

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The first comprehensive survey of 'Informal Sector' using its definition was conducted in The NSS 55th Round during July 1999 to June, 2000. The NSSO during the 55th round survey (July 1999- June 2000), for the first time, collected data through employment – unemployment Survey, in respect of workers engaged in the non-agricultural enterprises in the informal sector. Information was collected directly from the enterprises by canvassing a separate schedule of Enquiry (Schedule 2.0). This schedule was canvassed for the informal sector enterprises, which Covered all unincorporated enterprises in the non-agricultural sector which operated on either Proprietary or partnership basis. The respondents were generally owners/ managers from whom all information on workers was obtained. The emphasis was more on such Details of the enterprises as their receipts, operating expenses, assets owned etc., and very few Items of information were exclusively on workers. The subsequent survey was conducted in NSS 61st Round during July 2004 to June 2005. The Commission has prepared direct estimates of Employment in the unorganized sector based on its definition (which include all of agricultural Workers in the unorganized sector and defined organised employment more tightly to limit it to Employees who receive provident fund and social security benefits from their employers) and the NSS 55th & 61st round survey results. As per these estimates, in 2004-05, the total employment (principal plus subsidiary) in the Indian economy was 458 million, of which the unorganized Sector accounted for 395 million (given in the following table). This direct estimation shows that The unorganized sector constituted 86 per cent of total workers in 2004-05, same as that in 1999-2000. Informal types of employment in organised and unorganized sectors taken together Constitute 92% in 2004-05 against 91% in 1999-2000. Informal employment increased from 341 Millions persons in 2000 to 394 millions in 2005. Formal employment, on the other hand Remained static at about 35 millions. Organised sector employment increased from 54.1 million to 62.6 millions during the period i.e. by about 9 million, which is entirely on account of what is Classified as informal employment in the organised sector, workers who do not have the benefit of Provident fund and social security.

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RESEARCH QUESTIONS

Women's Share in Informal Employment ?

The total employment in 2005 consisted of 303 million male and 155 million female Workers. Rural workers were 342 millions and urban workers were 116 million. Out of the total Workforce of 458 million persons, unorganised/ informal sector constitute 395 million persons as On 1st January, 2005 calculated based on the 61st round NSS survey. The gender differential in Proportion of workers engaged in the non-agricultural and Agricultural sector Excluding Growing of Crops (AGEGC) enterprises by type of enterprises is presented in Table-2 at the all-India level. The two types of enterprises – proprietary and partnership – have been clubbed Together and denoted as P&P. As per definition P&P constitute the Informal Sector. The Statement shows that a high proportion of non-agricultural and AGE GC workers, in the rural and Urban areas, worked in the informal sector. The survey estimated that during 2004-05, among Workers in the non-agricultural and AGE GC sectors, about 82 per cent in the rural areas and 72 Per cent in the urban areas were employed in the informal sector. This proportion was higher for The females (86 per cent) than that for the males (79 per cent) in the rural areas, while in the urban Areas, the proportion was higher for the males (74 per cent) than that for the females (65 per cent).

Gender Distribution of Workers in Non-Agricultural sector and AGE GC ?

The distribution of all workers as per usual principal status and usual subsidiary status (ps+ss) between non-agricultural sector and AGE GC, market gardening, horticulture and Growing of crops combined with farming of animals AGE GC is given in Table-3. Between these Two sectors of activities, the non-agricultural sector alone accounted for almost 87 per cent of Workers (ps+ss) and AGE GC engaged remaining 13 per cent. In the urban areas, the distribution Was in favour of the non-agricultural sector with nearly 98 per cent of workers being engaged in The non-agricultural activities and merely 2 per cent in the AGE GC. The corresponding shares for The rural areas were, however, 79 per cent and 21 per cent, respectively. The distribution of Workers between these two sectors, the male-female difference too was significant – in rural areas, Nearly 46 per cent among females were engaged in the AGE GC compared to 9 per cent among Males and in the urban areas, nearly 6 per cent among females were engaged in AGE GC Compared to only 1 per cent among males. As AGE GC is a part of the agricultural sector, a higher Proportion of female workforce in this

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sub-sector compared to their male counterparts, in both the Rural and urban areas, shows the dominance of male workers in the non-agricultural sector.

Gender Distribution of Non-Agricultural Workers ?

The proportion of non-agricultural workers to all workers obtained from NSS 61st round Has been compared with the corresponding figures for NSS 55th Round survey in Table-4 at the All-India level. The comparison has been given for the workers engaged in the non-Agricultural sector since in the 55th round, information regarding the particulars of Enterprises were collected only from those engaged in that sector. Over a period of 5 years Since 1999-2000, as expected, there has been a significant change in the proportion of non-Agricultural workers in the rural workforce; it increased from 24 per cent in 1999-2000 to 27 per Cent in 2004-05. This rise in the proportion of workers in the non-agricultural sector was observed For both males and females, and more significantly for women. However, during this period, the Share of the urban workforce in the non-agricultural sector remained unchanged at 91 per cent. The proportion of males and females also remained more or less same in the urban areas during this period.

Gender Differentials in Activity Status of Employment in Informal Sector ?

In the 55th round survey the characteristics of the enterprises were collected for the non-Agricultural sector only. Therefore, the proportion of workers in the informal sector obtained from The 61st round survey could be compared with the results of 55th round only for the non-Agricultural sector. It can be seen that the proportion of non-agricultural workers in the informal Sector has increased substantially for all types of work status, except for the regular wage/salaried Females. This is possibly due to separating out the workers engaged in the employer households in The 61st round. The rise in the proportion of workers in the informal sector during 2004-05, as Compared to 1999-2000 is found to have gone up among the casual labourers in both the rural and Urban areas. In the rural areas, the rise in the proportion of the casual labours was observed for Both the males and females but for females the rise was slightly higher compared to males. In the Urban areas, though the proportion of the male casual labours in the informal sector increased During 2004-05 by nearly 11 percentage points, in the case of urban females it declined by nearly 3 percentage points – from 73 per cent in 1999-2000 to 69 per cent in 2004-05.

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Engendered Information on Social Security Benefits ?

Information on eligibility of the regular wage/salaried employees and casual labourers for Different social security benefits was collected in the NSS 61st round survey. It was ascertained From the employees whether they were covered under any of the specified social security benefits Or a combination of them. The different social security benefits covered in the survey were Provident Fund (PF) scheme, Gratuity and, Health Care & Maternity Benefits. The term Provident Fund (PF) included General Provident Fund, Contributory Provident Fund, Public Provident Fund, Employees Provident Fund, etc. It may be mentioned that coverage Under any of these Social Security schemes would mean that the employers' Contributed/arranged/paid in implementing the social security benefits for the worker. If an Employee operated, in his/her individual capacity, a PPF account and the employer was not Contributing to that account, it was not considered a social security benefit. On the contrary, a Scheme, in which both the employee and the employer contributed, was considered a social Security benefit. Similarly, in case an employee was eligible for paid leave for a specified period Of pre-natal/childbirth/post-natal stages or if the expenditure for maternity care or childbirth was Born by the employer as per the conditions of employment, then such benefits were considered to Be social security benefits.

Home-based Workers- An Invisible Dimension of Informal Sector ?

In the ILO (2002) report on "Women and Men in the Informal Economy: A Statistical Picture", Home-based workers are defined and related to homeworkers as follows:

"The term "home-based worker" is used to refer to the general category of workers who carry Out remunerative work within their homes or in the surrounding grounds. It does not refer to Either unpaid housework or paid domestic work. Within the general category of home-based Workers, there are two basic types of workers: those who work on their own (the self-employed) And those who work for others (mainly as industrial outworkers). The term "homeworker" is used To refer to a sub -set of home-based workers : namely, industrial outworkers who carry out paid Work from their home. It is important to distinguish, both conceptually and statistically, between The following two categories (and related terms): Home-based workers: all those who carry out market work at home or in adjacent

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- A blue signature is written over the word "homeworker".
- A blue signature is written at the bottom right.
- A blue signature is written at the bottom left.
- A blue signature is written at the bottom center.

Printed text at the bottom:
- "Internal Quality Assurance Cell (IQAC)"
- "Green for Quality"

grounds or Premises whether as self-employed or as paid workers. Homeworkers : those home-based workers who carry out paid work for firms/businesses or their Intermediaries, typically on a piece-rate basis."

HYPOTHESIS :

Gender Perspective of Informal Sector ?

Women are bigger workforce of the informal sector ?

Role of women in informal sector and informal unemployment?

Women are the bigger workforce of the Informal sector as they are more likely than men to Undertake 'unpaid' activities, whether economic or non-economic, women are also more likely Than men to be involved simultaneously in unpaid care work and in unpaid or low-paid economic Activity. More generally, women are less likely than men to be engaged in full-time regular Employment as 'employees' in formal sector enterprises, which is the simplest form of work to Capture in surveys. Often the work of women is unrecognized by society, their families and even Themselves. They are instead regarded as homemakers, and thus not economically active, even Though they are engaged in economic work.

Gender sensitive statistics are needed to understand how a range of different factors is Affecting women and men, especially those who are poor, and their families. These factors Include:-

- *A large and possibly expanding, informal economy;*
- *Globalization-increased economic integration and advances in technology;*
- *The impact of work and lack of work on family and personal lives;*
- *The linkages between unpaid care work and production.*
- *The extent to which women and men are affected by decent work deficits*

The National Statistical System has to widen its scope to cover contextual Evidences to establish or quantitatively demonstrate the value and validity of this set of Postulations, which inter-alia provide overarching objectives for statistical investigations

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Research METHODS

: surveys

: Case Studies


: Secondary Data Analysis

CONCLUSION

Despite some progress made over the last few decades in increasing women's labour force participation and narrowing gender gaps in wages, gender equality in the world of work still remains an elusive goal. While millions of women have become successful entrepreneurs, women are still grossly underrepresented in the world's board rooms. In particular, in the developing world, women continue to form a large majority of the world's working poor, earn less income, and are more often affected by long-term unemployment than men. This is due to women's socio-economic disadvantages caused by gender-based discrimination and their double roles of being a worker and a care taker for the society. Women often have less access to productive resources, education, and skills development and labour market opportunities than men in many societies. Largely, this is because of persistent social norms ascribing gender roles, which are often, slow to change. Furthermore, women continue to undertake most of unpaid care work, which has become an increasing challenge in their efforts to

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engage in productive work, both in subsistence agriculture and market economy, especially in countries which are negatively affected by environmental change and HIV and AIDS.


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**EDUCATION DURING PANDEMIC: A STUDY FROM A STUDENT'S PERSPECTIVE
IN INDIA**

PREPARED UNDER THE SUPERVISION OF

PROF. MEENAKSHI YADAV

SUBMITTED BY

DEEKSHA

B.A PROGRAMME, 2 YEAR



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2021

INTRODUCTION

The novel coronavirus disease (COVID-19) first appeared in Wuhan city of China at the end of last year. Rapid worldwide spreading of COVID-19 prompted the World Health Organization (WHO) to declare it as 'pandemic' on 11 March 2020 (WHO Timeline - COVID-19, 2020, Pelmin, 2020). Most of the governments around the world have initiated a common goal to curb the spread of this highly contagious disease by imposing lockdown, social/physical distancing, avoiding face-to-face teaching-learning, and restrictions on immigration. Around 600 million school-going learners are affected across the world due to the closing down of educational institutions. UNESCO (2020) has reported that around 320 million learners are affected in India, of which about 34 million belonged to the tertiary level of education.

The first COVID-19 positive case has been reported in India (Kerala) on 30 January 2020. Currently, India has been experiencing sparkled growth in COVID-19 cases. The government of India along with various state governments have initiated several strategies to control the spread of the disease.

The closures of the educational institution due to the outbreak of COVID-19 lead to an unprecedented impact on education. During the lockdown, teachers are instructed to teach through online learning platforms. The outbreak of COVID-19 results in the digital revolution in the higher education system through online lectures, teleconferencing, digital open books, online examination, and interaction at virtual environments. The online mode of the teaching-learning process is often discriminatory to poor and marginalized students. During this lockdown period, the closing of educational institutions hampered the education system and the teaching-learning process. The major focus of the paper will be dedicated to the education scenario in India. As per the Universities Grants commission (UGC) guidelines, all universities in the country are not expected to start regular classes. Under such adverse circumstances, several questions arise for all stakeholders involved in the education system in India. While a number of universities have resorted to distance learning for the ongoing semester through online methods, Is it a viable solution pan-India? Several cities are majorly hit by the virus where people of different demographics have been infected.

Availability of bare essentials have been affected. While we consider the possibilities and conditions of the current situation with regards to the ongoing academic season, the question of several final year students' future studies and jobs also arise.

Research paper
ON
GLOBAL SEMICONDUCTOR SHORTAGE

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BACKGROUND

Semiconductors possess specific electrical properties. A substance that conducts electricity is called a conductor, and a substance that does not conduct electricity is called an insulator. Semiconductors are substances with properties somewhere between them. ICs(integrated circuits) and electronic discrete components such as diodes and transistors are made of semiconductors. Common elemental semiconductors are silicon and germanium. Silicon is well-known of these. Silicon forms most of ICs. Common semiconductor compounds are such as gallium arsenide or indium antimonite. Semiconductors became essential for many electronic appliances as well as for social infrastructure that support our everyday life.

Semiconductors play an important role in equipment control in a variety of fields, such as operating air conditioners at a comfortable room temperature, improving automobile safety, laser treatment in cutting-edge medical care and many more. Moreover, the advances of Semiconductors technology have driven systems efficiency, miniaturization and energy savings, which in turn help to preserve the global environment in addition to achieving safe and comfortable life and to create prosperous future.

Semiconductors were discovered all the way back in 19th century. In the 1940s, transistors were invented. Radios, which used vacuum tubes until then, were significantly downsized and became portable.

A widely known Semiconductors is silicon. Electronic components using Semiconductors are called Semiconductors devices, including the IC, which is an integrated circuit of transistors. Semiconductors devices mounted inside many electronics appliances are important electronic components that support our everyday live.

And now there aren't enough of them getting made a massive global shortage

Consumers are facing price rises and shortages of products from TVs and mobile phones to cars and games consoles as a global shortage in semiconductors grows.

The shortage in chips, the "brain" within every electronic device in the world, has been steadily worsening since last year.

Initially the problem was only a temporary delay in supplies as factories shut down when the coronavirus pandemic first hit.

Honda to close UK plant for four days owing to supply chain problems

However, although production is back to normal, a new surge in demand driven by changing habits fuelled by the pandemic means that it is now reaching crisis point.

Car manufacturers investing in tech-heavy electric vehicles, the boom in sales of TVs and home computers and launch of new games consoles and 5G-enabled mobile phones have all driven demand.

CRISIS OF URBAN GOVERNANCE IN INDIA

Research Methodology

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Submitted To: Meenakshi Yadav



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INTRODUCTION

The rapid shift of human settlements to towns and cities in the developing world has contributed in the Rapid Urbanisation. India is among the countries to witness rapid urbanisation and there has been a massive growth of urban population in major cities like Delhi, Mumbai, Bengaluru, Chennai and Pune if we like to talk about a few.

As per the provisional data released by the census of India for the first time since independence, the absolute increase in population is more in urban areas than in rural areas. The country's metro are getting overcrowded. For ex. The total population of Delhi Urban Agglomeration region is 16.3 million and that of Bengaluru Urban Metropolitan region is estimated to be 10 million

The steep rise of urban population in the last two decades has led to unbalanced and unplanned growth of cities posing a threat to the urban environment. The proliferation of informal settlements with heavy concentration and scant urban infrastructure has added to the dangers of disease in epidemics. Solid waste management is pitiable in many cities and sanitary dumping and recycling facilities have not made much headway. Whether it is Mumbai, Delhi or Pune or second tier cities such as Ludhiana, Mysore, Patna, Dehradun, they all face similar set of pressing problems – growth of urban population far outpaces the availability of necessary urban infrastructure and amenities that are usually provided by the city authorities.

The lack of public accountability due to citizen's non participation in urban governance has also accentuated such as problems as widespread corruption at all levels of governance, lack of transparency, and also a lack of expertise. Added to these is the limited availability of resources, including financial resource.

In the Early 1990s, when the Indian government amended the constitution to legislate local governance bodies, the emphasis remained on rural India. Urban governance occurred to the government as an afterthought and the 74th constitutional Amendment Act was appended with Panchayati Raj Act in order to provide urban local bodies with constitutional legitimacy parallel to rural local bodies. The amendment proposed political decentralisation and the establishment of a local self-government at the city level with relative political and planning autonomy. Cities generate major tax revenues; moreover, controlling cities means controlling urban infrastructure and, by implication, the entrepreneurial and business classes. The humongous mess in our towns and cities is largely due to systemic inability of the urban local bodies (ULBs) to perform the basic roles and duties.

EVOLUTION OF LOCAL SELF GOVERNMENT IN INDIA

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BA Programme

4th Semester

**Research Methodology
Assignment**

**The Impact of Government Expenditure
on Economic Growth: A Study of Asian
Countries**

Submitted to:

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INTRODUCTION

There has been much debate on the role and the size of government interference in the macroeconomic outlook throughout countries. As a result, governments attempt to stimulate economic growth through different instruments. Public expenditure has traditionally been a component of fiscal policy which is an instrument of the State to influence economic growth.

Economic growth as an indicator of economic performance within a country is considered as an objective that most of the countries would anticipate because of its impact in raising the standards of living, the state benefits, and the employment levels. Hence, understanding the determinant factors capable of causing economic growth is crucial. Government expenditure is one of the most important factors in economic theory.

However, with the present economic crisis in all over the world occurring with the government involvement, it is important to be analyzed to determine government expenditure is indeed a determinant factor on economic growth. Asian region was the most dynamic economic region throughout the past two decades. There are large differences among the Asian countries in their levels of living and other circumstances, as well as the policies that they have pursued. Larger government size is likely to be an obstacle to efficiency and economic growth because the taxes necessary to support government expenditures distort incentives to work and to invest, absorb funds that otherwise would have been used by the private sector in profitable investment opportunities, generally reduce efficient resource allocation, and hence reduce the level of output. In addition, government operations are often carried out inefficiently, and the regulatory process imposes excessive burdens and costs on the economic system. Thus, countries with greater government expenditure as a proportion of output should experience lower economic growth. Keynesian economics predicts government expenditure should lead to economic growth. In Asian countries; there are developed countries as well as developing countries. Most of the time there can be an increasing trend in the real gross domestic product level in both kinds of countries. Especially, in recently developed countries like Singapore, as well as other countries the government has played a vital role in their development process. Since Sri Lanka has a welfare economy, the government is a crucial thing to the Sri Lankan developing process. This study will be focused to measure whether the government involvement in their economy impacts this kind of rapid developing progress in Asian countries.

There are a lot of empirical studies which study the relationship between government expenditure and economic growth in Asian countries. But there is still an unfulfilled gap related to the issue, impact of government expenditure on economic growth in Asian countries as whole.

By conducting this study it is expected to cover up this gap by including major member countries in Asia and enhancing the time horizon to 1790 to 2013. Consequently, the main purpose of this study is to scrutinize the impact of government expenditure on economic growth in Asian countries which covering the time period from 1970 to 2013. Then this study will be fulfill the following objectives of assessing the impact of government expenditure on Economic growth in Asian countries, identifying the long run relationship between government expenditure and

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ECONOMICS (SKILL ENHANCEMENT COURSE) ASSIGNMENT

ON

REGULATION OF CRYPTOCURRENCY AND ITS LEGAL ASPECTS

SUBMITTED BY: MAHIMA RATHORE

COURSE: BA PROGRAMME

YEAR: 2nd (4th SEMESTER)

ROLL NO. 19BAP9044

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PAPER NAME: RESEARCH METHODOLOGY

SESSION: 2020-21

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TEACHER: DR. MEENAKSHI YADAV
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Acknowledgement

I would like to express my deepest appreciation to all those who provided me the possibility to complete this report. A special gratitude I give to our teacher, DR. MEENAKSHI YADAV , whose contribution in stimulating suggestions and encouragement, helped me to coordinate my project especially in writing this report.

I will also like to thank my family for providing me with sufficient resources and my friends who helped me in collecting data.



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ECONOMICS (SKILL ENHANCEMENT COURSE) ASSIGNMENT

ON

SWEATSHOP- A HIDDEN CHALLENGE TO INDIAN SOCIETY AND GOVERNMENT

SUBMITTED BY: NEHA YADAV

COURSE : B.A. PROGRAMME


YEAR: 2ND (4TH SEMESTER)

ROLL NO. 19BAP9144

PAPER NAME: RESEARCH METHODOLOGY

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BACKGROUND

Sweatshop is more than just a metaphor for a lousy job. Although there is no clear, single definition of the term, it generally refers to a workplace where relatively unskilled employees work long hours for substandard pay in unhealthy and unsafe conditions.

The term "sweatshop" was first used in the late 19th century to describe aspects of the tailoring trade, but sweatshop conditions exist in other industries as well. The forces that promote sweatshop production have always been varied. Some shops are the result of greed and opportunism; others stem from competitive pressures.

Understanding why sweatshops persist today means exploring issues of global competition, government regulation, immigration, business practices, and racial, ethnic, and gender discrimination.

For developing countries to support their economies, it is almost impossible to do so without participating in foreign direct investment (FDI) and being aware of globalization. Many Americans are aware that sweatshops exist, but it has become the norm to turn a blind eye. Why do sweatshops exist? Why do American brands and companies choose to do business on Foreign soil? The answer to these questions is simple, cheap labor.

China has been known as the "world's factory," along with the label "Made in China" being associated with sweatshops (Guo, Hsu, Holton, & Jeong, 2012; Yu, 2015). According to Yun-Wing (2007), China surpassed the United States in 2002 when it became the sole leader of FDI. Sweatshops are not a new phenomenon and have been in the media for decades, but are relevant during a government flare up. The most well-known flare up concerning sweatshops appeared in the 90s, with Nike, Inc. Roberts, Engardio, Bernstein, Holmes, and Ji, (2006) wrote an article about the secrets and lies of sweatshops. It revealed companies, like Nike, will go to any length to make their merchandise cheaper for Americans.

China is not the only country that has experienced how American companies can manipulate and demand. Countries such as Indonesia, Nigeria, Saudi Arabia, India, Guatemala and Bangladesh have all been so called "victimized" by Western businesses. Globalization and FDI have had a tremendous impact on sweatshops, but an even bigger effect on the governments of these countries.

SYNOPSIS
ON

ANALYSING THE IMPACT OF PRECONCEIVED PERCEPTIONS UPON GENDER
GAP IN THE FIELD OF STEM AND HUMANITIES

PREPARED UNDER THE SUPERVISION OF
PROF. MEENAKSHI YADAV

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INTRODUCTION

Women in recent times have always been fighting for their rights and equal access to basic amenities like that of men. But like everything has its own history, in a similar way women's fight for justice has a vast unhidden history behind it. During Indus Valley Civilisation, the female clay figurines and the hairstyles, ornaments demarcated on those figurines appear as an evidence of high social status of women at that time. During early Vedic period, people worshipped 'Ardhanareshwar' and Goddess Shakti and women participated in various religious ceremonies. Thus, we see women enjoyed equal status as that of men. Many women such as Gargi and Maitreyi were well-learned and became respected saints. During Later Vedic Period, women's position started deteriorating. They lost their political rights of attending assemblies and weren't given educational rights to study Vedas. Mauryan period too didn't see any improvement in position of women. Women were only entitled to stridhan and not to property rights. Due to lowering of the age of marriage, women were not educated as before. During the medieval times, because of the 'purdah' system, education to women was naturally restricted but some were taught in 'harems' by private tutors.

It was only in 1893, New Zealand became the 1st country in the world to grant national voting rights to women. In England and Wales the restrictions on property ownership was the case until the 1870 Married Woman's Property Act. Because of the efforts of Caroline Norton, parental rights were recognised to be given to mother. The Calcutta, Bombay and Madras institutions in British India did not permit the admission of girls till 1875. It was only after 1882 that girls were allowed to go for higher education. Girls in Britain received a home education that focused on being wives and mothers and taught them music. In contrast, subjects such as mathematics and science were typically reserved for boys. It was even considered that they were not suited to certain subjects by not having the appropriate minds.

Even when now many countries give equal access to education still there is a belief that girls don't do well in Science and Technology, Engineering and Mathematics and are likely to take Social science and Humanities. It remains unclear to what extent this is due to their preferred choice or socialisation and expectation management on the part of others that shapes their perceptions and choices. The persistence of gendered paths in career choices has recently been reflected in the current Global Gender Gap Report of the World Economic Forum (WEF), which states that on average men are underrepresented in the fields of education, health and welfare whereas women are underrepresented in the STEM fields (WEF, 2017). Females are particularly under-represented in math-intensive fields. It would be simple to say that women favour the humanities and men favour the sciences, but that's not true. Some scientific fields, like molecular biology and neuroscience, have achieved gender parity. And some fields in the social sciences and humanities, like economics and philosophy, favor men heavily. Psychology seemed to embrace women, with female researchers earning 70 percent of all PhDs in the field. But in philosophy, less than 35 percent of such degrees went to women.

Hence, we conducted a survey to find out the relative gender disparity while choosing career option in STEM, Commerce and Humanities. The survey consists of both objective and

PROJECT PAPER
ON
MGNREGA – IMPACT ON INFRASTRUCTURE DEVELOPMENT
AND WOMEN EMPOWERMENT IN RURAL AREA

PREPARED UNDER THE SUPERVISION OF
PROF. MEENAKSHI YADAV

SUBMITTED BY

ROHIT MEENA

19BAP9130

SUBJECT – RESEARCH METHODOLOGY

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INTRODUCTION

It is hard to think development of a any nation without the development of its rural economy, neglecting of rural development means neglecting of overall development of nation. The real development of India lies in the economic betterment of people lives in rural India for which government needs to make strong economic policies and better implementing strategies. National Rural Employment Guarantee Act (NREGA) enacted by legislation of India on 7th September 2005 and it was renamed as the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) on 2nd October 2009 on the birth anniversary of Mahatma Ghandi. The act aims to remove the extreme poverty and at making villages of country self sustaining through productive assets creation. The Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) was enacted in India with the various multiple objectives of providing employment in a right-based framework, addressing rural poverty, checking migration and building rural

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- *College*
- *178* (circled)

infrastructure. It aims to enhance livelihood and security in rural areas by providing at least 100 days of wage employment in a financial year to every household whose adult members volunteer to do unskilled manual work. An additional 50 days of wage employment are provided over and above 100 days in the notified drought affected areas or natural calamity areas in the country on recommendation of the Ministry of Agriculture and Farmers Welfare. It is considered as a right of a rural Indian citizen to work for minimum 100 days in a year if he/she is willing to work and job should be provided to him/her by authorities in his own area and also within a given time frame (within 15 days) otherwise state government is liable for pay unemployment allowance. Only labour intensive tasks i.e without machinery are preferred like creating infrastructure for social benefit like water harvesting, drought relief and flood control etc. As such, every year around 31 percent of households in India overall and 38 percent in rural India receive some form of employment share under the MGNREGA programme. One significant and unique fact about MGNREGA is that it has provided a fair opportunity to people from rural Indian to earn their own income without any discrimination of caste, gender and sex. Most remarkable feature of MGNREGA is that it plays women the same as men something that was virtually unimaginable in rural India.

Women Related Provision Of The Act :-

These very provision of the Act some way have become very handy for women in increasing their magnitude of empowerment :-

- The act is inclusive in nature. It specifies that a minimum of one-third of the beneficiaries of the scheme are to be women who have registered and demanded employment under the scheme.
- The act is also gender sensitive. It provides that there shall be no discrimination solely on the ground of gender in providing employment and equal wages between men and women have also been a major incentive for women.
- The MGNREGA in India is an example of important safety nets for women, allowing childcare facilities to be provided on Worksites and requiring provision of work close to participants homes.
- MGNREGA is seen to be a policy response of the Government of India to a situation of poverty and inequality.

Review Of Literature :-

There are a large number of works relating to impact of MGNREGA on Infrastructure Development and Empowerment of Women. In this study I have reviewed only few important ones to understand the concept and to link them. These are :-

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Case Research as a Methodology for Industrial Networks; A Realist Apologia

Introduction :-

Few researchers involved in research in the business or marketing areas spend much time thinking about research methodology. Fewer still show any concern with or interest in epistemology. To an outsider this state of affairs might seem strange. After all such researchers would, most likely, if asked what they were doing, make claims such as "we seek to gain understanding" or "we are pushing back the frontiers of knowledge". And epistemology is the philosophical basis for claiming to know what we know; the substantive basis for our knowledge claims. It is even stranger that we, who research what managers do, and often criticise them for making decisions based on few or dubious data, do not apply the same criteria to our own activities.

It would be interesting to speculate at length why this anomaly has occurred. However for the purposes of this paper it will suffice to offer just one or two observations. It may be that we are so ensconced in our own paradigm that we simply take for granted that the methodologies we employ are correct because we are doing what everyone else does.

Someone else has done the thinking for us. It may be that the research training we receive is inadequate; the apprentices learning from masters who themselves have little background in methodology. All this, perhaps, the result of being involved in immature disciplines. Another contributory factor may be that to many researchers the epistemological justification of their work is self evident..What you see is what you get. I collected these data and this is what they mean So what is the fuss all about? Finally, for those who have dipped their toes in the waters of philosophy, they may seem very cold indeed. There are no tight little prescriptions. It is hard work and much of what is written

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ECONOMICS (SKILL ENHANCEMENT COURSE) ASSIGNMENT

ON

EDUCATION SYSTEM IN INDIA AND ITS IMPACT ON THE STUDENTS

SUBMITTED BY: ABHIMANYU GARG

COURSE: BA PROGRAMME

YEAR: 2nd (4th SEMESTER)

ROLL NO. 19BAP9101

PAPER NAME: RESEARCH METHODOLOGY

SESSION: 2020-21

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BACKGROUND

The essence of Human Resource Development is education, which plays a significant and remedial role in balancing the socio-economic framework of the country. Education is a continuous and seamless process. There are no boundaries, time limits for any kind of education. Age limits are there for competitive exams, but then education doesn't end there. Neither does it end with a person's graduation, or Masters, or a PhD, nor does it begin in the first standard, as it is widely perceived. This was even pointed out by the late Dr A.P.J. Abdul Kalam. He said **"India needs to change its education framework completely."**

In ancient times, India had the Gurukula system of education in which anyone who wished to study went to a teacher's (Guru) house and requested to be taught. If accepted as a student by the guru, he would then stay at the guru's place and help in all activities at home. This not only created a strong tie between the teacher and the student, but also taught the student everything about running a house. The guru taught everything the child wanted to learn, from Sanskrit to the holy scriptures and from Mathematics to Metaphysics. The student stayed as long as she wished or until the guru felt that he had taught everything he could teach. All learning was closely linked to nature and to life, and not confined to memorizing some information.

The modern school system was brought to India, including the English language, originally by Lord Thomas Babington Macaulay in the 1830s. The curriculum was confined to "modern" subjects such as science and mathematics, and subjects like metaphysics and philosophy were considered unnecessary. Teaching was confined to classrooms and the link with nature was broken, as also the close relationship between the teacher and the student.

The Uttar Pradesh (a state in India) Board of High School and Intermediate Education was the first Board set up in India in the year 1921 with jurisdiction over Rajputana, Central India and Gwalior. In 1929, the Board of High School and Intermediate Education, Rajputana, was established. Later, boards were established in some of the states. But eventually, in 1952, the constitution of the board was amended and it was renamed Central Board of Secondary Education (CBSE). All schools in Delhi and some other regions came under the Board. It was the function of the Board to decide on things like curriculum, textbooks and examination system for all schools affiliated to it. Today there are thousands of schools affiliated to the Board, both within India and in many other countries from Afghanistan to Zimbabwe.

Universal and compulsory education for all children in the age group of 6-14 was a cherished dream of the new government of the Republic of India. This is evident from the fact that it is incorporated as a directive policy in article 45 of the constitution. But this objective remains far away even more than half a century later. However, in the recent past, the government appears to have taken a serious note of this lapse and has made primary education a Fundamental Right of every Indian citizen. The pressures of economic growth and the acute scarcity of skilled and trained manpower must certainly have played a role to make the government take such a step. The expenditure by the Government of India on school education in recent years comes to around 3% of the GDP, which is recognized to be very low.

India is divided into 28 states and 9 so-called "Union Territories". The states have their own elected governments while the Union Territories are ruled directly by the Government of India, with the President of India appointing an administrator for each Union Territory. As per the constitution of India, school education was originally a state subject —that is, the states had complete authority on deciding policies and implementing them. The role of the Government of India (GoI) was limited to coordination and deciding on the standards of higher education. This was changed with a constitutional amendment in 1976 so that education now comes in the so-called *concurrent list*. That is, school education policies and programmes are suggested at the national level by the GoI though the state governments have a lot of freedom in implementing programmes. Policies are announced at the national level periodically. The Central Advisory Board of Education (CABE), set up in 1935, continues to play a lead role in the evolution and monitoring of educational policies and programmes.

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FOREIGN DIRECT INVESTMENT IN INDIA

FOREIGN INVESTMENT:

- Foreign investment refers to the investment in domestic companies and assets of another country by a foreign investor.
- Large multinational corporations will seek new opportunities for economic growth by opening branches and expanding their investments in other countries.
- Foreign direct investments include long-term physical investments made by a company in a foreign country, such as opening plants or purchasing buildings.

TYPES OF FOREIGN INVESTMENT IN INDIA:-

Funds from foreign country could be invested in shares, properties, ownership / management or collaboration. Based on this, Foreign Investments are classified as below.

- Foreign Direct Investment (FDI)
- Foreign Portfolio Investment (FPI)
- Foreign Institutional Investment (FII)

Foreign Direct Investment (FDI)

FDI is an investment made by a company or individual who us an entity in one country, in the form of controlling ownership in business interests in another country. FDI could be in the form of either establishing business operations or by entering into joint ventures by mergers and acquisitions, building new facilities etc.

Foreign Portfolio Investment (FPI)

Foreign Portfolio Investment (FPI) is an investment by foreign entities and non-residents in Indian securities including shares, government bonds, corporate bonds, convertible securities, infrastructure securities etc. The intention is to ensure a controlling interest in India at an investment that is lower than FDI, with flexibility for entry and exit.

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RESEARCH PAPER

ON

**DECODING ROLE OF INDIAN MARITIME LAWS' IN DISTURBING MARINE
ECOLOGY AND SIGNIFICANCE IN ESTABLISHING RELATIONS WITH
COUNTRIES OF WORLD**

**SUBMITTED BY
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BACKGROUND

The seas, it is said, have historically performed two vital functions: first, "as a medium of communication and second as a vast reservoir of resources for both living and non-living"

This resulted in the development of legal fabric called "Maritime law", It is a complex area in the discipline of laws which dates back to antiquity. It is an ancient system derived from the customs of the early Egyptians, Phoenicians and Greeks who were involved extensively in commerce in the Mediterranean Sea. As the commerce moved northward and westward Sea Codes developed in northern European ports. The Laws of Wisby, the Laws of Hansa Towns and the Laws of Oleron were the important medieval Sea Codes which have been termed as the three arches upon which rests modern laws..Admiralty, or maritime law, consists of the rules and principles derived from custom, judicial decisions, legislative enactments and international treaties that govern the legal relationships arising from the transportation of passengers and cargoes on the high seas and other navigable waters. Appropriate tribunal have been put in place to apply maritime law in matters involving maritime contracts, maritime torts and other maritime offences. India have a coastline of 7,517 km and the coastal environment plays a vital role in both India and trading country's economy by virtue of the resources, productive habitats, and rich biodiversity. The Coastline of Indian mainland is surrounded by Arabian Sea in the west, Bay of Bengal in the east, and Indian Ocean in the south. For import and export of goods through waters is comparatively cheaper which facilitates the country to provide the imported consumables to its citizens at a competitive price. Moreover, the ever increasing recreational boating activities such as cruising, fishing, racing and yachting has become as widespread as to require Government regulation in all its forms.

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INTRODUCTION

The geopolitical situation changes over time and the changes in it are very gradual are very gradual.

In ancient times eastern world was most powerful nation because it was more advanced in military power, rich in mineral resources and agriculture and other fields. By their scientific advancement Europeans dominated the medieval period (renaissance to industrial revolution). Post industrial revolution to present day America, due to multiple factors, has dominated the world.

The advent of Artificial intelligence and the advancement of China in Artificial intelligence is now challenging the position of America as a world leader. The term is not limited narrowly to what AI is specifically in the technical sense, but also includes the entire ecosystem of technologies that AI propels forward as their force multiplier. This cluster includes quantum computing, semiconductors, nanotechnology, medical technology, brain-machine interface, robotics, aerospace, 5G, and much more. I use AI as the umbrella term because it leverages their development and synergizes them.

On the one hand, AI is the holy grail of technology; the advancement that people hope will solve problems across virtually every domain of our lives. On the other, it is disrupting a number of delicate equilibriums and creating conflicts on a variety of fronts. AI is exacerbating them however, a new equilibrium will be established, and a new kind of world will emerge. The prevailing equilibriums are disintegrating, and as a result, creating tensions among the parties held in balance. We are entering an epoch of disequilibrium in which a period of chaos is inevitable. Eventually, however, a new equilibrium will be established, and a new kind of world will emerge.

China is using AI as its strategic weapon to leapfrog ahead of the United States and achieve global domination. The geopolitical competition between China and the US is playing out both these superpowers recognize AI as the most prized summit to conquer in their race for leadership in economic, political and military affairs.

While aerospace, semiconductors, biotech, and other technologies are also crucial in this race, AI is the force multiplier that brings them together and catapults them to new levels. Both these countries are heavily invested in AI, and between them they control the vast majority of AI-related intellectual property, investments, market share and key resources.

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CRISIS OF URBAN GOVERNANCE IN INDIA

Research Methodology

KARAN MEENA

19BAP9014

IV SEM

B.A. Programme

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INTRODUCTION

The rapid shift of human settlements to towns and cities in the developing world has contributed in the Rapid Urbanisation. India is among the countries to witness rapid urbanisation and there has been a massive growth of urban population in major cities like Delhi, Mumbai, Bengaluru, Chennai and Pune if we like to talk about a few.

As per the provisional data released by the census of India for the first time since independence, the absolute increase in population is more in urban areas than in rural areas. The country's metro are getting overcrowded. For ex. The total population of Delhi Urban Agglomeration region is 16.3 million and that of Bengaluru Urban Metropolitan region is estimated to be 10 million

The steep rise of urban population in the last two decades has led to unbalanced and unplanned growth of cities posing a threat to the urban environment. The proliferation of informal settlements with heavy concentration and scant urban infrastructure has added to the dangers of disease in epidemics. Solid waste management is pitiable in many cities and sanitary dumping and recycling facilities have not made much headway. Whether it is Mumbai, Delhi or Pune or second tier cities such as Ludhiana, Mysore, Patna, Dehradun, they all face similar set of pressing problems – growth of urban population far outpaces the availability of necessary urban infrastructure and amenities that are usually provided by the city authorities.

The lack of public accountability due to citizen's non participation in urban governance has also accentuated such as problems as widespread corruption at all levels of governance, lack of transparency, and also a lack of expertise. Added to these is the limited availability of resources, including financial resource.

In the Early 1990s, when the Indian government amended the constitution to legislate local governance bodies, the emphasis remained on rural India. Urban governance occurred to the government as an afterthought and the 74th constitutional Amendment Act was appended with Panchayati Raj Act in order to provide urban local bodies with constitutional legitimacy parallel to rural local bodies. The amendment proposed political decentralisation and the establishment of a local self-government at the city level with relative political and planning autonomy. Cities generate major tax revenues; moreover, controlling cities means controlling urban infrastructure and, by implication, the entrepreneurial and business classes. The humongous mess in our towns and cities is largely due to systemic inability of the urban local bodies (ULBs) to perform the basic roles and duties.

EVOLUTION OF LOCAL SELF GOVERNMENT IN INDIA


India has primarily been a rural country, history shows that urban dwellings were very much there since the Indus Valley Civilisation. The astonishing uniformity mould for many aspects of classical and modern Indian civilisation.

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Research Synopsis
ON
BLACK LIVES MATTER MOVEMENT AND ITS WORLDWIDE
IMPACT , 2013-2018

PREPARED UNDER THE SUPERVISION OF PROF.
MEENAKSHI YADAV

SUBMITTED BY
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SUBJECT - SEC ECONOMICS
PAPER NAME - RESEARCH METHODOLOGY


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Background

Black Lives Matter (BLM), an international social movement, formed in the United States in 2013, dedicated to fighting racism and anti-Black violence, especially in the form of police brutality. The name Black Lives Matter signals condemnation of the unjust killings of Black people by police and the demand that society value the lives and humanity of Black people as much as it values the lives and humanity of white people.

Black Lives Matter Movement was cofounded as an online movement (using the hashtag #BlackLivesMatter on social media) by three Black community organizers—Patrisse Khan-Cullors, Alicia Garza, and Opal Tometi. They formed BLM after George Zimmerman, a man of German and Peruvian descent, was acquitted on charges stemming from his fatal shooting of Trayvon Martin, an unarmed Black teenager, in Sanford, Florida, in February 2012. Zimmerman, a neighbourhood-watch volunteer, had seen Martin walking in his neighbourhood and called the police because he thought Martin looked “suspicious.” Although police told Zimmerman not to do anything, he followed Martin, got into an argument with him, and shot and killed him. Zimmerman remained free for weeks after the shooting but was finally charged with second-degree murder and arrested in April, after

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demonstrations demanding his prosecution were held in cities across the United States. At his trial more than a year later, Zimmerman claimed that he had acted in self-defense. His acquittal in July 2013 was widely perceived as a miscarriage of justice and led to further nationwide protests.

The BLM movement expanded in 2014 after the police killings of two unarmed Black men, Eric Garner and Michael Brown. Garner died in Staten Island, New York, after a white police officer held him in a prolonged illegal choke hold, which was captured in a video taken by a bystander. Brown, a teenager, was shot and killed by a white police officer in Ferguson, Missouri. Large protests of these deaths in the name of Black Lives Matter captured national and international attention. The BLM movement thereafter continued to play a prominent role in demonstrations against police brutality and racism. Notably, BLM activists protested the deaths at the hands of police or while in police custody of several other Black people, including Sandra Bland, Philando Castile, Freddie Gray, Laquan McDonald, Tamir Rice, Walter Scott, Alton Sterling, and Breonna Taylor.

In 2020 George Floyd, an unarmed Black man, was pronounced dead after a white Minneapolis police officer knelt on Floyd's neck for several minutes, despite Floyd's repeated protests that he could not breathe. Wide circulation of a bystander's video of Floyd's last minutes triggered massive demonstrations in cities throughout the United States and across the globe. The tragedy swayed U.S. public opinion in favour of the Black Lives Matter movement while drawing wide attention to the problem of entrenched racism in American society.

Review of the Literature

The literature review is a very crucial part of any research. In the context of present study, the review of the literature has been discussed under the following five themes:

1. History of Racial Formation in the U.S.
2. Emergence of Black Lives Matter Movement
3. Institutional racism in the United States
4. All Lives Matter Response
5. Significance and Impact of Black Lives Matter Movement

History of Racial Formation in the U.S.

Omi M. and Winant H. (1986) in their book *Racial Formation in the United States from the 1960's to the 1980's* explained how racism emerged in the United States.

In the United States, racial formation started with the birth of slavery. The growing demand for cheap labor in the South and the large size of the lower class led to the enslavement of African Americans (Alexander 2010). To justify the enslavement of black people the elite planter class used the excuse that blacks were a lesser race, thus both slavery and racism was

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Background

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Review of the Literature

SYNOPSIS
ON
MEDICAL TERMINATION OF PREGNANCY (AMENDMENT) ACT 2021

PREPARED UNDER THE SUPERVISION OF
PROF. MEENAKSHI YADAV

SUBMITTED BY
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MEDICAL TERMINATION OF PREGNANCY (AMENDMENT) ACT 2021

INTRODUCTION

India being a democratic country provides every one with the rights and choices that they want to make. Right to abortion is not just a fundamental right but also a human right. Every expecting woman should have the right to make choices and decisions of her own. Right to abortion is one such right and choice provided to the woman. Abortion has been one of the most inflammatory topics all throughout the world and the nation. Everyone has their own perceptions on whether a woman should be allowed to abort her child or not, and whether the Right to Abortion falls under the purview of Right to life or not. In the Indian Penal Code, 1860, abortion, which is stated as "*Causing Miscarriage*" is considered as a punitive offence. It pertains to a '*woman who causes herself to miscarry*'. Among many other rights that women have been granted in India, Right to Abortion must be given as equal weight as the Right to conceive a child and get pregnant. Under the Indian Penal Code, 1860, voluntarily terminating a pregnancy is a criminal offence. The Medical Termination of Pregnancy Act, 1971 allows for aborting the pregnancy by medical doctors (with specified specialisation) on certain grounds. A pregnancy may be terminated up to 12 weeks based on the opinion of one doctor, and up to 20 weeks based on the opinion of two doctors. Abortion was illegal beyond 20 weeks. Termination is permitted only when continuance of the pregnancy would involve a risk to the life of the pregnant woman, cause grave injury to her mental or physical health (including rape and failure of birth control measures), or in the case of foetal abnormalities. Termination is also allowed at any point during the pregnancy if there is an immediate necessity to save the woman's life. The Medical Termination of Pregnancy (Amendment) Bill, 2020 was introduced in Lok Sabha on March 2, 2020 and passed on March 17, 2020 and then finally was passed in Rajya Sabha on March 16, 2021. The Medical Termination of Pregnancy (Amendment) Act, 2021 received Presidential assent, ushering into law key changes in India's abortion law which would allow abortions by unmarried women for contraceptive failure and abortions beyond the earlier gestational limit of 20 weeks. The Act regulates the conditions under which a pregnancy may be aborted. It increases the time period within which abortion may be carried out. The Act regulates the conditions under which a pregnancy may be aborted. The Act increases the time period within which abortion may be carried out. Currently, abortion requires the opinion of one doctor if it is done within 20 weeks of conception and two doctors if it is done between 20 and 24 weeks. Like the existing Act of 1971, the new amendment act also allows termination of pregnancy on the opinion of one doctor,

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BACKGROUND

In 2017 the central government had released a number of model farming acts, The standing committee on agriculture (2018 -19) however, the Noted the several reforms suggestion in the model act had not been implemented by the states .In the past Agriculture produce marketing rules explicitly says that agriculture produce can be marketed at the APMCs To prevent exploitation of the farmers such laws lack in practically and are poor in the enactment and cause a monopoly of market players or middlemen.

The produce passes on the wholesaler in the city, who in turn sell it to small retailers or paddlers, there is price rise of Rs 4 to 5 at every tranche ,The result is that vegetable many of which are purchased at rs 2 or 3 kg to from farmers are sold at 20 to 30 a kg to urban consumers. This system has been going on for 25 to 30 years. thus, cr. Of urban Indians head to pay higher price an million of farmer have gone underpaid.

Also, price rises do not lead to farmers ,If open marketing was allowed, million of farmers would have gained at least rs 4or 5 more kilo for thier produce and enjoy it better leave financially today

In Indian agriculture acts of 2020 of often referred to as the farm bills are three acts initiated by the parliament of India in September 2020, The Lok Sabha approved at the bill on 17 September 2020 and the Rajya Sabha on 20 September in com0

INTRODUCTION

One, Bills give greater freedom to farmer to sell their produce their will apologise intermediaries are at least some level of intermediaries between farmer and buyers. This will ensure that the farmer gets a bigger share of the price paid by the consumer and will their fare improve agriculture incomes.

Two, the clamour for incorporating minimum support price MSP into the laws is pursuit of vested interests as only a handful of farmer enjoy the benefit of MSP based procurement in the country today the agriculture practises in green regulation region of Punjab ,Haryana and western Uttar Pradesh where MSP was the cornerstone have prevented reform and these changes will lead to a creative destruction in agriculture. Unfair exchange is not the basic reason for Predicament of Indian farmers

The argument that these bills will remove intermediaries and therefore make farmers well off ,assume that an unfair exchange is the biggest problem facing India's farmers, but inflation data shows that retail end wholesale prices for important food item, cereals, pulses ,vegetables and fruit move in tandem .this means formgate prices are not completely divorced from the prices prevailing in retail markets and intermediaries do pass on profit or less losses in food market to farmers.

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- ❖ **ROLL NO . => 19BAP9140**
- ❖ **SESSION => 2020-21**
- ❖ **SUBJECT => RESEARCH
METHODOLOGY(SEC)**
- ❖ **TOPIC NAME => FARMER BILL
IMPACT ON INDIAN
ECONOMY**
- ❖ **TEACHER NAME=>MISS
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ASSIGNMENT

[RESEACH METHODOLOGY]

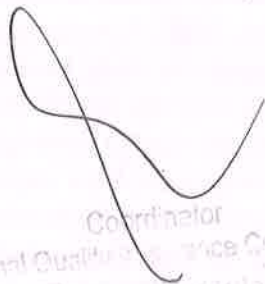
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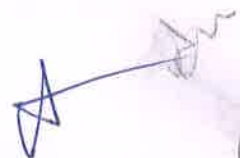
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INTRODUCTION

Mankind has faced the scourge of epidemics and pandemics on numerous occasions in history. The scale of devastation took on enormous proportions, such as during the Black death of 1350 or the Spanish Flu of 1918. While the Black Death evaded India and China due to the limited pan-continental transportation of that era (Sussman, 2011), the Spanish Flu, in contrast, ran riot in India after originating in a distant corner of the globe (Patterson & Pyle, 1991). Thus, investigations on the biological characteristics of these occurrences prompted the deployment of 'lockdowns' as containment measures which are well-documented since the outbreak of the Spanish Flu. The effectiveness of restrictions on public movement and congregation, when implemented at different stages of the disease, resulted in remarkably different outcomes in its propagation (Hatchett, Mesher, & Lips's itch, 2007). In contemporary times, the outbreak of severe acute respiratory syndrome (SARS) was effectively handled by intense monitoring and imposition of restrictions on public movement despite the adverse impact on industrial production and livelihoods (Omi, 2006; Two et al., 2003). While the current Corona Virus Disease (COVID-19) had characteristics similar to a contagious viral infection (Wu et al., 2020), it evaded detection in a large fraction of people due to its asymptomatic nature. Further, the virus uncontrollably spread owing to the extensive movement of people across the globe. Despite its identical nature, its mechanisms of action remain largely unknown. Thus, we invoked the typology of crises (Gunnel, 2005) to classify COVID-19 as an intractable crisis. Most affected countries have imposed partial or total lockdown of their economies as containment measures towards timeboxing the virus (Lau et al., 2020; Remizid & Remizid, 2020). A three-week nation-wide lockdown was imposed by the Indian government from 26 the March 2020, during the early stages of the outbreak of COVID-19 in the country (Barkur, Vibha, & Kamath, 2020). The lockdown was extended by two weeks at the end of the first interval. According to Gupta, Madagascar, and Yadav (2020), the Indian economy functioned at 49-57% of its full activity. Thus, the industrial sector in India came to a grinding halt, resulting in a Gross Domestic Product loss of almost USD 98 billion (Aggarwal, 2020). While the restrictions may have slowed the progress of the disease, nevertheless, the reported cases increased from 360 in the last week of March to 40,263 national cases by the first week of May 2020 (WHO, 2020).

The current global outbreak is different from the outbreaks of yesteryears as it is among the first to emerge in the backdrop of unprecedented advancements in information and communication technology (Okuda & Karazhanova, 2020). Leveraging the technological revolution, industries could function to varying degrees by using facilities such as remote access and online communication, even as factories were are largely shut and there were prolonged restrictions in physical movement. Thus, the current investigation assumes significance by providing a succinct note on how employees have responded to the challenge posed by the outbreak. While urging employees to work from home was the only viable option for organizations to function, we draw upon the employee isolation literature to unearth its psychological impacts (Cooper & Kurland, 2002; Golden, Verga, & Dino, 2008; Mulki & Jaramillo, 2011). Employees working in virtual environments have reported feelings of professional and social isolation due to a lack of sense of belongingness, trust, and camaraderie that engenders during physical presence and interpersonal interactions. Thus, the present study aimed to assess how employees in India were coping with the current global outbreak is different from the outbreaks of yesteryears as it is among the first to emerge in the

ECONOMICS SKILL ENHANCEMENT COURSE (SEC) ASSIGNMENT

ON

INDIA'S RELATIONSHIP WITH CHINA

SUBMITTED BY: RAGGHAV SHARMA

COURSE: BA PROGRAMME

YEAR: 2nd YEAR (4th SEMESTER)

ROLL NO.: 19BAP9230

SESSION: 2020-21

PAPER NAME: Research Methodology

TEACHER: DR. MEENAKSHI YADAV MAM

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BACKGROUND

The last six decades of India-China relationships have seen more of mutual mistrust and suspicion than friendliness and cordial atmosphere. Such mutual mistrust and suspicion grew over the years and have gone beyond proportions in the current context. The challenge has always been to bridge the differences of opinion from both sides and reach to a common understanding on a number of sensitive issues including Sino-Indian border issues. At the same time, one should not come to the conclusion that both India and China have always been at loggerheads. A series of serious attempts have been made by both India and China to bridge the differences more particularly on the border issue. Not only border disputes, we have showed our concern towards many other burning issues too. Such as its territory expansion policy, China's one of the most important project i.e., China Pakistan Economic Corridor (CPEC), its reach in Indian ocean by acquiring various ports development projects in Shri Lanka and Iran, its territorial disputes in south China Sea, its claim over that sea are one of the major issues. Still, we are its ally, we are its neighbours and were had very warm and cordial relations earlier.

On 1st April, 1950, India became the first non-socialist bloc country to establish diplomatic relations with the Peoples Republic of China. There was a brief period of cooperation from 1949-1957 where diplomatic relations were formally established and high-level visits were exchanged. Although India was offered with UNSC permanent seat but India supported for China at that time considering China much deserving candidate. Despite, China's military takeover of Tibet in 1950. Although, the Indian government did not register a serious protest with Beijing, opposition leaders in parliament criticized Nehru's policy on the Tibetan issue but he remained unmoved. the India- China border conflict in 1962 was a serious setback to ties; Prime Minister Rajiv Gandhi's landmark visit in 1988 began a phase of improvement in bilateral relations.

In 1993, the signing of an Agreement on the Maintenance of Peace and Tranquillity along the Line of Actual Control (LAC) on the India-China Border Areas during Prime Minister Narasimha Rao's visit reflected the growing stability and substance in bilateral ties.

India-China relations, though occasionally showing signs of peace and cooperation, have often been afflicted by tension and mistrust. With the potential to make big contributions to regional

CHARGING INFRASTRUCTURE FOR ELECTRIC VEHICLE-A SUSTAINABLE DEVELOPMENT IN INDIA

A RESEARCH METHODOLOGY PROJECT SUBMITTED IN THE PARTIAL FULFILL
FOR THE AWARD OF THE DEGREE OF BA PROGRAMME, IV Semester

TO



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SUBMITTED BY

NIKHIL KUMAR, Roll No.: 19BAP9122

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ABSTRACT

Electric vehicles are gaining popularity worldwide. This trend is given by several factors including the need to reduce air and noise pollution and dependence on fossil fuels. In this paper, we focus on the status of establishment of charging structure for adoption of electric vehicles in India and also concern about the drawbacks of electric vehicle like its limited range, long time duration that is required to charge the electric batteries of vehicles. This research paper also discusses about the potential need for electric vehicles in India. It also includes the research and development which are occurs in the field of electric vehicles to make it more accessible or better with suit the Indian scenario. In this paper we discuss all the initiative which is taken for the betterment of the charging infrastructure and the use of electric vehicles in India.

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SYNOPSIS
ON
HEALTH AND ITS IMPACT ON ECONOMIC GROWTH



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DR. MEENAKSHI YADAV

SUBMITTED BY:

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ABSTRACT

Health is one of the foremost important components of human capital. Being healthy is a state of complete physical, mental and social well-being and not only the absence of any disease. Good health are often thought of as a goal in its title independently of its relationship with growth. The economic performance of any country is directly linked with health performance. When people are healthy and educated, they're more active and enthusiastic in their work and that they can become more productive in their field. It has been seen that health status is crucial for economic growth and good health is a necessary element for the human to provide labour services. It is no secret that health is instrumental to an individual's education, income and overall development.

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ECONOMICS (SKILL ENHANCEMENT COURSE) ASSIGNMENT

ON

Effect Of Covid 19 on the Hospitality Industry

SUBMITTED BY: Gandharv Sehgal

COURSE: BA PROGRAMME

YEAR: 2nd (4th SEMESTER)

ROLL NO. 19B AP9211

PAPER NAME: RESEARCH METHODOLOGY

SESSION 2020-21

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Introduction

On December 8, 2019, the government of Wuhan, China, announced that health authorities were treating dozens of new virus cases, identified as coronavirus disease 2019 (COVID-19) [1].

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Since then, COVID-19, a new strain of SARS (SARS-CoV-2), has grown into a global pandemic and

spreading across many countries. A highly transmissible respiratory disease, COVID-19 spreads

through contact with other infected individuals, with symptoms such as fever, cough, and breathing

problems. Transmission can also occur from asymptomatic individuals, with up to 40% of

infected persons remaining asymptomatic [3]. Other factors that facilitate infection include speed

and efficiency of COVID-19 transmission; airborne transmission; (3) close contact between

infected and non-infected individuals; vulnerability of immunocompromised individuals with

specific underlying health conditions (e.g., hypertension, diabetes, cardiovascular disease, respiratory

problems); susceptibility of persons over 65; and contact with persons who have traveled to

locations with a high number of cases. Critical global responses to control the spreading of the COVID-19 pandemic have included

travel restrictions, shelter-in-place and social distancing orders. Most countries around the world have

imposed partial or complete border closures, with travel bans affecting the majority of the world's

population [6]. With millions suddenly unemployed, uncertainty over economic recovery, and global

fears of continuing COVID-19 spread and its future waves, the hospitality industry was among the

first industries affected, and it will be among the last industries to recover [7].

On 20 January 2020, the United States reported its first COVID-19 confirmed case [8]. In February

and through March 2020, the pandemic began to exact unprecedented economic and social consequences.

Since public health concerns started to escalate in mid-February 2020, U.S. hotels have lost room

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PROJECT PAPER

ROAD ACCIDENTS AND ITS EFFECT ON LIVES AND LIVELIHOODS

NAME - MAYANK SINGHAL

ROLL NUMBER - 19BAP9117

COURSE -BA (PROG)

SEMESTER - 4

PAPER NAME - RESEARCH METHODOLOGY (SKILL ENHANCEMENT COURSE)



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INTRODUCTION

In the present times, personal vehicles are of utmost importance. They are more comfortable and convenient as compare to the public transportation. With increasing per capita income, number of vehicles is also increasing. But with increase in vehicles on road along with careless driving and poor road infrastructure worsens the situation on road. According to the WORLD HEALTH ORGANISATION (WHO), road accidents caused an estimated 1.35 million deaths worldwide in 2016 which means there is one death in every 25seconds.

India is a developing nation. According to Ministry Of Road Transport And Highways (MoRTH), India has 1% of the world's vehicles and accounts for 6% of total road crashes but 11% of all road accident deaths in 2018. India reported 400 fatalities per day in 2018 (as per WHO report) and also tops the world in total road crash deaths the same year. Poor road infrastructure, below par safety standards of vehicles, poor implementation of road safety policies, irresponsible driving ,etc., are some reasons of road accidents. After the accident, the fate of the individual depends upon some factors like severity of accident & injuries, location of injury on body (like whether it's on head, shoulder or any other part of the body), post-accident quality medical treatment (chances of survival is high if treatment is given within an hour of accident which considered as the "golden hour"), etc. Since most of the crashes are from the productive age group (15-59), thus, India had to bear the economic cost too.

The brunt of post-accident is faced by both victim and his family. The emotional trauma followed by the economic burden, breaks down family especially the low-income households. And if the victim is the sole bread-winner of the family the post-crash situation of household fumbles.

But the post-crash damages can be mitigated through - various types of insurances (like vehicle insurance, life insurance, health insurance, etc.,) , support from government , support from society , quality medical care on time, etc. , which provides moral and financial support to the victim and his family. Financial support can reduce the out of pocket expenditure. This in turn can ensure enough financial resources with the family to sustain themselves and to ensure quality education to the children.

For any policy intervention it is important to know the actual number of fatalities and causes of them. For it recently government of India launched the Integrated Road Accident Database (IRAD), an AI tool that will help in analyzing causes of road crashes and in devising safety interventions to reduce such accidents in the country.

India is the signatory of the Brasilia declaration of road safety 2015 which resolved to halve the deaths and injuries from accident by 2020 and to include this target in the 2030 agenda for sustainable development (sustainable development goal – 3.6).

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BACKGROUND/INTRODUCTION

In the budget this year, Finance Minister Nirmala Sitharaman announced the Vehicle Scrappage Policy to banish the usage of older vehicles. As per the policy, "private cars older than 20 years and declared unfit will be scrapped and for commercial vehicles, the age is up to 15 years." As per the Road Transport and Highways Minister Nitin Gadkari, the policy would give a 30 percent boost to the Indian automobile sector and will reach a turnover of Rs 10 lakh crore in the coming years.

The key point of the policy-

- 1- Under India's voluntary vehicle scrappage policy, private vehicles – which are over 20 years old – will have to undergo fitness tests. Commercial vehicles that are over 15 years old will also have to face these tests.
- 2- Fully automated fitness test facilities will be set up on a public-private partnership (PPP) basis involving private firms and state governments. The automated tests will allow no scope for human intervention or fudging of results.
- 3- Those who choose to drive a vehicle that has failed the automated test will face substantial penalties, and such vehicles could also be impounded.
- 4- Additionally, even vehicles older than 8 years that pass the automated tests will be subjected to a 'green tax', which will see owners shell out an additional 10 percent to 25 percent of road tax at the time of the renewal of the vehicle's fitness certificate.
- 5- Those who opt for the voluntary scrappage scheme and have their old vehicle scrapped, will be eligible for benefits and incentives as part of the policy when they purchase a new vehicle.
- 6- The vehicle scrappage policy has been devised to promote sales of new vehicles with improved fuel efficiency and low pollution levels, as well as to slash India's Rs 10 lakh crore expenditure on crude imports.
- 7- As per the Road Transport and Highways Minister Nitin Gadkari, the policy would give a 30 percent boost to the Indian automobile sector and will reach a turnover of Rs 10 lakh crore in the coming years.
- 8- Around 1 crore aging vehicles are set to be scrapped once the policy is implemented, according to Gadkari.
- 9- As a direct result of the policy being put in place, up to 50,000 jobs and investments of around Rs 10,000 crore are expected to be generated.
- 10- According to Gadkari India's automotive sector will be amongst those offering the highest employment opportunities in the country going forward.
- 11- The Central Government has advised states to provide a rebate of up to 25 percent on-road taxes for newly purchased vehicles and a waiver on new registrations if the buyer provides the scrappage certificate.

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ASSINGMENT TOPIC - vechile scrappage
policy and its effect on indian environment,
automobile industry and economy.

NAME OF THE PAPER - Research methodology

NAME - BRIJESH YADAV

ROLL NO.- 19BAP9107

COURSE- BA(Program)

SEMESTER- 4th semester

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ECONOMICS (SKILL ENHANCEMENT COURSE) ASSIGNMENT

ON

THE SOCIAL IMPACTS OF MIGRATION IN INDIA

SUBMITTED BY : HIMANSHI SHARMA

COURSE : B.A. PROGRAMME

YEAR : 2 (4 th SEMESTER)

ROLL NO : 19BAP9214

PAPER NAME : RESEARCH METHODOLOGY

SESSION : 2020-2021

TEACHER : DR. MEENAKSHI YADAV

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BACKGROUND

Any movement from one locality to another to another area of humans is called Human migration. For example, you live in Madhya Pradesh and moves to Delhi so you can say that you are migrating from Delhi to MP. But by law, you are not a migrant because article 19 of the Indian constitution allows you to do so without being called a migrant. But you live in India and then moves to the US for any reason might be, then you will be called a migrant.

Migration is an equilibrium process which reduces regional disparities at different stages of development and a process which is as old as human civilization. Migration including refugee flows, asylum seekers, internal displacement and development induced displacement increased considerably in volume and political significance since the end of the cold war. It has become an integral part of North – South relationships and is closely linked to current processes of global social transformation. This makes it as important for sociologists to develop empirical research and analysis on migration as it is to include it in their theoretical understandings of contemporary society. The study of migration is linked to research on economic migration but has its own specific research topics, methodological problem and conceptual issues. Migration needs to be analysed as a social process in which human agency and social network play a major part. It gives rise to loss of state control, especially in the context of recent concerns about migration and securities. In this context, it is essential to question entire sociological approaches, which have been based on the principle of relatively autonomous national societies.

Migration is often associated with better human capital at both individual and household level, and with better access to migration networks. Age is also important for both work and non-work migration. People may migrate as individuals, in family units or in large groups. There are four major forms of migration: invasion, conquest, colonization and emigration/immigration.

In contemporary times, migration governance has become closely associated with state sovereignty. States retain the power of deciding on the entry and stay of non-nationals because

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May, 2021

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Paper Name- Research &
Methodology

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“INDIA-CHINA TRADE RELATIONSHIP”

BACKGROUND

The process of dialogue initiated by the governments of the two countries at that point of time was quite helpful in identifying the common trade interests. Efforts were initiated to make the most of their economic strengths so as to further the economy relations between India and China. In the year 1984, India and china entered into a Trade Agreement, which provided them with the status of Most Favored Nation (MFN). It was in 1992 that the India and China got involved in a full-fledged bilateral trade relation. The year 1994 marked the beginning of a new era in the India- China economic relations. In this year a double Taxation Agreement was signed between India and China. The government of both the countries also took the necessary initiative to turn into dialogue partners in the Association of Southeast Asian Nations (ASEAN). In 2003, Bangkok Agreement was signed the two countries. Under this agreement both India and china offered some trade preferences to each other. India provided preferences on tariff for 217 products export from India. In 2003, India and China entered into an agreement to initiate open border trade via the Silk Route. The two countries have also shown interest to take part in a multilateral trade system as per the WTO commitments. China has already been the top trading partners of India in the recent time. The economic relation between the two countries is considered to be one of the most significant bilateral relations in the contemporary global economic scenario and this trend is expected to continue in the years to come. Today, China is India's largest trading partner; whereas India is within the top ten of China's trading partner.

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PAPER NAME:

RESEARCH METHODOLOGY

SUBMITTED BY:

NAME KATAKAM SAI SAMPATH

COURSE B.A PROGRAM 2ND YEAR

ROLL NUMBER 19BAP9113

SEMESTER 4TH

SESSION 2020-2021

SUBMITTED TO:

MEENAKSHI YADAV MA'AM

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TOPIC:

**“SLOW AGRICULTURAL GROWTH AND
AGRARIAN CRISIS IN INDIA”**

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“SLOW AGRICULTURAL GROWTH AND AGRARIAN CRISIS IN INDIA”

BACKGROUND

India's agricultural growth in the past two decades has been slower than the rest of the economy. This has led to resentment among the rural population that the bulk of the benefits of development have gone to the urban areas and that public development policy is more concerned with promoting urban interests at the cost of ignoring the concerns of rural areas.

This resentment is widespread, strong and grows to crisis proportions whenever there are severe natural calamities as witnessed in the last few years. This paper is an effort to explore the deeper issues underlying the past experience and future prospects of growth of agriculture and the rural economy. It also examines how this growth has impacted (and is likely to impact) various sections of the rural population.

INTRODUCTION

The state of the country's agriculture and of its agrarian economy has been and continues to be the subject of discussion and debate. The following are the major concerns highlighted in the literature about the trends in the performance of the sector, their adverse socioeconomic impact and the needed remedial measures.

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SYNOPSIS
ON
CORPORATE GOVERNANCE FAILURE AT YES BANK, 2018 – 2019

PREPARED UNDER THE SUPERVISION OF
PROF. MEENAKSHI YADAV

SUBMITTED BY
SHRUTI KHANDELWAL

DEEN DAYAL UPADHYAY COLLEGE
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NEW DELHI
2021

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INTRODUCTION

Yes Bank's independent director and audit committee chairman Uttam Prakash Agarwal resigned from his post concerning and citing the reasons of corporate governance failures, compliance failures and flawed management practices of the company and the capital raising decisions taken by upper management.

The Board of Directors plays a critical part in the decision making of any company. But when upper management overpowers the board of directors, the overall health and direction of the company suffers. The very same happened in the case of Yes Bank. The process followed by the management team in appointing the advisors, merchant bankers, briefing to the board was not proper at all and also, the independent directors were not included in capital raising decisions of the company.

According to the statement from Prakash Agarwal, the bank is run by management and not by the board of directors, resulting in total failure of corporate governance. He was unaware of the loan disbursements and all the plans of the management related to rising of capital. Also, he was not allowed to function as an independent director, so he was concerned that if anything goes wrong, the directors would be blamed for the same. Being the ex-president of The Institute of Chartered Accountants of India, he did not like the process adopted by the company in its decision-making process.

The independent directors are appointed by the shareholders and stakeholders and are independent to look into the interest of the company. But when majority of the members on the board are the senior leaders of the same company, it is difficult for the independent director to oppose any decision taken by the majority members of the board.

Yes Bank opposed the decision of financial regulators to not take excess risk and started aggressive lending and under reporting the bad loans. With lending in risky businesses and misreporting the Non-Performing Assets, the company landed itself in the muddle as a result of which it was not able to raise enough capital given the loss of confidence in the market. It all happened because of some flawed decisions taken by the management without intimating and taking advice from independent directors.

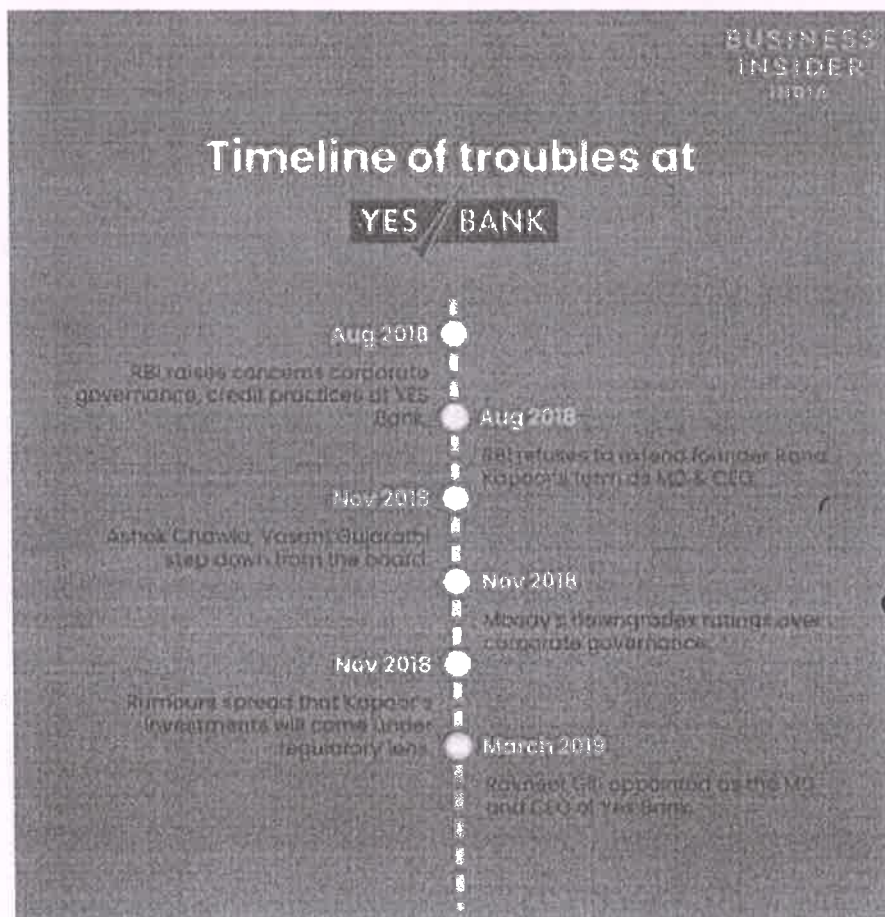
BACKGROUND INFORMATION

YES Bank Ltd runs three units as following: YES Asset Management Services, YES Capital and YES Bank. Once the country's fifth-largest private lender by market capitalisation, YES Bank was founded by Rana Kapoor and Ashok Kapoor in 2004. To talk about few of its accolades the bank was ranked number 1 bank in the Business Today-KPMG Best Banks Annual Survey 2008. Also, YES Bank was the first institution globally to receive funding through IFC's Managed Co-Lending Portfolio Programme and the first Indian bank to raise loan under IFC's A/B loan facility. On September 2014, YES Bank announced it had received

Page 2 of 3 a ratings upgrade from credit rating agency ICRA and CARE for its various long-

term debt programmes. On December 18, 2017, YES Bank made its entry in the 30-share S&P BSE Sensex.

The bank's loan book on March 31, 2014, was Rs 55,633 crore, and its deposits were Rs 74,192 crore. Since then, the loan book has grown to nearly four times as much, at Rs 2.25 trillion as on September 30, 2019. While deposit growth failed to keep pace and increased at less than three times to Rs 2.10 trillion. The bank's asset quality also worsened and it came under regulator RBI's scanner. YES Bank has a substantial exposure to several troubled borrowers, including the Anil Ambani-led Reliance group, DHFL and IL&FS. The tipping point came when one of the bank's independent directors Uttam Prakash Agarwal, resigned from the board in January 2020 citing governance issues.



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In its 2015-16 annual report, Yes Bank declared that it had bad and dodgy loans of about Rs 749 crore, on its books. This gross NPA (Non-Performing Assets) figure was actually a gross understatement. Prodded by the RBI's new norms, Yes Bank had to publish revised bad-loan numbers for 2015-16. It turned out to be a whopping Rs 4,926 crore, almost seven times the number it had declared earlier. This showed how severely the company failed in corporate governance and how the management was trying to put all the NPAs under the carpet. One

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reason cited for underreporting in tenure of Rana Kapoor and Ravneet Gill is that their tenure was ending and any negative news could have affected their tenure extension.

The best practices recommend that at least 3/4th of board members should be independent, the board should have an independent chairman and not an individual who serve the role of both CEO & chairman of the board, Also, board election should be conducted annually as this it helps directors to make more careful decisions and be more attentive to shareholders because they can cast their vote to keep or a director each year.

REVIEW OF THE LITERATURE

The literature review is a very vital part of any research. In the reference of present study, the review of the literature has been discussed under the following three themes:

1. Corporate governance and its best practices
2. Non-performing assets
3. Risk compliances and policy for whistle blower and ombudsman

Corporate governance

Corporate governance is the combination of rules, processes or laws by which businesses are operated, regulated or controlled. Purpose of corporate governance is to implement a check and balances system that minimizes conflicts of interest. Conflicts typically arise when two involved parties have opposing opinions on the way the business should be conducted. Since a board of directors is typically a mix of internally and externally involved members, corporate governance is a non-biased way to approach conflict.

Non-performing assets

A nonperforming asset (NPA) refers to a classification for loans or advances that are in default or in arrears. A loan is in arrears when principal or interest payments are late or missed. A loan is in default when the lender considers the loan agreement to be broken and the debtor is unable to meet his obligations.

Nonperforming assets are listed on the balance sheet of a bank or other financial institution. After a prolonged period of non-payment, the lender will force the borrower to liquidate any assets that were pledged as part of the debt agreement. If no assets were pledged, the lender might write-off the asset as a bad debt and then sell it at a discount to a collection agency.

Policy for risk compliances

Whistleblowing means the reporting by employees of suspected misconduct, illegal acts or failure to act within the council. The aim of this policy is to encourage employees and others who have serious concerns about any aspect of the council's work to come forward and voice these concerns.

The Ombudsman functions within a set geographical jurisdiction and can entertain disputes relating to partial/total repudiation of claims, delay in settlement of claims, any dispute on the

legal construction of the policies in so far as such disputes relate to claims, disputes regarding premium paid or payable in terms of the policy and non-issuance of insurance documents.

DEFINITION, RATIONALE, AND SCOPE OF THE STUDY

Corporate governance is the system of rules, practices, and processes by which a firm is directed and controlled. Corporate governance essentially involves balancing the interests of a company's many stakeholders, such as shareholders, senior management executives, customers, suppliers, financiers, the government, and the community.

Since corporate governance also provides the framework for attaining a company's objectives, it encompasses practically every sphere of management, from action plans and internal controls to performance measurement and corporate disclosure.

The rationale of this research is to understand the impact of corporate governance failure on the Indian economy as well as on Indian banking. The impact that Yes Bank's troubles will have on the banking sector are contagion effect, panic spreads faster than confidence as investors are, generally, risk averse. The implosion of Yes Bank may affect the business of other private lenders and shadow banks. Also this case affects the SBI and also impacted the enhanced scrutiny of promoter – run banks. Yes Bank's problems can have a crippling effect on the Indian economy, too. The sudden curbs on its operations, and limited functionality of its cards, will result in merchants' money getting frozen. The mutual fund industry has also impacted by this failure. This case increased the supervisory role for RBI. The Yes Bank crisis comes in the backdrop of a prevailing environment of financial stress within the telecom and the airline sectors, prompting reconsideration by global investors as to the efficacy of sector-related policies. Yes Bank was one of the many private banks offering generous interest rates (as much as 7%) on its savings accounts. This practice is simply not sustainable. Now, the Yes Bank crisis is sure to prompt a reconsideration of the business model.

The study will focus on the period from august 2018 to march 2019 with special emphasis on the NPAs (non-performing assets). The study will aim to analyze how corporate governance failure affected the Indian economy and Indian banking sector.

The research is intended to open up further discussion with the Research Questions and Hypothesis highlighted below.

RESEARCH QUESTIONS

1. How the corporate governance failure affected the Indian economy and Indian banking sector?
2. How these conflicts between management and board of directors can be avoided?
3. How the corporate governance effectiveness can be improved?
4. Whether it was the right step taken by Mr. Uttam Prakash in his capacity?
5. Given that depositors' money is at stake in the banking industry, what can we do to ensure such things do not happen again?

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HYPOTHESIS

Yes Bank's management focused more on short term profit instead of long term sustainable goals. So that there can be balance in the economy. But due to their wrong decision making, it led to high NPA.

RESEARCH METHODS

The study is empirical in nature. The period covered under the study is of eight months. The theoretical part includes the understanding of corporate governance and its importance in corporate industry and also the role of Board Of Directors in adapting to best practices for the betterment of the society.

The available sources include research articles, national and international newspapers, internet sources.

CONCLUSION

The taxpayer's money is at stake in the banks, and the plaguing of such governance issues poses a big threat to the economy of the nation. In order to regulate such concerns, apart from regulatory frameworks, the internal conflict of interest in the company needs to be addressed. Good governance practices and credit discipline should be put in place in order to ensure the economic health of the company. The company is also required to put in place specific conflict management and risk management policies wherein the risk or compliance team should directly report to Board rather than upper management and also their remuneration should not be linked with the profitability of the bank.

The unfortunate events at Yes bank is the clear example of how the promoter driven banks needs special focus from regulators and the loopholes in corporate governance needs to be plugged out from the roots. For the healthy survival of any bank, the golden rule of high corporate governance proves to be vital. In case of Yes Bank, the company need to make sure that the decisions taken must be in the interest of the company rather than management, whose remuneration is linked to the profit of the bank. The steps should be taken in the direction to regain the confidence from shareholders and investors.

REFERENCES

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2. Data and statistics: Indian Finance Association

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SEC Economics Assignment

Name- Lakshay yadav

Class- BA PROGRAM 2nd year

Submitted to- Meenakshi yadav mam

Topic- Ease of doing business





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Ease of Doing Business

India climbed 14 rungs in the World Bank's Ease of Doing Business 2020 survey to stand at 63, among 190 countries, making it the one of world's top 10 most improved countries for the third consecutive time.

About/Background

The ease of doing business index is an index created jointly by Simeon Djankov and Gerhard Pohl, two leading economists at the Central and Eastern Europe sector of the World Bank Group.

The academic research for the report was done jointly with professors Oliver Hart and Andrei Shleifer.

A nation's ranking on the index is based on the average of 10 sub-indices

Starting a business – Procedures, time, cost, and minimum capital to open a new business

Dealing with construction permits – Procedures, time, and cost to build a warehouse

Getting electricity – procedures, time, and cost required for a business to obtain a permanent electricity connection for a newly constructed warehouse

Registering property – Procedures, time, and cost to register commercial real estate

Getting credit – Strength of legal rights index, depth of credit information index

Protecting investors – Indices on the extent of disclosure, extent of director liability, and ease of shareholder suits

Paying taxes – Number of taxes paid, hours per year spent preparing tax returns, and total tax payable as share of gross profit

Trading across borders – Number of documents, cost, and time necessary to export and import

Enforcing contracts – Procedures, time, and cost to enforce a debt contract

Resolving insolvency – The time, cost, and recovery rate (%) under bankruptcy proceeding

An 11th area – employing workers – is measured, but not factored into the score.

The Doing Business project also offers information on following datasets:

Distance to frontier – Shows the distance of each economy to the “frontier,” which represents the highest performance observed on each of the indicators across all economies included since each indicator was included in Doing Business

Entrepreneurship – Measures entrepreneurial activity. The data is collected directly from 130 company registrars on the number of newly registered firms over the past seven years

DEEN DAYAL UPADHYAYA COLLEGE

ECONOMICS (Skill enhancement course)

INTERNAL ASSESSMENT

Assignment

NAME - SHRUTI

ROLL NO. - 19BAP9030

COURSE - B.A. PROGRAMME

SEMESTER - 4TH

YEAR - 2nd

SUBJECT - RESEARCH METHODOLOGY

SUBMITTED TO - MEENAKSHI MAM

DATE OF SUBMISSION – 5 APRIL, 2021

DAY OF SUBMISSION - MONDAY

TOPICS COVERED:

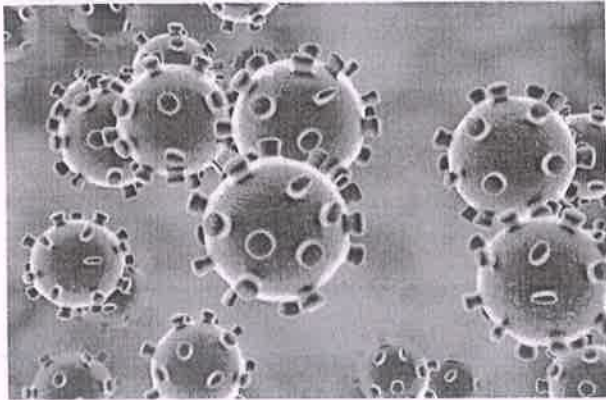
~ CORONAVIRUS AND DOMESTIC VIOLENCE OR
INCREASE IN THE DOMESTIC VIOLENCE.

So, let's begin.....

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Coordinator
Internal Quality Assurance Cell (IQAC)



Introduction:

Coronavirus (covid 19) has been a biggest problem of 2020 around the world. It is an infectituous disease which looks like very normal disease where a person feels normal symptoms like moderate respiratory illness , cough, cold but has very dangerous consequences leading to take away the life of a person. This dangerous virus had led to many negative impacts on everyone's life . Countries across the world were battling covid -19 by enacting the measures such as national quarantines, border closures, online work, and school closures to reduce the speed of transmission. As of May 7,2020, more than one -third of the entire population of the world was under some form of restriction with measures varying from region to region. For example, while the United states had an inactive lockdowns regionally, countries such as Italy endforced citizens to stay indoors indefinitely. As per the report of June 2020 the total cases of covid - 19 are numbered 73,57,153 with the United states recording the most cases at 20,47,147, Brazil in second place with 7,42,084 cases and Russia in 3rd place with 4,93,657 cases.

Domestic violence refers to the harm or abuse caused physically ,mentally ,socially and emotionally by a partner to another partner in a marriage or relationship. Covid 19 made it even more worse. Furthermore, looking beyond these numbers shows us that covid- 19 has affected families, relationships and societies in unprecedented ways, leading to an economic crisis. Covid- 19 is putting societies to test the extent that goes above and beyond political leadership, healthcare infrastructure, show self care systems and international solidarity. One such significant impact that is currently being felt do an alarming extent is the effects of increases in domestic violence cases during the pandemic. Although the lockdowns and movement restrictions imposed by countries around the world are slowing down the infection rate of covid- 19, data suggests that "domestic abuse is acting like an opportunistic infection, flourishing in the conditions created by the pandemic. Research suggest that social isolation is

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Ease of Doing Business

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Official stamp of Deen Dayal Upadhyay University of Education, Dwarka, New Delhi-78. The stamp is partially obscured by a large handwritten 'X' and other marks.

Official stamp of the International Quality Assurance Cell (IQAC), Deen Dayal Upadhyay College, University of Delhi. The stamp is partially obscured by a large handwritten 'X' and other marks.

Resolving insolvency – The time, cost, and recovery rate (%) under bankruptcy proceeding

Improving Ease of Doing Business

Constitute a National Compliance Commission

India's regulations need an urgent review.

An empowered commission must be set up to reduce the compliance burden by at least 50%.

It should focus on identifying duplication and redundancy among compliance requirements.

The commission should remove ambiguity, standardise implementation and simplify record keeping.

Create UEN (Unique Enterprise Number)

Indian enterprises deal with multiple identities (PF, ESIC, PAN, CIN, TAN etc.) issued by different central and state departments.

There is often no single source of truth to build a corporate profile. This can be resolved with a UEN along the lines of Aadhaar.

All departments of the government and financial institutions will register an enterprise based on UEN.

It will help create a holistic corporate profile for governance, credit, risk and compliance.

Create enterprise document vault

India needs to go paperless.

Managing paper is inefficient, expensive and non-sustainable.

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TO WHOMSOEVER IT MAY CONCERN

THIS IS TO CERTIFY THAT REGT. NO. NL20SWPB50356 RANK Fit. Cdt.
NAME NIKSHUBHA PANDEY WHO IS ENROLLED IN UNIT 2 DELHI
GIRLS AIR SQN NCC, NEW DELHI, HAS WILLINGLY VOLUNTEERED TO OFFER
HER SERVICES IN THE FIGHT TO OVERCOME THE COVID-19 PANDEMIC IN
NATIONAL INTEREST.

WE SMT NAMRATA PANDEY
AND
SHRI YOGESH PANDEY

WHO ARE HER LEGAL GUARDIANS / PARENTS GIVE OUR CONSENT TO HER
VOLUNTEERING AS A HEALTH WORKER / SOLDIER IN THIS FIGHT IN THE
CAUSE OF THE NATION.

(SIGN)

MOTHER'S NAME NAMRATA PANDEY
AADHAAR NUMBER 412162537000

(SIGN)

FATHER'S NAME YOGESH PANDEY
ADHAAR NUMBER 437232330596

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RESEARCH WORK
ON
INCREASE IN DIVORCE RATES
SUBMITTED BY
RIYA RAI



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BACKGROUND

Divorce is a process through which marital bond ceases to be in existence as per law and the couple can no longer be called the husband or the wife. The family is not a static institution. In recent decades, marriage rates have fallen, divorce rates have been risen, and the defining characteristics of marriage have changed. Now marriages are not bounded to the rituals and customs, once you got married so that you have to live your whole life with that one person. People now want to explore more; they don't want to tied up into something or with

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someone. Everyone is searching for the better one. That is why the rate of divorces is increasing dramatically in last few decades.

Domestic violence is being a very big reason for the separation of marriage. Everyday, news showing increasing cases of domestic violence sometimes for the dowry they beat the women sometimes after getting drunk husband beat his wife and sometimes the male ego oblige them to do so.

Misunderstanding is being the big part of having divorce nowadays. Partners don't find themselves as a compatible couple and the irony is, they don't want do anything to made themselves more perfect or compatible what they want to do is what they find easier is to keep changing the companion. Husband is frustrated from his office work, wife from her household stuffs and children, they don't get time to sit together and ask about what is going on in their lives what they are suffering from what they want from life, so not giving proper time to each other is also act as a fuel for the fire, which eventually ended with the option of divorce.

Couples nowadays may be thinking that not caring for the relationship they are having with the person is cool and make them so called advance or modern. But they are forgetting that this husband-and-wife relation is unlike from other relations. Here a small spark can cause a severe fire and burn everything. The relation of husband and wife is very fragile, strong, deep, the main components of the relation are trust, loyalty, understanding, a bit of adjustment sometimes may be more than what you have thought, the art of tolerance. Relationship is always not about having fifty-fifty share sometimes it is sixty-forty and sometimes even eighty-twenty. It is like a growing plant if you don't water it, it will shrivel or may be like the colours of the painting which will fade away after sometimes. It needs a regular maintenance, care, love, understanding, and may be space too, but a temporary one to restart to regain the same energy as you had in the beginning the same level of confidence the love and may be to realise that going far away or leaving someone is not the option but trying till you can is .

These fast-moving lives development of new technologies social sites this lime light of the virtual world is also pouring ghee into the fire. That sharing of emotions and feeling has lost its value, posting on Instagram and Facebook is on trend you should look happy and joyful on Instagram whether you are happy in your real life or not. Maintaining your self on social media is more the matter of concern for the people.

Increasing divorces is just the result of these small thing which people are not considering as the matter of worry. They don't want to sort the things what they do is put it on tomorrow or they will stop talking to each other they ignore each other try to escape from the situation. Divorce is not a sudden action it can never be, whereas it is the reaction of your actions, everything started from the very scratch and at last it falls apart. People never try to find out the cracks, what are the problems with their partner what they should do to fill those cracks. And then they wonder why they want divorce how a happy and peaceful relation is now irritating them that they have to separate from each other.

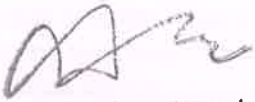
In this corona period, the cases of fights and tension between the husband and wife has soared the rungs. In some places where lockdown bought happiness to people and gave

**PROJECT PAPER
ON
ROLE OF WOMEN IN INDIA'S ECONOMIC DEVELOPMENT**

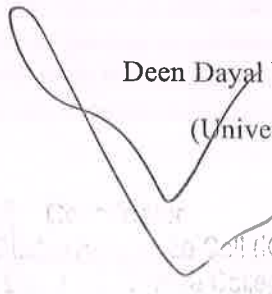
**SUBMITTED TO
MEENAKSHI YADAV MA'AM**

**SUBMITTED BY
NAME: AYUSH YADAV
COURSE: B.A. (PROGRAMME)
SEMESTER: IVTH
ROLL NO.: 19 B A P 9 2 0 6
SESSION: 2020-2021
PAPER NAME: RESEARCH METHODOLOGY**




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BACKGROUND

An impressive 133 million Indians rose out of poverty between 1994 and 2019. An achievement that India and the world can be proud of while worthy of celebration, the success could have been more dramatic if a greater number of women could contribute to the workforce.

In India in 2019 only 20% of adult Indian women had a job or were actively looking for one compared to 79 percent of men. Infact almost 20 million women had dropped out of the workforce between 2005-2019. This is equivalent to entire population of Sri Lanka.

Worryingly, India's rapid urbanisation has not yet encouraged more women to join the labourforce. Rural jobs have been decreasing and not enough women have been able to make the transition to working in urban areas. This makes the need for greater public safety and safe transport.

India ranks 120 among 131 countries in female labour force participation rates and rates of gender based violence remain unexpectedly high.

It's hard to develop in an inclusive and sustainable way when half of the population is not fully participating in the economy. At 17% of GDP the economic of Indian women is less than half of the global average, and compares unfortunately to the 40% in China, for instance. India could boost it's growth by 1.5 % points to 9% per year if around 50% of women could join the work force. This is not to say that India have not had some success. Some young women are staying in school longer, and other are choosing to leave work as circumstances change and income rise change, but we must turn the tide to realise its development potential.

Valuing girls and women is critical in making societies more prosperous and woman's development and economic empowerment is highly connected with poverty reduction as women also tend to invest more of there earnings in their children and communities.

The make in India mission ensures the training in India such that training programs are sensitive to their needs helping to build. Its an appropriate time to revisit and reform outdated legislation and policies acted as deterrents to women entering or staying in the labour market. Fostering the creation better jobs, providing support for children and elder and ensuring mobility to and from work can remove significant structural barriers for women to access employment.

REVIEW OF THE LITERATURE

In the context of present study, the review of the literature has been discussed under the following five different sectors :

1. Agricultural sector
2. Health sector
3. Education sector
4. Defence sector

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Deen Dayal Upadhyaya College
University of Delhi

Assignment

Name - Satyavrat


Course - B.A. Program

Year - II

Semester - IV

Roll.no - 19BAP9133

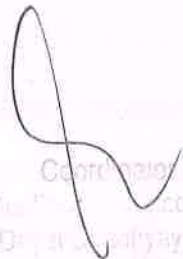
Subject - Research methodology


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Case Research as a Methodology for Industrial Networks; A Realist Apologia

Introduction :-

Few researchers involved in research in the business or marketing areas spend much time thinking about research methodology. Fewer still show any concern with or interest in epistemology. To an outsider this state of affairs might seem strange. After all such researchers would, most likely, if asked what they were doing, make claims such as "we seek to gain understanding" or "we are pushing back the frontiers of knowledge". And epistemology is the philosophical basis for claiming to know what we know; the substantive basis for our knowledge claims. It is even stranger that we, who research what managers do, and often criticise them for making decisions based on few or dubious data, do not apply the same criteria to our own activities.

It would be interesting to speculate at length why this anomaly has occurred. However for the purposes of this paper it will suffice to offer just one or two observations. It may be that we are so ensconced in our own paradigm that we simply take for granted that the methodologies we employ are correct because we are doing what everyone else does. Someone else has done the thinking for us. It may be that the research training we receive is inadequate; the apprentices learning from masters who themselves have little background in methodology. All this, perhaps, the result of being involved in immature disciplines. Another contributory factor may be that to many researchers the epistemological justification of their work is self evident. What you see is what you get. I collected these data and this is what they mean So what is the fuss all about? Finally, for those who have dipped their toes in the waters of philosophy, they may seem very cold indeed. There are no tight little prescriptions. It is hard work and much of what is written appears incomprehensible. It does not help that philosophy proceeds by way of argument

PROJECT PAPER
ON
FINANCIAL ACCENTUATION OF THE SUSTAINABLE DEVELOPMENT GOALS
(SDG's) IN INDIA, 2014-2021

SUBMITTED TO
MEENAKSHI YADAV MA'AM

SUBMITTED BY
NAME: ASHUTOSH KUMAR YADAV
COURSE: B.A. (PROGRAMME)
SEMESTER: IVTH
ROLL NO.: 19 B A P 9 2 0 5
SESSION: 2020-2021
PAPER NAME: RESEARCH METHODOLOGY

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Deen Dayal Upadhyaya College
(University of Delhi)

2021

Internal Quality Assurance Cell (IQAC)
Deen Dayal Upadhyaya College
University of Delhi

BACKGROUND

Vasudhaiva Kutumbakam, an ancient Indian phrase meaning “the world is one family”, pithily captures the spirit of India’s approach to all aspects of life including economic development. The Sustainable Development Goals (SDGs) are, thus, part and parcel of the country’s longstanding tradition and heritage. Indeed, the goals substantially reflect the development agenda of India, as Prime Minister Narendra Modi himself noted in his speech at the United Nations Sustainable Development Summit in September 2015. To quote him, *“Much of India’s development agenda is mirrored in the Sustainable Development Goals. Our national plans are ambitious and purposeful; Sustainable development of one-sixth of humanity will be of great consequence to the world and our beautiful planet.”*

Sustainable development can be defined as development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

Increasing growth rate and rapid urbanisation has spurred the demand for natural resources, exerting pressures on the environment and raising sustainability concerns. Resource efficiency can be a major tool to meet the resource needs of the country at the least possible cost to the environment.

The global community after dedicated and consistent efforts has developed an agenda that promises to address the concerns of human development for all while ensuring the health of the planet and its ecosystem. The year 2020 marked the fifth anniversary of adoption of 2030 Agenda for Sustainable Development and the Paris Agreement. The 2030 Agenda for Sustainable Development and its 17 SDGs adopted by World leaders in 2015 presents a roadmap for future development trajectory to all nations with focus on poverty eradication, environmental sustainability, peace and prosperity. The achievement of these goals is an imperative for, not just, any particular country but the global community as a whole.

The implementation of SDGs needs every country to judiciously prioritise, and adapt the goals and targets in accordance with local challenges, capacities and resources available.

India is striving to combine the element of ‘sustainability’ to economic development through well-designed initiatives for inclusive development enshrined in its policies: electrify rural households, augment the usage of renewable sources, eliminate malnutrition, eradicate poverty, access to primary education to all girls, provide sanitation and housing for all, equip

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Deen Dayal Upadhyaya College
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2021

BACKGROUND

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DEPARTMENT OF ENVIRONMENTAL STUDIES
UNIVERSITY OF DELHI

Environmental Studies*
(Six-month Module for Undergraduate Courses)

Unit 1 : Introduction to environmental studies

- Multidisciplinary nature of environmental studies
- Scope and importance
- Need for public awareness.

(2 lectures)

Unit 2 : Ecosystems

- Concept of an ecosystem.
- Structure and function of an ecosystem.
- Energy flow in an ecosystem: food chains, food webs and ecological pyramids.
- Ecological succession.
- Case studies of the following ecosystems :
 - a) Forest ecosystem
 - b) Grassland ecosystem
 - c) Desert ecosystem
 - d) Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

(6 lectures)

Unit 3 : Natural Resources : Renewable and Non-renewable Resources

- Land resources and land use change : Land as a resource, land degradation, landslides (natural & man-induced), soil erosion and desertification.
- Forests & forest resources : Use and over-exploitation, deforestation, case studies.
- Impacts of deforestation, mining, dam building on environment, forests, biodiversity and tribal populations.
- Resettlement and rehabilitation of project affected persons; problems and concerns, case studies
- Water resources: Use and over-exploitation of surface and ground water, floods, drought, conflicts over water (international & inter-state).
- Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies.
- Energy resources: Renewable and non renewable energy sources, use of alternate energy sources, growing energy needs, case studies.

(8 lectures)

Unit 4 : Biodiversity and Conservation

- Levels of biological diversity : genetic, species and ecosystem diversity.
- Biogeographic zones of India
- Ecosystem and biodiversity services: Ecological, economic, social, ethical, aesthetic and Informational values
- Biodiversity patterns and global biodiversity hot spots
- India as a mega-biodiversity nation; Endangered and endemic species of India
- Threats to biodiversity : Habitat loss, poaching of wildlife, man-wildlife conflicts, biological invasions.
- Conservation of biodiversity : In-situ and Ex-situ conservation of biodiversity.

(8 lectures)

Unit 5 : Environmental Pollution

- What is environmental pollution and its types?
- Causes, effects and control measures of :
 - a) Air pollution

- b) Water pollution – freshwater and marine
- c) Soil pollution
- d) Noise pollution
- e) Thermal pollution
- Nuclear hazards and human health risks
- Solid waste management : Control measures of urban and industrial waste.
- Role of an individual in prevention of pollution.
- Pollution case studies.

(8 lectures)

Unit 6 : Environmental Policies & Practices

- Concept of sustainability and sustainable development.
- Water conservation & watershed management.
- Climate change, global warming, acid rain, ozone layer depletion.
- Disaster management : floods, earthquake, cyclones and landslides.
- Wasteland reclamation.
- Environment Protection Act.
- Air (Prevention and Control of Pollution) Act.
- Water (Prevention and control of Pollution) Act
- Wildlife Protection Act
- Forest Conservation Act
- Issues involved in enforcement of environmental legislation.
- Environment: rights and duties.

(7 lectures)

Unit 7 : Human Population and the Environment

- Population growth, demographic variation among nations.
- Environment, human health and welfare; infectious and lifestyle diseases in contemporary world.
- Value Education: Environmental ethics.
- Environmental communication and public awareness, case studies.

(6 lectures)

Unit 8 : Field work

- Visit to an area to document environmental assets river/ forest/ grassland/ hill/ mountain
- Visit to a local polluted site-Urban/Rural/Industrial/Agricultural
- Study of common plants, insects, birds.
- Study of simple ecosystems-pond, river, hill slopes, etc.

(Equal to 5 lectures)

Suggested Further Readings:

- 1 Brunner RC, 1989, Hazardous Waste Incineration, McGraw Hill Inc. 480pgs.
- 2 Carson, Rachel. 1962. Silent Spring (Boston: Houghton Mifflin, 1962), Mariner Books, 2002
- 3 Cheney, J. 1989. Postmodern environmental ethics. *Environmental Ethics* 11: 117-134.
- 4 Economy, Elizabeth. 2010. The River Runs Black: The Environmental Challenge to China's Future.
- 5 Gadgil, M. & Ramachandra, G. 1993. *This fissured land: an ecological history of India*. Univ of California Press.
- 6 Gleeson, B. and Low, N. (eds.) 1999. Global Ethics and Environment, London, Routledge.
- 7 Gleick, H.P. 1993. *Water in Crisis*, Pacific Institute for Studies in Development.
- 8 Environment and Security. Stockholm Environmental Institute, Oxford University Press.
- 8 Groom, Martha J., Gary K. Meffe, and Carl Ronald Carroll. Principles of conservation biology.

Sunderland: Sinauer Associates, 2006.

- 9 Grumbine, R. Edward, and Pandit, M.K. Threats from India's Himalaya dams. *Science* 339.6115 (2013): 36-37.
- 10 Heywood V.H. & Watson, R.T. 1995. *Global Biodiversity Assessment*. Cambridge University Press.
- 11 McCully, P. 1996. *Silenced rivers: the ecology and politics of large dams*. Zed Books.
- 12 McNeill, John R. 2000. *Something New Under the Sun: An Environmental History of the Twentieth Century*.
- 13 Norton, B. G. 1984. Environmental ethics and weak anthropocentrism. *Environmental Ethics* 6: 131-148.
- 14 Odum, E.P., Odum, H.T. & Andrews, J. 1971. *Fundamentals of Ecology*. Philadelphia: Saunders.
- 15 Pepper, I.L., Gerba, C.P. & Brusseau, M.L. 2011. *Environmental and Pollution Science*. Academic press, 2011.
- 16 Philander, S. George (Ed.). (2012). *Encyclopedia of global warming & climate change*. (2nd ed., Vols. 1-3). Thousand Oaks, CA: SAGE Publications, Inc.
- 17 Rao MN and Datta AK, 1987. *Waste Water Treatment*. Oxford and IBH Publishing Co. Pvt. Ltd.
- 18 Raven, P.H., David M. H., & Linda R. B. *Environment*. De Boeck, 2009.
- 19 Reaka-Kudla, Marjorie L., Don E. Wilson, and Edward O. Wilson, eds. 1996. *Biodiversity II: understanding and protecting our biological resources*. Joseph Henry Press.
- 20 Ricklefs, R. E., & Miller, G.L. 2000. *Ecology*. W. H. Freeman, New York.
- 21 Robbins, P. 2012. *Political ecology: A critical introduction*. John Wiley & Sons.
- 22 Rosencranz, A., Divan, S. & Noble, M.L. *Environmental law and policy in India*. 2001. Tripathi 1992.
- 23 Rothmun, H.K. 1998. *The Greening of a Nation? Environmentalism in the United States since 1945*.
- 24 Sengupta, R. 2003. *Ecology and economics (OUP): An approach to sustainable development*. OUP Catalogue.
- 25 Singh, J.S., Singh, S.P. and Gupta, S.R. 2006. *Ecology, Environment and Resource Ecology, Environment and Resource Conservation*. Anamaya Publishers.
- 26 Sodhi, N.S., Gibson, L. & Raven, P.H.G. (eds). 2013. *Conservation biology: voices from the Tropics*. John Wiley & Sons.
- 27 Thapar, V. 1998. *Land of the Tiger: A Natural History of the Indian Subcontinent*.
- 28 Van Leeuwen, C. J., & Vermeire, T. G. 2007. *Risk assessment of chemicals*.
- 29 Warren, C.E. 1971. *Biology and water pollution control*.
- 30 Wilson, E. O. 2006. *The creation: An appeal to save life on earth*. New York: Norton.
- 31 World Commission on Environment and Development. 1987. *Our Common Future*. Oxford: Oxford University Press.

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*Note: The course is uploaded as sent by the Department concerned. The scheme of marks and number of periods/lectures will be determined by the University and will be corrected in the syllabus according to Academic Council and Executive Council Minutes (dated 19th July 2014) and guidelines framed by the Course Implementation Committee, University of Delhi. Editing, typographical changes and formatting will be undertaken further.

Undergraduate Programme Secretariat

ENVIRONMENTAL STUDIES

LIST OF ASSIGNMENTS FOR THE STUDENTS OF BA (PROG)

2020-2021

S.N	Roll No	Student Name	TOPIC ASSIGNED
1	20BAP9301	AMAN RAJ	MULTIDISCIPLINARY NATURE OF ENVIRONMENTAL STUDIES;
2	20BAP9302	AVINASH KUMAR MASKARA	COMPONENTS OF ENVIRONMENT:ATMOSPHERE, HYDROSPHERE, LITHOSPHERE, AND BIOSPHERE
3	20BAP9303	MOHIT SINGH MOURYA	SCOPE AND IMPORTANCE OF ENVIRONMENTAL STUDIES
4	20BAP9304	MANISH KUMAR	BRIEF HISTORY OF ENVIRONMENTALISM
5	20BAP9305	SAHIL	CONCEPT OF SUSTAINABILITY AND SUSTAINABLE DEVELOPMENT
6	20BAP9306	RUNESH	DEFINITION AND CONCEPT OF ECOSYSTEM
7	20BAP9307	PARUL	STRUCTURE OF ECOSYSTEM
8	20BAP9308	SAKSHI YADAV	FUNCTIONS OF ECOSYSTEM: PHYSICAL (ENERGY FLOW)
9	20BAP9309	ANNAPURNA NAMDEV	FUNCTIONS OF ECOSYSTEM:BIOLOGICAL (FOOD CHAINS, FOOD WEB, ECOLOGICAL SUCCESSION),
10	20BAP9310	MANISHA	FUNCTIONS OF ECOSYSTEM:BIOGEOCHEMICAL (NUTRIENT CYCLING) PROCESSES
11	20BAP9311	GOURAV SINGH	FUNCTIONS OF ECOSYSTEM:CONCEPTS OF PRODUCTIVITY
12	20BAP9312	PIKKI RAHUL SAI ARJUN	FUNCTIONS OF ECOSYSTEM:ECOLOGICAL PYRAMIDS AND HOMEOSTASIS
13	20BAP9313	VISHAL	TYPES OF ECOSYSTEMS: TERRESTRIAL ECOSYSTEMS
14	20BAP9314	KARN SINGH	TYPES OF ECOSYSTEMS: AQUATIC ECOSYSTEMS
15	20BAP9315	CHANDAN	IMPORTANCE AND THREATS TO ECOSYSTEMS
16	20BAP9316	ANKIT KUMAR GAUTAM	ECOSYSTEM SERVICES (PROVISIONING, REGULATING, CULTURAL, AND SUPPORTING)
17	20BAP9317	DEEPESH KUMAR	ECOSYSTEM PRESERVATION AND CONSERVATION STRATEGIES
18	20BAP9318	KORABANDI PRASANTH KUMAR	BASICS OF ECOSYSTEM RESTORATION
19	20BAP9319	YASH KUMAR	LAND RESEOURCES
20	20BAP9320	BHUKYA KARTHIK	MINERAL RESOURCES
21	20BAP9321	ABHISHEK MINA	SOIL EROSION
22	20BAP9322	ANANYA	DESERTIFICATION
23	20BAP9323	TANNU	DEFORESTATION
24	20BAP9324	SHRUTI TEWARI	IMPACT OF MINING ON ENVIRONMENT, FORESTS, BIODIVERSITY AND TRIBAL COMMUNITIES
25	20BAP9325	PRATHAM SINGH	IMPACT OF DAM BUILDING ON ENVIRONMENT, FORESTS, BIODIVERSITY AND TRIBAL COMMUNITIES
26	20BAP9326	ASHISH CHAUDHARY	LAND SLIDES
27	20BAP9327	KHUSHI	LAND DEGRADATION, UNCCD

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28	20BAP9328	ABHAY SRIVASTAVA	WATER RESOURCES: NATURAL AND MAN-MADE SOURCES
29	20BAP9329	ANUPRIYA DIXIT	OVER EXPLOITATION OF SURFACE AND GROUND WATER RESOURCES;
30	20BAP9330	MD ZEESHANUDDIN	INTERNATIONAL AND INTERSTATE CONFLICTS OVER WATER
31	20BAP9331	DIKSHA BHARDWAJ	DISASTER MANAGEMENT: FLOODS AND DROUGHTS
32	20BAP9332	SHIPRA KHURANA	RENEWABLE ENERGY RESOURCES/ NON CONVENTIONAL ENERGY RESOURCES
33	20BAP9333	KANISHKA SHARMA	NON RENEWABLE ENERGY RESOURCES/ CONVENTIONAL ENERGY RESOURCES
34	20BAP9334	RASHI SHARMA	USE OF ALTERNATIVE ENERGY RESOURCES
35	20BAP9336	SEJAL BAIROLIYA	GROWING ENERGY NEEDS
36	20BAP9337	PRACHI SANDILYA	FOSSIL FUEL ENERGY: COAL PETROLEUM AND NATURAL GAS
37	20BAP9338	ABHISHEK SHARMA	AGRO-RESIDUES AS A BIOMASS ENERGY SOURCE
38	20BAP9339	AKANKSHA	CASE STUDIES: CONTEMPORARY INDIAN ISSUES RELATED TO MINING, DAMS,
39	20BAP9340	UDITANSHU RAI	NATIONAL SOLAR MISSION, CAUVERY RIVER WATER CONFLICT
40	20BAP9341	SHRADHA THAKUR	CHIPKO MOVEMENT, APPIKO MOVEMENT, TARUN BHARAT SANGH
41	20BAP9342	ARPIT SRIVASTAVA	NARMADA BACHO ANDOLAN
42	20BAP9343	ABHINAV	CONCEPT AND DEFINITION OF BIODIVERSITY
43	20BAP9344	NAGENDER SINGH	LEVELS OF BIODIVERSITY
44	20BAP9345	KARAN SHARMA	BIOGEOGRAPHIC ZONES OF INDIA
45	20BAP9401	SHIVAM GOYAL	INDIA AS A MEGA DIVERSE NATION
46	20BAP9402	GAURAV SHARMA	BIODIVERSITY HOTPOTS AND ENDEMIC SPECIES, CONCEPT OF ENDEMISM
47	20BAP9403	NIKHIL KUMAR SINGH	IUCN RED DATA BOOK AND ITS NINE CATAGORIES
48	20BAP9404	ARCHANA GUPTA	VALUE OF BIODIVERSITY: ECOLOGICAL, ECONOMIC, SOCIAL, ETHICAL, AESTHETIC, AND INFORMATIONAL VALUES OF BIODIVERSITY WITH EXAMPLES
49	20BAP9405	LAKSHMI YADAV	SACRED GROVES AND THEIR IMPORTANCE
50	20BAP9406	ARYAN JAISWAL	THREATS TO BIODIVERSITY: HABITAT LOSS, HABITAT DEGRADATION, HABITAT FRAGMENTATION
51	20BAP9408	MADHAV BARBARIA	THREATS TO BIODIVERSITY: POACHING, HUMAN WILDLIFE CONFLICTS
52	20BAP9409	NILESH	THREATS TO BIODIVERSITY: INVASIVE SPECIES AND BIOLOGICAL INVASION
53	20BAP9410	AJEET YADAV	BIODIVERSITY CONSERVATION STRATEGIES: IN-SITU METHODS OF CONSERVATION
54	20BAP9411	KUSHAGRA	BIODIVERSITY CONSERVATION STRATEGIES: EX-SITU METHODS OF CONSERVATION
55	20BAP9412	UDAY SINGH RAJPUT	NATIONAL PARKS, WILDLIFE SANCTUARIES
56	20BAP9414	PRIYA YADAV	BIOSPHERE RESERVES
57	20BAP9415	RITESH	KEYSTONE AND FLAGSHIP SPECIES
58	20BAP9416	ABHAY YADAV	UMBRELLA SPECIES AND INDICATOR SPECIES
59	20BAP9417	RAJENDRA SARAN	SPECIES REINTRODUCTION AND TRANSLOCATION
60	20BAP9418	BRIJESH	PROJECT TIGER
61	20BAP9419	ABHISHEK	PROJECT ELEPHANT

62	20BAP9420	PAWAN SINGH	VULTURE BREEDING PROGRAM
63	20BAP9421	DEEPANSHU	PROJECT GREAT INDIAN BUSTARD
64	20BAP9422	SONI	CROCODILE CONSERVATION PROJECT
65	20BAP9423	SHREY TOMAR	SILENT VALLEY MOVEMENT, SAVE WESTERN GHATS MOVEMENT
66	20BAP9425	SHIVANI MEENA	AIR POLLUTON: TYPES, SOURCES, CAUSES, EFFECTS AND CONTROL
67	20BAP9426	YASH VARDHAN GAUR	WATER POLLUTON: TYPES, SOURCES, CAUSES, EFFECTS AND CONTROL
68	20BAP9427	KESHAV KUMAR JHA	NOISE POLLUTON: TYPES, SOURCES, CAUSES, EFFECTS AND CONTROL
69	20BAP9428	ADITYA KADAM	SOIL POLLUTON: TYPES, SOURCES, CAUSES, EFFECTS AND CONTROL
70	20BAP9429	KULDEEP	THERMAL POLLUTON: TYPES, SOURCES, CAUSES, EFFECTS AND CONTROL
71	20BAP9430	OJASWINI PALIWAL	AIR AND WATER QUALITY STANDARDS
72	20BAP9431	DIKSHA SHARMA	CRITERIA POLLUTANTS; POINT AND NON POINT SOURCES OF POLLUTION
73	20BAP9432	DRISHTI MISHRA	PRIMARY AND SECONDARY POLLUTANTS
74	20BAP9433	SHIVAM GUPTA	NUCLEAR HAZARDS AND HUMAN HEALTH RISKS
75	20BAP9434	ARZOO	SOLID WASTE MANAGEMENT: CONTROL MEASURES FOR VARIOUS TYPES OF URBAN, INDUSTRIAL WASTE
76	20BAP9435	ANIKET CHATURVEDI	HAZARDOUS WASTE: SEGREGATION AND DISPOSAL
77	20BAP9436	HIMANSHU KUMAR JHA	E WASTE: SEGREGATION AND DISPOSAL
78	20BAP9437	VIVEK KUMAR	GANGA ACTION PLAN
79	20BAP9439	THUMMA KAPIL	DELHI AIR POLLUTION AND PUBLIC HEALTH
80	20BAP9440	MAHAVEER SIDH	PLASTIC WASTE MANAGEMENT AND ITS RULES
81	20BAP9441	TANYA KUMARI	BHOPAL GAS TRAGEDY, CHERNOBYL NUCLEAR DISASTER
82	20BAP9442	SRISHTI	GLOBAL WARMING: CAUSES AND IMPACTS ON ON HUMAN COMMUNITIES, BIODIVERSITY, GLOBAL ECONOMY, AND AGRICULTURE
83	20BAP9443	MONIKA	CLIMATE CHANGE: CAUSES AND IMPACTS ON ON HUMAN COMMUNITIES, BIODIVERSITY, GLOBAL ECONOMY, AND AGRICULTURE
84	20BAP9444	PREETI LAMBA	CASE STUDIES OF GLOBAL WARMING
85	20BAP9445	ANJALI	CASE STUDIES OF CLIMATE CHANGE
86	20BAP9446	AMRITANSH MANI TRIPATHI	OZONE LAYER DEPLETION: CAUSES AND IMPACTS ON ON HUMAN COMMUNITIES, BIODIVERSITY, GLOBAL ECONOMY, AND AGRICULTURE AND CONTROLS
87	20BAP9447	ANUBHAV SINGH	ACID RAIN: CAUSES AND IMPACTS ON ON HUMAN COMMUNITIES, BIODIVERSITY, GLOBAL ECONOMY, AND AGRICULTURE AND CONTROLS
88	20BAP9449	YUKTA GODARA	EARTH SUMMIT, AGENDA 21
89	20BAP9450	KHUSHI JINDAL	UNFCCC
90	20BAP9452	PIYUSH MISHRA	MONTREAL PROTOCOL
91	20BAP9453	SAHIL PARMAR	KYOTO PROTOCOL
92	20BAP9454	YAMAN PANERI	UNCCD

93	20BAP9455	SNEHIL KUMAR	CONVENTION ON INTERNATIONAL TRADE OF ENDANGERED SPECIES
94	20BAP9456	DIKSHA LOGWANI	RAMSAR CONVENTION
95	20BAP9457	CHESHTA SHARMA	CONVENTION ON BIOLOGICAL DIVERSITY (CBD)
96	20BAP9458	BRAJENDRA SINGH PARIHAR	CHEMICAL WEAPONS CONVENTION (CWC)
97	20BAP9459	ABHINAV MISHRA	UNEP
98	20BAP9460	YUVRAJ SINGH	SUSTAINABLE DEVELOPMENT GOALS
99	20BAP9461	PRAPTI SHARMA	NATIONAL ACTION PLAN ON CLIMATE CHANGE AND ITS EIGHT MISSIONS
100	20BAP9462	VIKRAM SINGH	WILDLIFE PROTECTION ACT, 1972
101	20BAP9463	ANAND AGARWAL	WATER (PREVENTION AND CONTROL OF POLLUTION) ACT, 1974
102	20BAP9464	SHANKI AHIRWAR	FOREST (CONSERVATION) ACT 1980
103	20BAP9465	PRIYANKA KUMARI	AIR (PREVENTION AND CONTROL OF POLLUTION) ACT, 1981
104	20BAP9467	AVNEET SINGH	ENVIRONMENT PROTECTION ACT, 1986;
105	20BAP9468	KRITI GONDAL	SCHEDULED TRIBES AND OTHER TRADITIONAL FOREST DWELLERS (RECOGNITION OF FOREST RIGHTS) ACT, 2006
106	20BAP9469	PRIYANSHU TALAN	HUMAN POPULATION GROWTH
107	20BAP9501	VIKAS	IMPACT OF POLUPATION ON ENVIRONMENT, HUMAN HEALTH AND WELFARE
108	20BAP9503	GARVIT GARG	CARBON FOOTPRINT AND WATER FOOTPRINT
109	20BAP9504	ANKIT	RESETTLEMENT AND REHABILITATION OF DEVELOPMENTAL PROJECT AFFECTED PERSONS AND COMMUNITIES
110	20BAP9506	SANJAY SONI	CASE STUDIES OF RESETTLEMENT AND REHABILITATION OF DEVELOPMENTAL PROJECT AFFECTED PERSONS AND
111	20BAP9507	BHUMIKA	BISHNOIS OF RAJASTHAN; NARMADABACHAO ANDOLAN
112	20BAP9508	SARTHAK SANJEEV	NATIONAL GREEN TRIBUNAL AND ITS IMPORTANCE
113	20BAP9509	SURYANSH YADAV	ENVIRONMENTAL ETHICS
114	20BAP9510	SHILPA G CHOUDHARY	ROLE OF VAIIOUS RELIGIONS ANS CULTURAL PRACTICES IN ENVIRONMENTAL CONSERVATION
115	20BAP9511	RAHUL DHANKHAR	ENVIRONMENTAL COMMUNICATION AND PUBLIC AWARENESS
116	20BAP9512	GAURAV YADAV	CNG VEHICLES IN DELHI
117	20BAP9513	RAUNAQ KUMAR	SWACHH BHARAT ABHIYAN
118	20BAP9514	RITIK CHAUHAN	NATIONAL ENVIRONMENTAL AWARENESS CAMPAIGN (NEAC)
119	20BAP9515	LAXMI	NATIONAL GREEN CORPS (NGC), ECO CLUB PROGRAME
120	20BAP9516	VIKASH MANDA	MULTIDISCIPLINARY NATURE OF ENVIRONMENTAL STUDIES;
121	20BAP9517	KHUSHI	COMPONENTS OF ENVIRONMENT:ATMOSPHERE, HYDROSPHERE, LITHOSPHERE, AND BIOSPHERE
122	20BAP9518	AYSHA BANO	SCOPE AND IMPORTANCE OF ENVIRONMENTAL STUDIES
123	20BAP9519	KULDEEP	BRIEF HISTORY OF ENVIRONMENTALISM
124	20BAP9520	ABHISHEK DHAKAD	CONCEPT OF SUSTAINABILITY AND SUSTAINABLE DEVELOPMENT
125	20BAP9521	HIMANSHU YADAV	DEFINITION AND CONCEPT OF ECOSYSTEM
126	20BAP9522	YOGESH RATHI	STRUCTURE OF ECOSYSTEM

127	20BAP9523	ANIKET PAL	FUNCTIONS OF ECOSYSTEM: PHYSICAL (ENERGY FLOW)
128	20BAP9524	MOHIT KUMAR	FUNCTIONS OF ECOSYSTEM: BIOLOGICAL (FOOD CHAINS, FOOD WEB, ECOLOGICAL SUCCESSION),
129	20BAP9525	PRADEEP KUMAR MANDAL	FUNCTIONS OF ECOSYSTEM: BIOGEOCHEMICAL (NUTRIENT CYCLING) PROCESSES
130	20BAP9526	VIKASH KUMAR	FUNCTIONS OF ECOSYSTEM: CONCEPTS OF PRODUCTIVITY
131	20BAP9527	ANJALI KUMARI	FUNCTIONS OF ECOSYSTEM: ECOLOGICAL PYRAMIDS AND HOMEOSTASIS
132	20BAP9528	VIVEK KUMAR	TYPES OF ECOSYSTEMS: TERRESTRIAL ECOSYSTEMS
133	20BAP9529	ASHWANI SONI	TYPES OF ECOSYSTEMS: AQUATIC ECOSYSTEMS
134	20BAP9530	DHARMRAJ SINGH	IMPORTANCE AND THREATS TO ECOSYSTEMS
135	20BAP9531	ROHIT	ECOSYSTEM SERVICES (PROVISIONING, REGULATING, CULTURAL, AND SUPPORTING)
136	20BAP9532	VIKASH SINGH LODHI	ECOSYSTEM PRESERVATION AND CONSERVATION STRATEGIES
137	20BAP9533	AKASH NARWARIYA	BASICS OF ECOSYSTEM RESTORATION
138	20BAP9534	SUMIT KUMAR	LAND RESEOURCES
139	20BAP9535	PRIYANSHU YADAV	MINERAL RESOURCES
140	20BAP9536	MOHIT BHASKAR	SOIL EROSION
141	20BAP9537	TUSHAR	DESERTIFICATION
142	20BAP9538	DEVESH VERMA	DEFORESTATION
143	20BAP9539	ABHISHEK KUSHWAHA	IMPACT OF MINING ON ENVIRONMENT, FORESTS, BIODIVERSITY AND TRIBAL COMMUNITIES
144	20BAP9540	ADITI SINGH	IMPACT OF DAM BUILDING ON ENVIRONMENT, FORESTS, BIODIVERSITY AND TRIBAL COMMUNITIES
145	20BAP9541	ALOK GUPTA	LAND SLIDES
146	20BAP9543	NEERAJ KUMAR	LAND DEGRADATION, UNCCD
147	20BAP9544	AMIT KUMAR	WATER RESOURCES: NATURAL AND MAN-MADE SOURCES
148	20BAP9545	AMAN KUMAR	OVER EXPLOITATION OF SURFACE AND GROUND WATER RESOURCES;
149	20BAP9546	NAYAN KUMAR	INTERNATIONAL AND INTERSTATE CONFLICTS OVER WATER
150	20BAP9547	SHIVAM SINGH PATEL	DISASTER MANAGEMENT: FLOODS AND DROUGHTS
151	20BAP9548	YASH THAPA	RENEWABLE ENERGY RESOURCES/ NON CONVENTIONAL ENERGY RESOURCES
152	20BAP9549	RONAK	NON RENEWABLE ENERGY RESOURCES/ CONVENTIONAL ENERGY RESOURCES
153	20BAP9550	BHARAT	USE OF ALTERNATIVE ENERGY RESOURCES
154	20BAP9551	DEEPA NAND GAUTAM	GROWING ENERGY NEEDS
155	20BAP9552	RAUSHAN KUMAR	FOSSIL FUEL ENERGY NEEDS
156	20BAP9553	SURAJ KUMAR	AGRO-RESIDUES AS A BIOMASS ENERGY SOURCE
157	20BAP9554	DASHARATH KUNDARA	CASE STUDIES: CONTEMPORARY INDIAN ISSUES RELATED TO MINING, DAMS,
158	20BAP9555	KUNAL KUMAR TANWAR	NATIONAL SOLAR MISSION, CAUVERY RIVER WATER CONFLICT
159	20BAP9556	SAURABH CHAUDHARY	CHIPKO MOVEMENT, APPIKO MOVEMENT, TARUN BHARAT SANGH
160	20BAP9557	AKASH KUMAR	NARMADA BACHO ANDOLAN

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		GAWAN	
161	20BAP9559	NEHA JOYA	CONCEPT AND DEFINITION OF BIODIVERSITY
162	20BAP9560	DEEPAK KUMAR	LEVELS OF BIODIVERSITY
163	20BAP9561	AJEET KUMAR	BIOGEOGRAPHIC ZONES OF INDIA
164	20BAP9562	VISHAL KUMAR	INDIA AS A MEGA DIVERSE NATION
165	20BAP9563	ROHAN	BIODIVERSITY HOTPOTS AND ENDEMIC SPECIES, CONCEPT OF ENDEMISM
166	20BAP9564	ARCHIT KUMAR	IUCN RED DATA BOOK AND ITS NINE CATEGORIES
167	20BAP9567	PANKAJ KUMAR	VALUE OF BIODIVERSITY: ECOLOGICAL, ECONOMIC, SOCIAL, ETHICAL, AESTHETIC, AND INFORMATIONAL VALUES OF BIODIVERSITY WITH EXAMPLES
168	20BAP9568	SAKSHAM HADOKAR	SACRED GROVES AND THEIR IMPORTANCE
169	20BAP9569	KALPANA MEENA	THREATS TO BIODIVERSITY: HABITAT LOSS, HABITAT DEGRADATION, HABITAT FRAGMENTATION
170	20BAP9570	SHYAM MEENA	THREATS TO BIODIVERSITY: POACHING, HUMAN WILDLIFE CONFLICTS
171	20BAP9572	DEEPA MEWAR	THREATS TO BIODIVERSITY: INVASIVE SPECIES AND BIOLOGICAL INVASION
172	20BAP9573	CHANDAN DAWAR	BIODIVERSITY CONSERVATION STRATEGIES: IN-SITU METHODS OF CONSERVATION
173	20BAP9574	SWEETI	BIODIVERSITY CONSERVATION STRATEGIES: EX-SITU METHODS OF CONSERVATION
174	20BAP9575	PRINCE GUPTA	NATIONAL PARKS, WILDLIFE SANCTUARIES
175	20BAP9576	HARSHIT MAHRISHI	BIOSPHERE RESERVES
176	20BAP9577	HARSH	KEYSTONE AND FLAGSHIP SPECIES
177	20BAP9579	NIDHI	UMBRELLA SPECIES AND INDICATOR SPECIES
178	20BAP9580	RAKHI DWIVEDI	SPECIES REINTRODUCTION AND TRANSLOCATION
179	20BAP9581	AVINASH MISHRA	PROJECT TIGER
180	20BAP9582	SYED SAMAR AFAQUE	PROJECT ELEPHANT
181	20BAP9584	JAYANT KUMAR	VULTURE BREEDING PROGRAM
182	20BAP9585	SACHIN SHARMA	PROJECT GREAT INDIAN BUSTARD
183	20BAP9587	KRISHNAPAL SINGH	CROCODILE CONSERVATION PROJECT
184	20BAP9588	RAHUL DUBEY	SILENT VALLEY MOVEMENT, SAVE WESTERN GHATS MOVEMENT
185	20BAP9589	ANANYA AMOLI	AIR POLLUTION: TYPES, SOURCES, CAUSES, EFFECTS AND CONTROL
186	20BAP9590	RASHI SHARMA	WATER POLLUTION: TYPES, SOURCES, CAUSES, EFFECTS AND CONTROL
187	20BAP9591	ARPIT TIWARI	NOISE POLLUTION: TYPES, SOURCES, CAUSES, EFFECTS AND CONTROL
188	20BAP9592	KOYAL	SOIL POLLUTION: TYPES, SOURCES, CAUSES, EFFECTS AND CONTROL
189	20BAP9593	AJAY PRATAP SINGH CHAUHAN	THERMAL POLLUTION: TYPES, SOURCES, CAUSES, EFFECTS AND CONTROL
190	20BAP9594	DEEPANSHU MALIK	AIR AND WATER QUALITY STANDARDS
191	20BAP9595	SHANTANU SINGH	CRITERIA POLLUTANTS; POINT AND NON POINT SOURCES OF POLLUTION
192	20BAP9596	KALPANA SINGH	PRIMARY AND SECONDARY POLLUTANTS

		GAUR	
193	20BAP9597	AANCHAL	NUCLEAR HAZARDS AND HUMAN HEALTH RISKS
194	20BAP9598	ARYAMANN	SOLID WASTE MANAGEMENT: CONTROL MEASURES FOR VARIOUS TYPES OF URBAN, INDUSTRIAL WASTE
195	20BAP9599	AAFTAB ALI	HAZARDOUS WASTE: SEGREGATION AND DISPOSAL
196	20BAP9600	ASHANI ASHOK PADHYE	E WASTE: SEGREGATION AND DISPOSAL
197	20BAP9601	PRATIBHA KUMARI	GANGA ACTION PLAN
198	20BAP9602	REETU KUMARI	DELHI AIR POLLUTION AND PUBLIC HEALTH
199	20BAP9603	ABHIMANYU RATHI	PLASTIC WASTE MANAGEMENT AND ITS RULES
200	20BAP9604	ANJALI RAJE	BHOPAL GAS TRAGEDY, CHERNOBYL NUCLEAR DISASTER
201	20BAP9605	ADITYA CHAUDHARY	GLOBAL WARMING: CAUSES AND IMPACTS ON ON HUMAN COMMUNITIES, BIODIVERSITY, GLOBAL ECONOMY, AND AGRICULTURE
202	20BAP9606	TUSHAR	CLIMATE CHANGE: CAUSES AND IMPACTS ON ON HUMAN COMMUNITIES, BIODIVERSITY, GLOBAL ECONOMY, AND AGRICULTURE
203	20BAP9607	NIKITHA BARUA	CASE STUDIES OF GLOBAL WARMING
204	20BAP9609	SANSKAR DWIVEDI	CASE STUDIES OF CLIMATE CHANGE
205	20BAP9610	SUMIT KUMAR SINGH	OZONE LAYER DEPLETION: CAUSES AND IMPACTS ON ON HUMAN COMMUNITIES, BIODIVERSITY, GLOBAL ECONOMY, AND AGRICULTURE AND CONTROLS
206	20BAP9611	AKASH AKHILESH SHAH	ACID RAIN: CAUSES AND IMPACTS ON ON HUMAN COMMUNITIES, BIODIVERSITY, GLOBAL ECONOMY, AND AGRICULTURE AND CONTROLS
207	20BAP9612	VISHAL YADAV	EARTH SUMMIT, AGENDA 21
208	20BAP9613	AARTI DEVI	UNFCCC
209	20BAP9614	AYUSH KAUSHIK	MONTREAL PROTOCOL
210	20BAP9615	SURAJ	KYOTO PROTOCOL
211	20BAP9616	YASH RAJ WARDHAN	UNCCD
212	20BAP9617	RAHUL GAHLAWAT	CONVENTION ON INTERNATIONAL TRADE OF ENDANGERED SPECIES
213	20BAP9618	ABHINAV SINGH	RAMSAR CONVENTION
214	20BAP9619	SHIVAM KAUSHIK	CONVENTION ON BIOLOGICAL DIVERSITY (CBD)
215	20BAP9620	SHREYA SINGH	CHEMICAL WEAPONS CONVENTION (CWC)
216	20BAP9621	HARSHIT BHARDWAJ	UNEP
217	20BAP9622	PARIPELLE RAVI TEJA REDDY	SUSTAINABLE DEVELOPMENT GOALS
218	20BAP9623	SAKSHI VISHWAKARMA	NATIONAL ACTION PLAN ON CLIMATE CHANGE AND ITS EIGHT MISSIONS
219	20BAP9624	AMIT KUMAR MISHRA	WILDLIFE PROTECTION ACT, 1972
220	20BAP9625	NIKHIL DIXIT	WATER (PREVENTION AND CONTROL OF POLLUTION) ACT, 1974
221	20BAP9626	HEMANT	FOREST (CONSERVATION) ACT 1980
222	20BAP9627	NIKHIL YADAV	AIR (PREVENTION AND CONTROL OF POLLUTION) ACT, 1981
223	20BAP9628	PRIYANSHU KUMAR SINGH	ENVIRONMENT PROTECTION ACT, 1986;

224	20BAP9629	YASHIKA SINGH	SCHEDULED TRIBES AND OTHER TRADITIONAL FOREST DWELLERS (RECOGNITION OF FOREST RIGHTS) ACT, 2006
225	20BAP9630	VIKAS PUROHIT	HUMAN POPULATION GROWTH
226	20BAP9631	KULDEEP SINGH CHUNDAWAT	IMPACT OF POLLUTION ON ENVIRONMENT, HUMAN HEALTH AND WELFARE
227	20BAP9632	KHUSHBOO GAHLOT	CARBON FOOTPRINT AND WATER FOOTPRINT
228	20BAP9633	ARYAN	RESETTLEMENT AND REHABILITATION OF DEVELOPMENTAL PROJECT AFFECTED PERSONS AND COMMUNITIES
229	20BAP9634	KANISHKA CHATURVEDI	CASE STUDIES OF RESETTLEMENT AND REHABILITATION OF DEVELOPMENTAL PROJECT AFFECTED PERSONS AND
230	20BAP9635	APRAJITA	BISHNOIS OF RAJASTHAN; NARMADABACHAO ANDOLAN
231	20BAP9636	DIVYA KAIRA	NATIONAL GREEN TRIBUNAL AND ITS IMPORTANCE
232	20BAP9637	PRAKARSH PANDEY	ENVIRONMENTAL ETHICS
233	20BAP9638	DEVRAJ DRALL	ROLE OF VARIOUS RELIGIONS AND CULTURAL PRACTICES IN ENVIRONMENTAL CONSERVATION
234	20BAP9639	SAKSHI	ENVIRONMENTAL COMMUNICATION AND PUBLIC AWARENESS
235	20BAP9640	ARIHANT PATERIA	CNG VEHICLES IN DELHI
236	20BAP9641	DANISH	SWACHH BHARAT ABHIYAN
237	20BAP9642	SAKSHI PATHAK	NATIONAL ENVIRONMENTAL AWARENESS CAMPAIGN (NEAC)
238	20BAP9643	NISHANT KUMAR	NATIONAL GREEN CORPS (NGC), ECO CLUB PROGRAMME
239	20BAP9644	DEEPAK	AIR POLLUTION: TYPES, SOURCES, CAUSES, EFFECTS AND CONTROL
240	20BAP9645	ARYAN SHARMA	WATER POLLUTION: TYPES, SOURCES, CAUSES, EFFECTS AND CONTROL
241	20BAP9646	SUNIL	NOISE POLLUTION: TYPES, SOURCES, CAUSES, EFFECTS AND CONTROL
242	20BAP9648	KANISHAK TANTA	SOIL POLLUTION: TYPES, SOURCES, CAUSES, EFFECTS AND CONTROL
243	20BAP9649	AVIRAL JAIN	MANGROOVES, JHUM CULTIVATION
244	20BAP9650	SAGAR PUNETHA	TYPES OF ECOSYSTEMS: TERRESTRIAL ECOSYSTEMS
245	20BAP9651	MADHAVENDER	TYPES OF ECOSYSTEMS: AQUATIC ECOSYSTEMS
246	20BAP9652	ARYAMAN SINGH TOMAR	IMPORTANCE AND THREATS TO ECOSYSTEMS
247	20BAP9653	KRISH	ECOSYSTEM SERVICES (PROVISIONING, REGULATING, CULTURAL, AND SUPPORTING)
248	20BAP9654	SAGAR YADAV	ECOSYSTEM PRESERVATION AND CONSERVATION STRATEGIES
249	20BAP9655	VARUN KUMAR MAURYA	DISASTER MANAGEMENT: EARTHQUAKES AND HURRICANES

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B.Com. (Hons.): Semester-VI
Paper BCH 6.3(a): FUNDAMENTALS OF INVESTMENT

Duration: 3 Hrs.**Marks: 100****Credits: 6****Course Objective**

To familiarize the students with different investment alternatives, introduce them to the framework of their analysis, valuation and investor protection.

Course Learning Outcomes

After completing the course, the student shall be able to:

- CO1: explain investment environment and concept of return & risk.
- CO2: understand bond valuation & role of credit rating agencies.
- CO3: examine equity approaches.
- CO4: analyze two securities portfolio using Harry Markowitz model, Calculating portfolio risk and return, explaining CAPM and evaluating Mutual Funds and Financial derivatives.
- CO5: evaluate investors protection framework

Course Contents**Unit-I: The Investment Environment**

The investment decision process. Types of Investment-Commodities, Real Estate and Financial Assets. The Indian securities market, the market participants and trading of securities, security market indices, sources of financial information. Return and Risk: Concept, Calculation, Trade off between return and risk, Impact of taxes and inflation on return.

Unit-II: Bond Analysis

Bond Fundamentals, Estimating bond yields, Bond Valuation & Malkiel Theorems, bond risks and credit rating.

Unit-III: Approaches to Equity Analysis

Fundamental Analysis, Technical Analysis and Efficient Market Hypothesis, Valuation of Equity Shares using Dividend Discount model and P/E ratio model.

Unit-IV: Portfolio Analysis and Financial Derivatives

Harry Markowitz model of Portfolio Analysis and Diversification, CAPM model. Portfolio Risk and Return, Mutual Funds, overview of Financial Derivatives-Forwards, Future & Options.

Unit-V: Investor Protection

Role of SEBI and stock exchanges in investor protection; Investor grievances and their redressal system, insider trading, investors' education and awareness.

Practical

Spreadsheet is the recommended software for doing basic calculations in finance and hence can be used for giving students subject related assignments for their internal assessment purposes.

References

- Jones, C.P., *Investment Analysis and Management*. Wiley.
- Mayo., *An Introduction to Investment*. Cengage Learning.
- Rustagi, R.P., *Investment Management*. Sultan Chand, New Delhi.
- Sharma, S.K. and Kaur, Gurmeet, *Fundamentals of Investments*, Sultan Chand & Sons.

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- Singh, Y.P. "*Fundamentals of Investment Management*". Galgotia Publications
- Tripathi, Vanita (2019), *Fundamentals of Investments*. Taxmann. Publications.

Additional Resources:

- *Videos of Eugene Fama on the history of Finance.*
- Vohra, N.D., and Bagri, *Future and Options*. McGraw Hill Publishing

Note: The latest edition of text books may be used.

Teaching Learning Process

As the course is designed to familiarize the students with different investment alternatives, introduce them to the framework of their analysis, valuation and investor protection the teaching learning process will be based on lectures, seminars, workshops, project work and cases studies

Assessment Methods

The assessment of the students must be aligned with the course learning outcomes and requires Class Participation, Class Test, Assignment, Project Work, End Semester Examination

Keywords

Investments, Bonds, Equity, Portfolio, Diversification, Investor Protection, Financial Derivatives.

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**FOI ASSIGNMENT FOR STUDENTS OF B.COM. (H), SEMESTER VI, BATCH
2020-21**

Instructions

1. Title page / Cover Page
The cover page of your assignment should include the following:
Full name, Course, Section, Semester, Roll No, Topic of the assignment
Note:
 - Number all pages except the title page.
 - Use bold for headings. No underlining or italics.
 - The text should be justified. Use centred, left aligned etc. options only for headings.
2. Submit the assignment latest by 21st March, 2021 up to 5:00 pm at drmeghna@ddu.ac.in. The assignment is time bound and will not be accepted after the due date and time. Students can contact the undersigned in case of any doubt whatsoever related to the assignment.
3. Save your assignment with your roll number followed by your name. Make sure the file size does not exceed 1MB limit.
4. The name of the student, his roll number and class section should form the subject of the mail; eg. Abhishek – 1004 – A

Attempt any one of the following –

Technical Analysis

Go to any financial website such as www.yahooofinance.com or www.nseindia.com and download daily price data for a company of your choice for any/past six months. The price data should comprise of the following:

- Open Price
- High Price
- Low Price
- Close Price

Prepare

1. A bar chart using the stock price data.
2. A candlestick chart using the price data.
3. A line chart using closing prices of the share.
4. Which of the following chart patterns you can identify in your line chart –
 - Head and Shoulder
 - Inverted Head and Shoulder
 - Double Top
 - Double Bottom
 - Triangle
 - Flags
5. Calculate 25 days moving average of the closing prices of the share. Plot the moving average line and the stock price line in a graph. Identify various buy and sell signals.

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6. Assume that you buy a share as per buy signal and sell as per sell signal. Will you be able to earn profits? Show all calculations assuming that you have Rs. 10000 to invest.

OR

Portfolio Analysis

Select any two stocks from S&P BSE SENSEX (say SBI and Wockhardt) and collect their closing adjusted prices on weekly basis for the period January 2018 to December 2018 from the website of BSE www.bseindia.com. The stocks should be from unrelated sectors. Now convert these prices into returns and make series of stock returns for each stock. Calculate

1. Mean Return on each stock.
2. Standard deviation of returns of each stock.
3. Covariance between the returns of stock 1 and stock 2 and interpret it.
4. Construct an equally weighted portfolio of these stocks, i.e. weights are 0.5 each, and calculate this portfolio's return and risk.
5. Construct a portfolio for Mr. Mishra who wants an expected return of 12%. What is the portfolio risk in this case?
6. Construct a portfolio for Mr. Tripathi who wants to have minimum possible risk by combining the two stocks.
7. Is it possible to reduce portfolio risk to zero by combining these two stocks? Why?

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Additional Resources:

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Note: The latest edition of text books may be used.

Teaching Learning Process






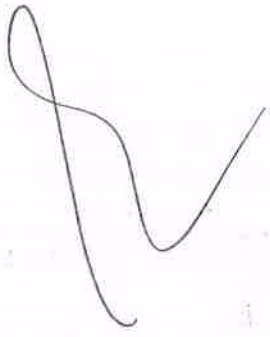



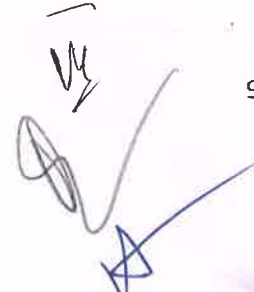



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Assessment Methods

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Keywords

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S. NO	ROLL NO.	STUDENT NAME	PROJECT TITLE	PROJECT SUPERVISOR
1	18COM1014	AMAAN AHMAD	TECHNICAL ANALYSIS	DR. MEGHNA AGGARWAL
2	18COM1258	TUSHAR KUMAR	TECHNICAL ANALYSIS	DR. MEGHNA AGGARWAL
3	18COM1007	ABHISHEK KUMAR	PORTFOLIO ANALYSIS	DR. MEGHNA AGGARWAL
4	18COM1206	SANGEET KHANNA	TECHNICAL ANALYSIS	DR. MEGHNA AGGARWAL
5	18COM1201	SAHIL CHOUDHARY		DR. MEGHNA AGGARWAL

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6	18COM1024	ANUSHKA YADAV	TECHNICAL ANALYSIS	DR. MEGHNA AGGARWAL
7	18COM1002	AAKRITI SINGHAL	TECHNICAL ANALYSIS	DR. MEGHNA AGGARWAL
8	18COM1215	SHRUTI SHARMA		DR. MEGHNA AGGARWAL
9	18COM1025	ARSHITA GUPTA	TECHNICAL ANALYSIS	DR. MEGHNA AGGARWAL
10	18COM1242	VIJYANT NAGPAL	TECHNICAL ANALYSIS	DR. MEGHNA AGGARWAL
11	18COM1016	AMAN SAH	PORTFOLIO ANALYSIS	DR. MEGHNA AGGARWAL

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12	18COM1231	TUSHAR SINGH	TECHNICAL ANALYSIS	DR. MEGHNA AGGARWAL
13	18COM1221	SOURAV BIJARNIA	TECHNICAL ANALYSIS	DR. MEGHNA AGGARWAL
14	18COM1236	VANIKA GUPTA	TECHNICAL ANALYSIS	DR. MEGHNA AGGARWAL
15	18COM1266	SANDEEP KUMAR	TECHNICAL ANALYSIS	DR. MEGHNA AGGARWAL
16	18COM1019	ANKIT KHANNA	TECHNICAL ANALYSIS	DR. MEGHNA AGGARWAL
17	18COM1009	ADITI SAINI	TECHNICAL ANALYSIS	DR. MEGHNA AGGARWAL

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V.P.S. College
New Delhi

18	18COM1230	TIJIL SURI	TECHNICAL ANALYSIS	DR. MEGHNA AGGARWAL
19	18COM1228	TANYA GULATI	TECHNICAL ANALYSIS	DR. MEGHNA AGGARWAL
20	18COM1232	UPASANA SHARMA	TECHNICAL ANALYSIS	DR. MEGHNA AGGARWAL
21	18COM1261	VIDISHA VERMA	TECHNICAL ANALYSIS	DR. MEGHNA AGGARWAL
22	18COM1010	ADITI GUPTA	TECHNICAL ANALYSIS	DR. MEGHNA AGGARWAL
23	18COM1015	AMAN GAUTAM	PORTFOLIO ANALYSIS	DR. MEGHNA AGGARWAL

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Coordinator
Internal Quality Assurance Cell (IQAC)
Dr. Meghna Aggarwal
Dean, Dayalbagh Educational Institute
University of Delhi

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24	18COM1250	YASHITA MEHTA	TECHNICAL ANALYSIS	DR. MEGHNA AGGARWAL
25	18COM1243	VINAY YADAV	TECHNICAL ANALYSIS	DR. MEGHNA AGGARWAL
26	18COM1208	SARTHAK GUPTA	TECHNICAL ANALYSIS	DR. MEGHNA AGGARWAL
27	18COM1265	SATYAM SABOO	TECHNICAL ANALYSIS	DR. MEGHNA AGGARWAL
28	18COM1006	ABHISHEK	TECHNICAL ANALYSIS	DR. MEGHNA AGGARWAL
29	18COM1249	YASHIKA GARG	TECHNICAL ANALYSIS	DR. MEGHNA AGGARWAL

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Coordinator
Internal Quality Assurance Cell (IQAC)
Deen Dayal Upadhyay College
Gurgaon

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30	18COM1229	TAZIM	TECHNICAL ANALYSIS	DR. MEGHNA AGGARWAL
31	18COM1257	SUNIL SHAH	TECHNICAL ANALYSIS	DR. MEGHNA AGGARWAL
32	18COM1211	SHANTANU	TECHNICAL ANALYSIS	DR. MEGHNA AGGARWAL
33	18COM1256	SUNIL PANDIT	TECHNICAL ANALYSIS	DR. MEGHNA AGGARWAL
34	18COM1240	VIDHI KANODIA	TECHNICAL ANALYSIS	DR. MEGHNA AGGARWAL
35	18COM1244	VINAYAK YADAV	TECHNICAL ANALYSIS	DR. MEGHNA AGGARWAL

Internal Quality Assurance Cell (IQAC)
Deen Dayal Upadhyaya College
University of Delhi

Anushka Yadav
B.Com Hons
Section A
Semester 6
18COM1024

FOI Assignment: Technical Analysis

Coordinator
Internal Quality Assurance Cell (IQAC)
Deen Dayal Upadhyaya College
University of Delhi

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08-Jan-21	204.35	206	200.25	201.5	209.03
11-Jan-21	204	206.1	201.25	202.5	209.16
12-Jan-21	203	206.9	201.6	206.45	209.52
13-Jan-21	207.45	213	205.25	211.25	209.87
14-Jan-21	212	216.5	211.6	214.15	210.07
15-Jan-21	214.9	218.5	211.2	217.85	210.21
18-Jan-21	218.4	222	214.6	219.75	210.33
19-Jan-21	221	221.7	217.5	218.85	210.49
20-Jan-21	218.5	219	215.7	217.65	210.48
21-Jan-21	219	219.5	212.2	213.7	210.39
22-Jan-21	214	214.75	209.15	210.7	210.12
25-Jan-21	212	212.5	206.85	207.8	210.43
27-Jan-21	208	212.65	207.1	210.65	210.55
28-Jan-21	209.25	211	205.75	206.6	210.37
29-Jan-21	208.55	208.8	202.35	203.25	210.67
01-Feb-21	204	217.95	201.8	215.95	211.02
02-Feb-21	220	223.5	217	218.2	211.22
03-Feb-21	221.5	222	215.7	216.75	211.98
04-Feb-21	216.1	231.4	216	229.95	212.99
05-Feb-21	232.15	238.85	227.25	234.35	213.76
08-Feb-21	237.5	238.05	231.5	233.1	214.38
09-Feb-21	234.6	239.2	228.2	229	215.03
10-Feb-21	229	231.1	223.1	227.55	215.87
11-Feb-21	229	229.3	224.5	226.45	216.46
12-Feb-21	225.75	225.75	215.8	217.45	217.14
15-Feb-21	218.45	221	217.5	218.6	217.77
16-Feb-21	219.05	221.8	217.25	218.25	218.22
17-Feb-21	217.6	218.4	216.55	217.75	218.53
18-Feb-21	218.2	220.6	217.9	218.85	218.60
19-Feb-21	218.85	218.9	214	215.95	218.17
22-Feb-21	212	212	206	207.05	217.72
23-Feb-21	208	210.55	207	208.5	217.32
24-Feb-21	209.1	209.8	206.5	208.85	216.98
25-Feb-21	209.5	211.2	208.8	209.15	216.58
26-Feb-21	207.25	208	203	203.85	216.43
01-Mar-21	205.45	207.75	204.05	206.9	216.79

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ITC- Daily Price Data from 1 Sept'20 to Mar'21

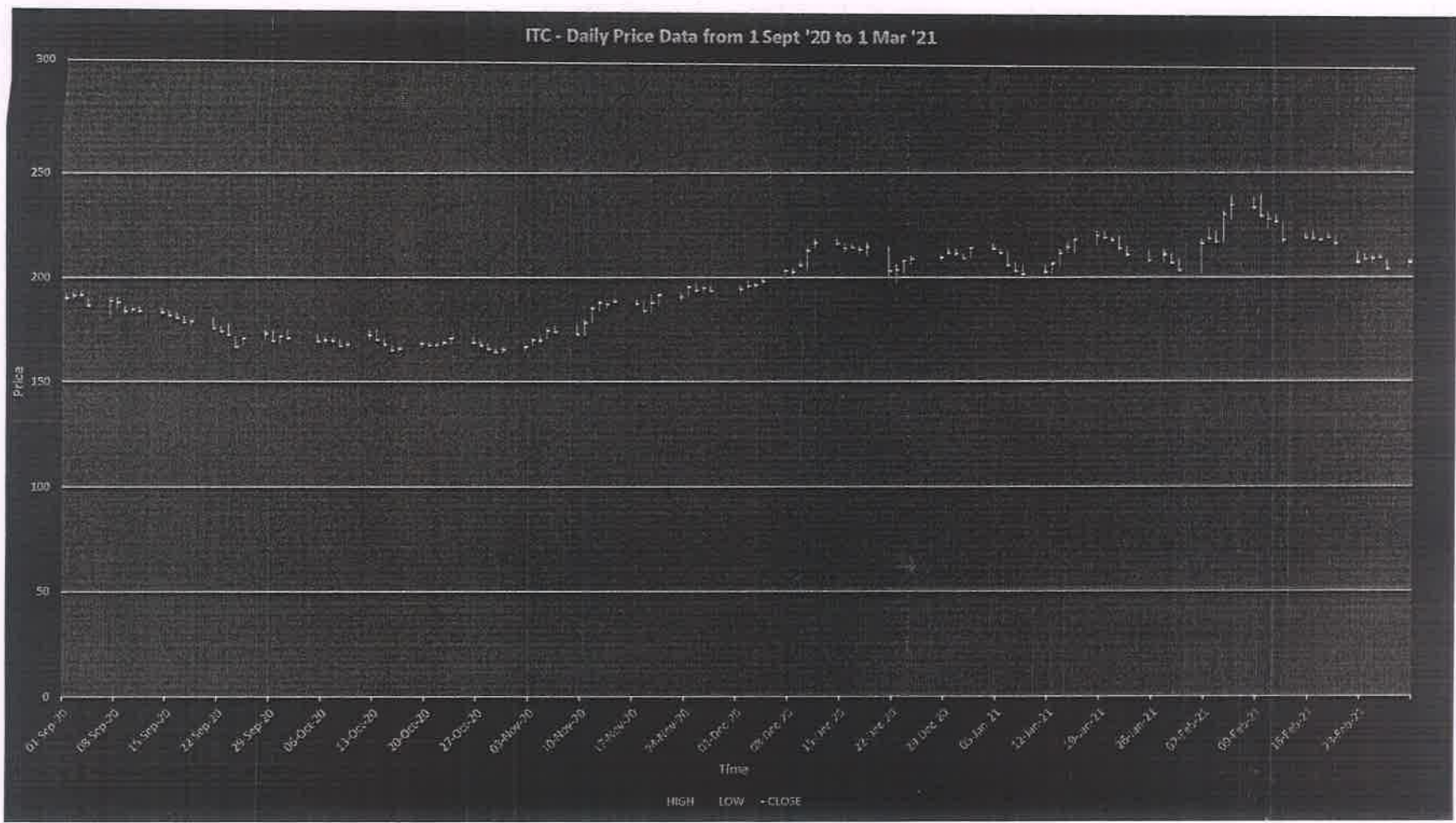
Date	OPEN	HIGH	LOW	CLOSE	25-day Moving Average
01-Sep-20	191.1	192.35	188.25	190.2	#N/A
02-Sep-20	191.3	193	189.65	191.35	#N/A
03-Sep-20	191.4	193.25	190	191.6	#N/A
04-Sep-20	190	190	185.7	186.7	#N/A
07-Sep-20	187.25	190.5	180.8	189.1	#N/A
08-Sep-20	189.6	190.55	184.6	188.15	#N/A
09-Sep-20	185.5	186.25	182.3	183.8	#N/A
10-Sep-20	184.1	185.7	183.2	184.9	#N/A
11-Sep-20	184.9	186.5	182.75	183.95	#N/A
14-Sep-20	185.8	185.85	183	183.35	#N/A
15-Sep-20	184	184.2	180.8	181.8	#N/A
16-Sep-20	181.85	183.5	180.05	180.65	#N/A
17-Sep-20	180.8	181.5	177.8	178.6	#N/A
18-Sep-20	179.55	179.85	177	179.1	#N/A
21-Sep-20	180	180.6	175.05	175.75	#N/A
22-Sep-20	175.75	176.75	173.75	174.2	#N/A
23-Sep-20	174.95	177.55	171.7	172.5	#N/A
24-Sep-20	171.7	171.75	166.15	166.55	#N/A
25-Sep-20	168.9	171.2	167	170.75	#N/A
28-Sep-20	171	174.8	170.5	173.3	#N/A
29-Sep-20	174.75	174.75	169	169.4	#N/A
30-Sep-20	170	172.1	168.7	171.7	#N/A
01-Oct-20	174.5	174.6	170.1	170.85	#N/A
05-Oct-20	171.1	172.8	168.75	169.25	#N/A
06-Oct-20	169.5	171.6	168.1	169.9	178.27
07-Oct-20	170	170.9	169	169.5	177.30
08-Oct-20	170.1	170.4	166.9	167.15	176.35
09-Oct-20	167.5	168.9	166.35	167.85	175.77
12-Oct-20	170.5	175.2	170	172.2	175.01
13-Oct-20	172.85	174.85	169.5	170.15	174.20
14-Oct-20	170.55	171	167.05	167.8	173.45
15-Oct-20	167.7	167.8	164.55	165.05	172.68
16-Oct-20	165.5	166.8	163.8	165.7	172.05
19-Oct-20	166.8	168.9	166.15	168.25	171.42
20-Oct-20	168	168.3	166.7	167.45	170.85
21-Oct-20	168.15	168.9	166.6	167.65	170.37
22-Oct-20	167.55	169.1	167	168.55	170.05
23-Oct-20	168.95	171	167.75	170.75	169.63
26-Oct-20	171.5	171.6	168.25	168.55	169.29
27-Oct-20	168.5	169.3	166.75	167.2	168.94
28-Oct-20	168.5	168.5	165	165.5	168.59
29-Oct-20	165	165.95	163.45	163.85	168.54
30-Oct-20	164	166.8	163.35	165.25	168.38

Coordinator
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University of Delhi

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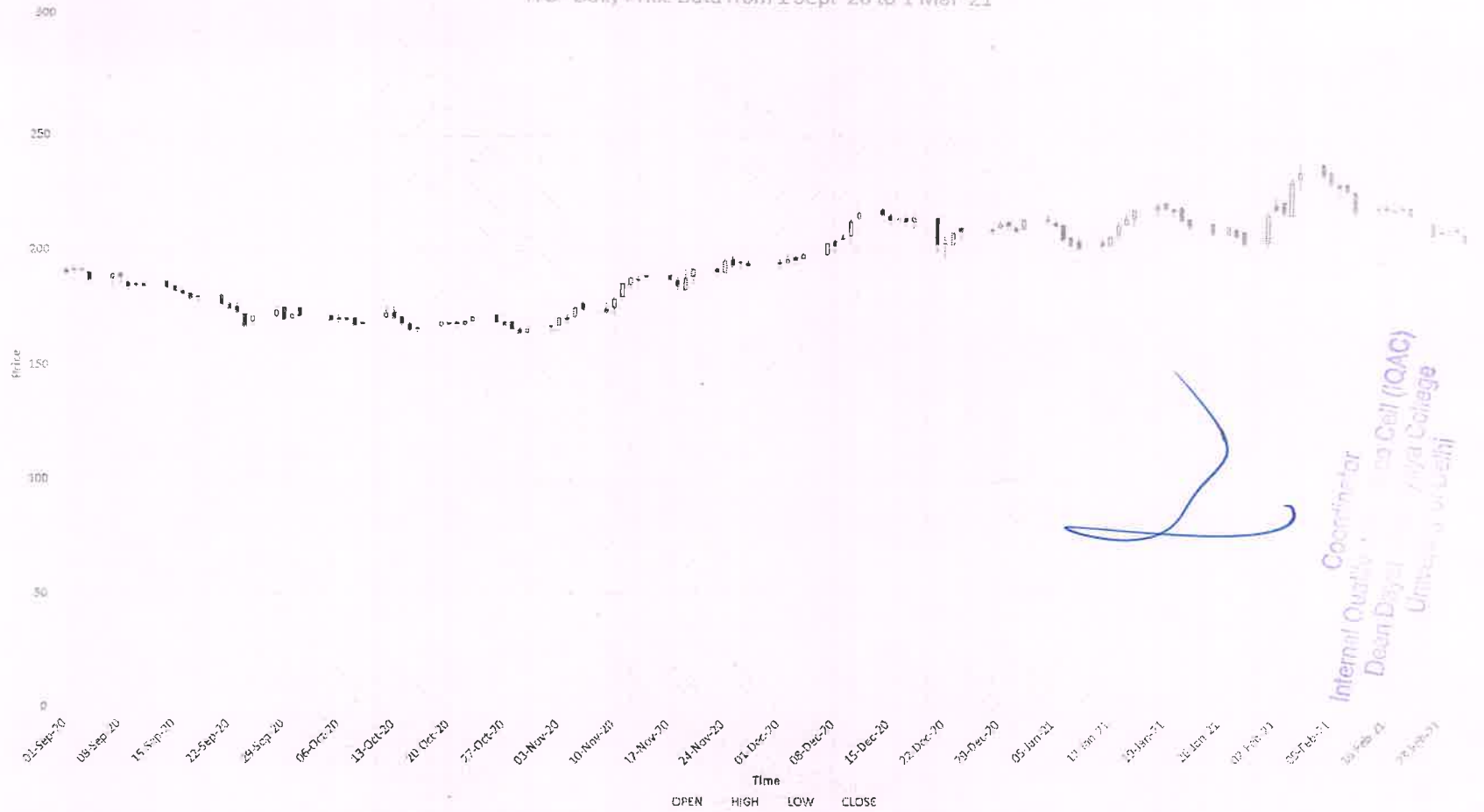
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Coordinator
Internal Quality Assurance Cell (IQAC)
Government College
Deen Dayal Upadhyay
University, Lucknow

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ITC - Daily Price Data from 1 Sept '20 to 1 Mar '21



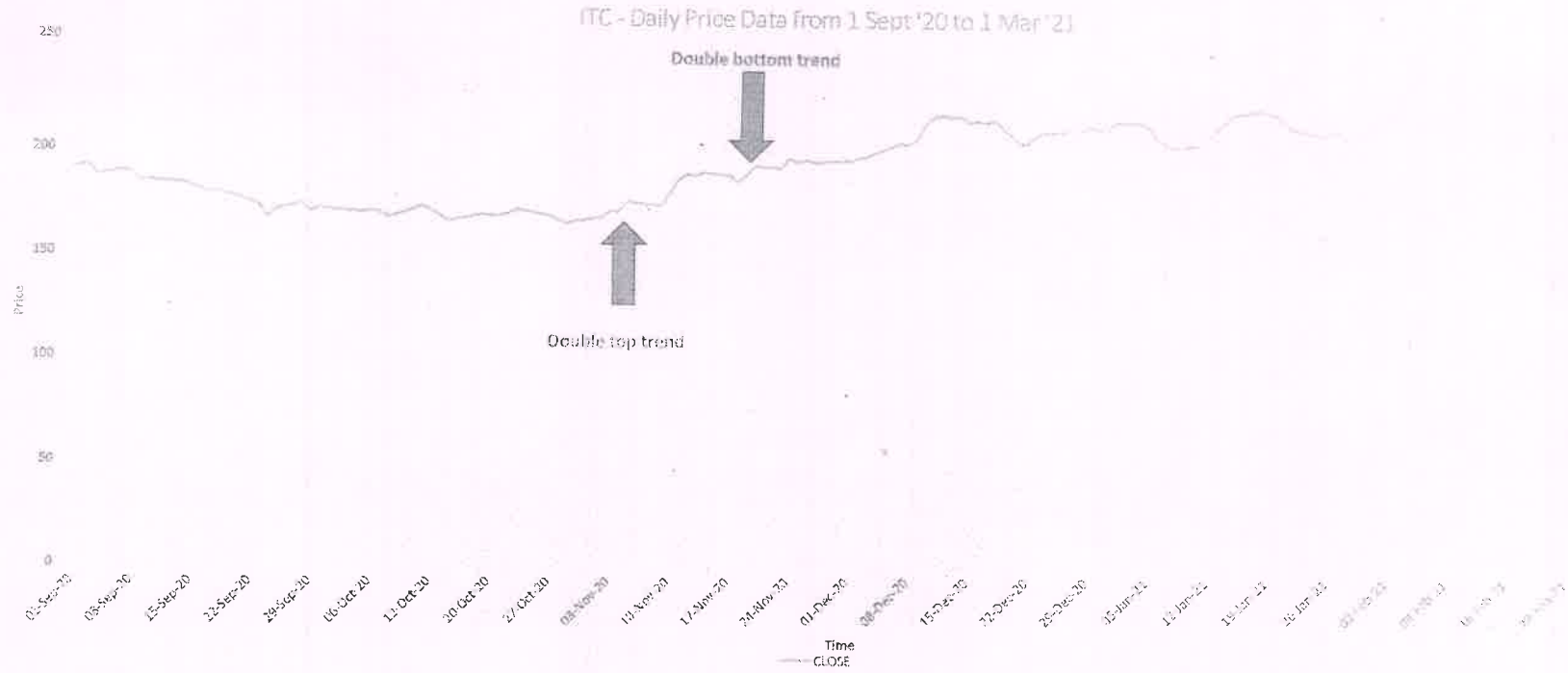
Coordinator
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University of Delhi

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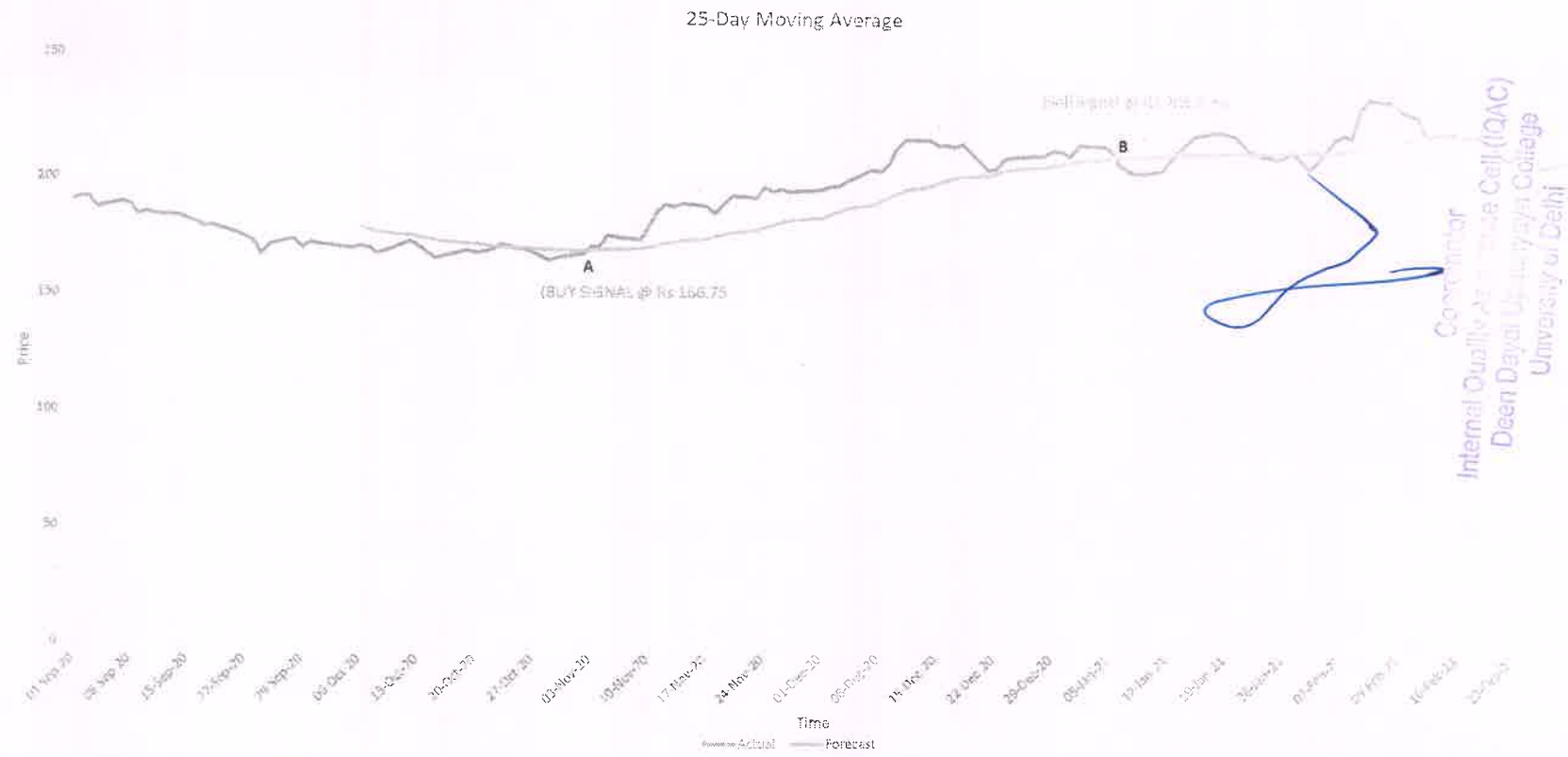
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Deen Dayar Upadhyaya College
University of Delhi

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UNIVERSITY OF DELHI
Environmental Studies
(Six month Module for Undergraduate Courses)

6

Unit 1 : Introduction to environmental studies

- Multidisciplinary nature of environmental studies
- Scope and importance
- Need for public awareness.

(2 lectures)

Unit 2 : Ecosystems

- Concept of an ecosystem.
- Structure and function of an ecosystem.
- Energy flow in an ecosystem: food chains, food webs and ecological pyramids.
- Ecological succession.
- Case studies of the following ecosystems :
 - a) Forest ecosystem
 - b) Grassland ecosystem
 - c) Desert ecosystem
 - d) Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

(6 lectures)

Unit 3 : Natural Resources : Renewable and Non-renewable Resources

- Land resources and land use change : Land as a resource, land degradation, landslides (natural & man-induced), soil erosion and desertification.
- Forests & forest resources : Use and over-exploitation, deforestation, case studies.
- Impacts of deforestation, mining, dam building on environment, forests, biodiversity and tribal populations.
- Resettlement and rehabilitation of project affected persons; problems and concerns, case studies
- Water resources: Use and over-exploitation of surface and ground water, floods, drought, conflicts over water (international & inter-state).
- Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies.
- Energy resources: Renewable and non renewable energy sources, use of alternate energy sources, growing energy needs, case studies.

(8 lectures)

Unit 4 : Biodiversity and Conservation

- Levels of biological diversity : genetic, species and ecosystem diversity.
- Biogeographic zones of India
- Ecosystem and biodiversity services: Ecological, economic, social, ethical, aesthetic and Informational values
- Biodiversity patterns and global biodiversity hot spots
- India as a mega-biodiversity nation; Endangered and endemic species of India
- Threats to biodiversity : Habitat loss, poaching of wildlife, man-wildlife conflicts, biological invasions.
- Conservation of biodiversity : In-situ and Ex-situ conservation of biodiversity.

(8 lectures)

Unit 5 : Environmental Pollution

- What is environmental pollution and its types?
- Causes, effects and control measures of :
 - a) Air pollution

- c) Air pollution: air quality and marine
- d) Noise pollution
- e) Thermal pollution
- Nuclear hazards and human health risks
- Solid waste management: Control measures of urban and industrial waste.
- Role of an individual in prevention of pollution.
- Pollution case studies.

(8 lectures)

Unit 6 : Environmental Policies & Practices

- Concept of sustainability and sustainable development.
- Water conservation & watershed management.
- Climate change, global warming, acid rain, ozone layer depletion.
- Disaster management: floods, earthquake, cyclones and landslides.
- Wasteland reclamation.
- Environment Protection Act.
- Air (Prevention and Control of Pollution) Act.
- Water (Prevention and control of Pollution) Act
- Wildlife Protection Act
- Forest Conservation Act
- Issues involved in enforcement of environmental legislation.
- Environment: rights and duties.

(7 lectures)

Unit 7 : Human Population and the Environment

- Population growth, demographic variation among nations.
- Environment, human health and welfare; infectious and lifestyle diseases in contemporary world.
- Value Education: Environmental ethics.
- Environmental communication and public awareness, case studies.

(6 lectures)

Unit 8 : Field work

- Visit to an area to document environmental assets river/ forest/ grassland/ hill/ mountain
- Visit to a local polluted site-Urban/Rural/Industrial/Agricultural
- Study of common plants, insects, birds.
- Study of simple ecosystems-pond, river, hill slopes, etc.

(Equal to 5 lectures)

Suggested Further Readings:

- 1 Brunner RC, 1989, Hazardous Waste Incineration, McGraw Hill Inc. 480pgs.
- 2 Carson, Rachel. 1962. Silent Spring (Boston: Houghton Mifflin, 1962), Mariner Books, 2002
- 3 Cheney, J. 1989. Postmodern environmental ethics. *Environmental Ethics* 11: 117-134.
- 4 Economy, Elizabeth. 2010. The River Runs Black: The Environmental Challenge to China's Future.
- 5 Gadgil, M. & Ramachandra, G. 1993. *This fissured land: an ecological history of India*. Univ of California Press.
- 6 Gleeson, B. and Low, N. (eds.) 1999. Global Ethics and Environment, London, Routledge.
- 7 Gleick, H.P. 1993. Water in Crisis, Pacific Institute for Studies in Development.
- 8 Environment and Security. Stockholm Environmental Institute, Oxford University Press.
- 9 Groom, Martha J., Gary K. Meffe, and Carl Ronald Carroll. Principles of conservation biology.

- 9 37.
- 10 Heywood V.H. & Watson, R.T. 1995. Global Biodiversity Assessment. Cambridge University Press.
- 11 McCully, P. 1996. *Silenced rivers: the ecology and politics of large dams*. Zed Books.
- 12 McNeill, John R. 2000. *Something New Under the Sun: An Environmental History of the Twentieth Century*.
- 13 Norton, B. G. 1984. Environmental ethics and weak anthropocentrism. *Environmental Ethics* 6: 131-148.
- 14 Odum, E.P., Odum, H.T. & Andrews, J. 1971. *Fundamentals of Ecology*. Philadelphia: Saunders.
- 15 Pepper, I.L., Gerba, C.P. & Brusseau, M.L. 2011. *Environmental and Pollution Science*. Academic press, 2011.
- 16 Philander, S. George (Ed.). (2012). *Encyclopedia of global warming & climate change*. (2nd ed., Vols. 1-3). Thousand Oaks, CA: SAGE Publications, Inc.
- 17 Rao MN and Datta AK, 1987. *Waste Water Treatment*. Oxford and IBH Publishing Co. Pvt. Ltd.
- 18 Raven, P.H., David M. H., & Linda R. B. *Environment*. De Boeck, 2009.
- 19 Reaka-Kudla, Marjorie L., Don E. Wilson, and Edward O. Wilson, eds. 1996. *Biodiversity II: understanding and protecting our biological resources*. Joseph Henry Press.
- 20 Ricklefs, R. E., & Miller, G.L. 2000. *Ecology*. W. H. Freeman, New York.
- 21 Robbins, P. 2012. *Political ecology: A critical introduction*. John Wiley & Sons.
- 22 Rosencranz, A., Divan, S. & Noble, M.L. *Environmental law and policy in India*. 2001. Tripathi 1992.
- 23 Rothmun, H.K. 1998. *The Greening of a Nation? Environmentalism in the United States since 1945*.
- 24 Sengupta, R. 2003. *Ecology and economics (OUP): An approach to sustainable development.* OUP Catalogue.
- 25 Singh, J.S., Singh, S.P. and Gupta, S.R. 2006. *Ecology, Environment and Resource Ecology, Environment and Resource Conservation*. Anamaya Publishers.
- 26 Sodhi, N.S., Gibson, L. & Raven, P.H.G. (eds). 2013. *Conservation biology: voices from the Tropics*. John Wiley & Sons.
- 27 Thapar, V. 1998. *Land of the Tiger: A Natural History of the Indian Subcontinent*.
- 28 Van Leeuwen, C. J., & Vermeire, T. G. 2007. *Risk assessment of chemicals*.
- 29 Warren, C.E. 1971. *Biology and water pollution control*.
- 30 Wilson, E. O. 2006. *The creation: An appeal to save life on earth*. New York: Norton.
- 31 World Commission on Environment and Development. 1987. *Our Common Future*. Oxford: Oxford University Press.

Officiating Principal
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Sector-3, Dwarke, New Delhi-78

***Note:** The course is uploaded as sent by the Department concerned. The scheme of marks and number of periods/lectures will be determined by the University and will be corrected in the syllabus according to Academic Council and Executive Council Minutes (dated 19th July 2014) and guidelines framed by the Course Implementation Committee, University of Delhi. Editing, typographical changes and formatting will be undertaken further.

Undergraduate Programme Secretariat



DEEN DAYAL UPADHYAYA COLLEGE

Sector-3, Dwarka, New Delhi-110078

Session: 2020 - 21

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System
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AECC- Environmental Science : 72182801

Course Name: B.Com. (H) Sec-A Sem. I

Name of the Faculty: Dr. Pramod Kumar

INTERNAL ASSESSMENT ASSIGNMENT

S.No.	Roll No.	Name of the Student	Name of the Topic
1.	20COM1502	Aashish Tahlan	<ul style="list-style-type: none"> Explain extinction of Vulture and Carbon footprint Effects of Modern Agriculture Explain the importance of wetlands with regard to biodiversity and water conservation. Write a short note on Ramsar Convention on Wetlands.
2.	20COM1504	Aavesh	<ul style="list-style-type: none"> Write objective of Swachh Bharat Abhiyan. Discuss the challenges and means to make it more effective and successful, Differentiate b/w Primary and Secondary air pollutants, Freshwater and Marine ecosystem
3.	20COM1505	Abhishek Chauhan	<ul style="list-style-type: none"> Solid waste management and its control measures Problems and challenges of e-waste management in India. Explain how various environmental issues have been responsible for increasing cases of farmer suicides in India? What measures should the government take to improve the agricultural sector in the country?
4.	20COM1506	Aditi	<ul style="list-style-type: none"> Concept of sustainability and sustainable development Think global and act local for sustainable development-how this is practically possible for urban city? Discuss giving examples Describe Vermicomposting and Joint forest management.
5.	20COM1508	Aditi Rathi	<ul style="list-style-type: none"> Explain Nuclear hazards and human health risks What are the strategies adopted to minimize the damages caused by earthquakes? Biogeochemical cycles: H₂O, O₂, N₂, Carbon, S and P
6.	20COM1509	Aditya Kumar	<ul style="list-style-type: none"> Explain Multidisciplinary nature of environmental studies Describe scope and importance of Environmental studies for human welfare. Write a note on Eutrophication.
7.	20COM1510	Aditya Tanwar	<ul style="list-style-type: none"> Explain Biological invasions. What are invasive species? How are they threat to biodiversity? Explain Conservation of biodiversity.
8.	20COM1511	Akanksha	<ul style="list-style-type: none"> Cultural practices are powerful tools to protect the environment and could also be threats to our ecosystem health. Justify the statement with examples. Explain problems associated with Natural Resources
9.	20COM1512	Akanksha Rastogi	<ul style="list-style-type: none"> Describe Ecological Succession and Food Pyramid Explain briefly, your views on the preparedness of Delhi state to tackle an earthquake disaster (University of Delhi)
10.	20COM1513	Akanshi Sharma	<ul style="list-style-type: none"> Explain Biodiversity, Levels and its importance Write a brief note on Smart cities Explain how indigenous and local communities can contribute towards the protection of biodiversity as well as conservation of forest and water resources
11.	20COM1514	Akash	<ul style="list-style-type: none"> Discuss Environmental laws and acts in India are inappropriate. Differentiate b/w Chipko movement and Beej bachao andolan.

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Sector-3, Dwarka, New Delhi-78



DEEN DAYAL UPADHYAYA COLLEGE

Sector-3, Dwarka, New Delhi-110078

Session: 2020 - 21



S.No.	Roll No.	Name of the Student	Name of the Topic
			Appiko Movement
12.	20COM1515	Akash Kumar Shah	<ul style="list-style-type: none">Describe Odd-even formula and its impact on air qualityWildlife Trafficking"Desert areas in India are a unique ecosystem that is ecologically, socially, and economically very important but at the same time are threatened due to human population pressure". Justify this statement giving relevant examples and arguments.
13.	20COM1517	Aman	<ul style="list-style-type: none">Explain Climate change, Global warming, Acid rain and Ozone depletion,Despite various anti-pollution laws and policies, India's metropolitan cities remain among the most polluted cities in the world. Why?
14.	20COM1518	Aman Kumar	<ul style="list-style-type: none">Explain Conflicts over water (international and inter-state)What are oil spills? How they contribute to marine pollution.
15.	20COM1519	Aman Singh	<ul style="list-style-type: none">Pollution Case Studies: Smog, Exxon Valdez oil spill disaster, Bhopal Gas Tragedy, Chernobyl and Hiroshima and Nagasaki Nuclear disaster
16.	20COM1520	Amit Kumar Meena	<ul style="list-style-type: none">Explain various threats to biodiversityDescribe Groundwater rechargeWhat kinds of practices are required to manage the ever increasing urban and industrial waste generated in the metropolitan cities of India? Discuss.
17.	20COM1523	Ananya Agrawal	<ul style="list-style-type: none">Discuss IUCN, Red data book and Global 200 in detail.What are the major Environmental issues today?
18.	20COM1524	Ananya Ojha	<ul style="list-style-type: none">What are invasive species? How are they threat to biodiversity?Differentiate b/w National park and Zoological Park, Biogas and Liquefied petroleum gas. Biosphere and Atmosphere
19.	20COM1526	Ankit Rana	<ul style="list-style-type: none">Do various environmental legislations lead to human-wildlife conflict in our country? Explain in detail.Describe Biogeographic zones of India and Biodiversity hotspots.
20.	20COM1527	Ankita Sharma	<ul style="list-style-type: none">Discuss Deforestation, its causes and impactsExplain Green energy and Impacts of mining.Carbon footprint and its impact on global warming
21.	20COM1528	Ankur Kushwaha	<ul style="list-style-type: none">Dam building on environment: Taking one example discuss how dam building affects ecological balance of ecosystemElaborate Jhoom cultivation
22.	20COM1531	Anshita Yadav	<ul style="list-style-type: none">Explain Composition & Structure of Earth's AtmosphereEcosystems and evolutionWith appropriate examples, discuss the contribution of women in protecting the environment and raising environmental awareness in India.
23.	20COM1532	Anurag	<ul style="list-style-type: none">Explain different pollution case studiesImpacts of Climate Change on human communities.
24.	20COM1536	Atul Pal	<ul style="list-style-type: none">Ecosystem Services. Write Explanatory notes on its importanceNational Solar MissionDifferentiate b/w Ex-situ and In-situ: Photosynthesis and Respiration
25.	20COM1538	Ayush Singla	<ul style="list-style-type: none">Discuss the role of disaster management to control recurrent floods in Indian plains

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DEEN DAYAL UPADHYAYA COLLEGE

Sector-3, Dwarka, New Delhi-110078

Session: 2020 - 21



S.No.	Roll No.	Name of the Student	Name of the Topic
			<ul style="list-style-type: none">What are the causes of global warming? Discuss its effects on the human communities and agriculture.
26.	20COM1540	Bhawna	<ul style="list-style-type: none">Describe Wasteland ReclamationCyclones in India and Ecotourism
27.	20COM1542	Chhavi Karn	<ul style="list-style-type: none">Explain the importance of Nature reservesTribal populations and rightsHuman wildlife conflicts in Indian context.
28.	20COM1543	Davinder Singh	<ul style="list-style-type: none">Human health hazards from Nuclear power plants,Pesticides and human healthGlobal warming.
29.	20COM1544	Deepanshi Goyal	<ul style="list-style-type: none">Explain briefly, the R's principle of waste management.'Waste segregation is the primary step for efficient solid waste management, yet it is in minimal practice in India'. Justify the statementAir quality index.
30.	20COM1545	Deepanshu	<ul style="list-style-type: none">Multidisciplinary nature of environmental studiesExplain London Smog and Los Angeles SmogDescribe Eutrophication and Agenda-21Discuss Project tiger, India
31.	20COM1546	Deepanshu Arora	<ul style="list-style-type: none">Write objective of Swachh Bharat Abhiyan. Discuss the challenges and means to make it more effective and successfulImpacts of Air pollutionExplain the steps that need to be taken at the individual level and by the government for conservation of water in India.
32.	20COM1548	Dhruv Dewan	<ul style="list-style-type: none">Human population explosion is causing severe resource depletion and environmental degradation. Justify giving examplesWrite importance of One horned rhinoceros, Asiatic lions, Mangrove forest, Bishnois, Jim Corbett National Park, Shifting cultivation
33.	20COM1549	Diksha Kapoor	<ul style="list-style-type: none">Environmental Pollution. Explain Air and Water-Types, causes, effects, controlEnlist some important steps and practices that can be taken by citizens to control indoor and outdoor air pollution in urban areas.
34.	20COM1550	Dilip Kumar Arya	<ul style="list-style-type: none">Environmental Pollution. Explain Soil and Noise-Types, causes, effects, controlLand degradation and desertification are one of the major challenges faced by humanity today. Justify the statement with respect to social, economic and environmental impacts.
35.	20COM1551	Dilkhush Meena	<ul style="list-style-type: none">Discuss Ecosystem ServicesProject tiger, Project Elephant and Project Crocodile
36.	20COM1553	Divyanshi Garg	<ul style="list-style-type: none">Man wildlife conflicts: case studiesDescribe Biomagnification and Project Brown Antlered Deer
37.	20COM1554	Diyara Mittal	<ul style="list-style-type: none">Environmental ethics: role of Indian and other religions in conservation of environmentDuring a recent visit to your village in south India, you come to know that a multinational company is setting up its pesticide manufacturing unit in the outskirts of the village. The villagers are not much aware of the possible harmful impacts of such an industry in their village. Based on your knowledge about Bhopal



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S.No.	Roll No.	Name of the Student	Name of the Topic
			Gas Tragedy and Minamata Disease Tragedy, explain the potential harm of this industry to the villagers. Also, suggest ways how villagers should coordinate with the government and the company to avoid any such tragedy in the village.
38.	20COM1556	Besha Jain	<ul style="list-style-type: none">Water resources: Use and Over-exploitationFloods and droughts
39.	20COM1557	Farman Ahmad	<ul style="list-style-type: none">Explain Forest and Grassland Ecosystem in detailProject Great Indian Bustard
40.	20COM1559	Gopichand Rajput	<ul style="list-style-type: none">Explain Desert and Aquatic Ecosystem in detailBhopal Gas Tragedy
41.	20COM1562	Harmandeep Singh	<ul style="list-style-type: none">Write short notes on: Ecosystem, Energy flow, Food chain, Food web, Food Pyramid and Ecological SuccessionExplain Kyoto Protocol & Conference of Parties (CoP)
42.	20COM1563	Harsh Saraswat	<ul style="list-style-type: none">Explain Water Audit and National Solar MissionDifferentiate b/w Ex-situ and In-situ; Photosynthesis and Respiration, pollutant and Toxicant, Petroleum and BiogasExplain the role of human communities to safeguard environment at local level.
43.	20COM1564	Harshit Kumar	<ul style="list-style-type: none">"The next world war may be fought over water". Justify the statement with suitable examples.Explain Air quality index and Ganga Action Plan
44.	20COM1567	Himanshu	<ul style="list-style-type: none">What are invasive species? How are they threat to biodiversity?Differentiate b/w National park and Zoological Park, Biogas and Liquefied petroleum gas, Biosphere and Atmosphere
45.	20COM1568	Ipsha Khatter	<ul style="list-style-type: none">Environmental Laws: Air, Water, Wildlife protection act, forest act and EPA
46.	20COM1570	Aayush Chauhan	<ul style="list-style-type: none">Write Vision of Eco-friendly products and Green EnergyDeforestation: causes and impactsUsing examples of various international summits and treaties, explain the importance of international co-operation for tackling global environmental issues.
47.	20COM1571	Himani Sachdeva	<ul style="list-style-type: none">Describe Kerala Floods, Landslides in IndiaOdd-even formula and its impact on air qualityVulture breeding program
48.	20COM1572	Abhimanyu Anurag	<ul style="list-style-type: none">Differentiate Pollutants and Toxicants, Primary and Secondary successionJustify statement. Most floods are anthropogenic.Describe the various stages of succession on rock and water.
49.	20COM1573	Abhishek Raj	<ul style="list-style-type: none">Mining is an essential environmental evil. Justify with a case studyDiscuss Solid Waste Management (SWM)Explain the various dangers and problems associated with landfills in metropolitan areas like Delhi. Also write a note on solid waste disposal measures that need to be taken to reduce the burden on existing landfills.
50.	20COM1575	Ankit Yadav	<ul style="list-style-type: none">National Environmental Awareness Campaign (NEAC),National Green Corps (NGC) and Eco Club Programme
51.	20COM1576	Ashish Verma	<ul style="list-style-type: none">Describe Plastic Free India and Paris Convention/AgreementComposition & Structure of Earth's AtmosphereEcosystems and evolution



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S.No.	Roll No.	Name of the Student	Name of the Topic
			<ul style="list-style-type: none">• Values of Biodiversity.
52.	20COM1724	Kanishk Yadav	<ul style="list-style-type: none">• Project Great Indian Bustard, Project Tiger, Project Elephant, Vulture breeding programme, Save Western Ghats movement,• Explain Homeostasis, Species reintroduction and translocation.
53.	20COM1725	Muskaan	<ul style="list-style-type: none">• Explain UNEP and CITES• Differentiate between Photosynthesis and Respiration, Biotic and Abiotic Components, Biomagnification and Eutrophication.
54.	20COM1726	Nancy	<ul style="list-style-type: none">• India as Mega-diversity spot. Comment giving examples• With the help of a case study each, explain the in-situ and ex-situ approach for protecting the biodiversity.
55.	20COM1727	Nidhi Yadav	<ul style="list-style-type: none">• Explain: Vulture breeding programme• Differentiate b/w E-waste and Kitchen wet waste; EPA and wildlife Protection Act; Global Warming and Ozone layer depletion, Pesticide and Compost
56.	20COM1728	Nitish	<ul style="list-style-type: none">• Explain Land resources and land use change• Soil erosion, Desertification, Bioamplification and Sacred forests.
57.	20COM1729	Pankaj Thakur	<ul style="list-style-type: none">• In contrast to rituals of the ancient Indian society the activities of modern Indian society have harmed the environment and biodiversity. Explain.• Comment on the statement 'environmental damage can give rise to tremendous social and economic inequality'.
58.	20COM1730	Pratham Anand	<ul style="list-style-type: none">• Mining is an essential environmental evil. Justify with a case study• Explain with suitable examples, why Indian megacities are more prone to facing water crisis in the next decade. As a resident of Delhi and as a concerned citizen, suggest some water conservation policies that the State Government should adopt in their master plan for the next 10 years (till 2030).• Explain Role of Public Awareness
59.	20COM1731	Rajesh	<ul style="list-style-type: none">• Explain Case Studies: Cauvery river water conflict, Sardar Sarovar Dam, Tarun Bharat Sangh, Kali Bachao Andolan and Silent Valley Movement
60.	20COM1732	Moksh Sharma	<ul style="list-style-type: none">• Explain different species with examples: Keystone, Flagship, Umbrella, Indicator, Endemic and Exotic species.• "Increasing consumerism has a major impact on environment with respect to resource depletion and pollution". Elaborate using relevant examples and case studies.
61.	20COM1733	Nirvani Singh	<ul style="list-style-type: none">• Explain importance of Rainwater harvesting in urban areas• Environmental effects of COVID-19 pandemic and potential strategies of sustainability
62.	20COM1734	Joel k. Reji	<ul style="list-style-type: none">• Water resources: Use and Over-exploitation• Floods and droughts
63.	20COM1734	Raj Verma	<ul style="list-style-type: none">• Discuss Yanchuan action plan• Ecosystem preservation and conservation strategies• Basics of Ecosystem restoration.

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AECC- Environmental Science : 72182801

Course Name: B.Com. (H) Sec-B Sem. I

Name of the Faculty: Dr. Pramod Kumar

INTERNAL ASSESSMENT ASSIGNMENT

S.No.	Roll No.	Name of the Student	Name of the Topic
1.	20COM1651	Jai	<ul style="list-style-type: none"> Cultural practices are powerful tools to protect the environment and could also be threats to our ecosystem health. Justify the statement with examples. Explain problems associated with Natural Resources
2.	20COM1652	Jasleen Waraich	<ul style="list-style-type: none"> Describe Ecological Succession and Food Pyramid Explain briefly, your views on the preparedness of Delhi state to tackle an earthquake disaster.
3.	20COM1653	Jatin Bansal	<ul style="list-style-type: none"> Year 2020 was a terrible year for Climate Disasters. Explain the statement using California wildfires as a case study.
4.	20COM1655	Jyoti Upadhaya	<ul style="list-style-type: none"> Discuss Environmental laws and acts in India are inappropriate. Differentiate b/w Chipko movement and Beej bachao andolan, Appiko Movement
5.	20COM1656	Karishma Meena	<ul style="list-style-type: none"> Describe Odd-even formula and its impact on air quality Wildlife Trafficking "Desert areas in India are a unique ecosystem that is ecologically, socially, and economically very important but at the same time are threatened due to human population pressure". Justify this statement giving relevant examples and arguments.
6.	20COM1657	Kashish Gandhi	<ul style="list-style-type: none"> Explain Climate change, Global warming, Acid rain and Ozone depletion. Despite various anti-pollution laws and policies, India's metropolitan cities remain among the most polluted cities in the world. Why?
7.	20COM1658	Keshav Arora	<ul style="list-style-type: none"> Explain Conflicts over water (international and inter-state) What are oil spills? How they contribute to marine pollution.
8.	20COM1659	Khushboo	<ul style="list-style-type: none"> Pollution Case Studies: Smog, Exxon Valdez oil spill disaster, Bhopal Gas Tragedy, Chernobyl and Hiroshima and Nagasaki Nuclear disaster
9.	20COM1660	Khushi Aggarwal	<ul style="list-style-type: none"> Explain various threats to biodiversity Describe Groundwater recharge What kinds of practices are required to manage the ever increasing urban and industrial waste generated in the metropolitan cities of India? Discuss.
10.	20COM1664	Komal	<ul style="list-style-type: none"> Explain Biodiversity, Levels and its importance Write a brief note on Small Scale Industries Explain how indigenous and local communities can contribute towards the protection of biodiversity as well as conservation of forest and water resources
11.	20COM1665	Kritika Goyal	<ul style="list-style-type: none"> Explain extinction of Vulture and Carbon footprint Effects of Modern Agriculture Explain the importance of wetlands with regard to biodiversity and water conservation. Write a short note on Ramsar Convention on Wetlands.
12.	20COM1666	Mahak Jain	<ul style="list-style-type: none"> Explain reasons for increased air pollution in Delhi Write objective of Swachh Bharat Abhiyan. Discuss the challenges

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S.No.	Roll No.	Name of the Student	Name of the Topic
			and means to make it more effective and successful, <ul style="list-style-type: none">Differentiate b/w Primary and Secondary air pollutants, Freshwater and Marine ecosystem
13.	20COM1667	Manish Rana	<ul style="list-style-type: none">Solid waste management and its control measuresProblems and challenges of e-waste management in India.Explain how various environmental issues have been responsible for increasing cases of farmer suicides in India? What measures should the government take to improve the agricultural sector in the country?
14.	20COM1668	Mannu Malik	<ul style="list-style-type: none">Concept of sustainability and sustainable developmentThink global and act local for sustainable development-how this is practically possible for urban city? Discuss giving examplesDescribe Vermicomposting and Joint forest management.
15.	20COM1669	Manvi Goel	<ul style="list-style-type: none">Explain Nuclear hazards and human health risksWhat are the strategies adopted to minimize the damages caused by earthquakes?Biogeochemical cycles: H₂O, O₂, N₂, Carbon, S and P
16.	20COM1670	Mayank Kumar Singh	<ul style="list-style-type: none">Explain Multidisciplinary nature of environmental studiesDescribe scope and importance of Environmental studies for human welfare. Write a note on Eutrophication.
17.	20COM1672	Megha Meena	<ul style="list-style-type: none">Explain Biological invasions. What are invasive species? How are they threat to biodiversity?Explain Conservation of biodiversity.
18.	20COM1675	Mohamed Imran Churihar	<ul style="list-style-type: none">What are invasive species? How are they threat to biodiversity?Differentiate b/w National park and Zoological Park, Biogas and Liquefied petroleum gas, Biosphere and Atmosphere
19.	20COM1676	Mukul Chadha	<ul style="list-style-type: none">Do various environmental legislations lead to human-wildlife conflict in our country? Explain in detail.Describe Biogeographic zones of India and Biodiversity hotspots.
20.	20COM1677	Muskaan	<ul style="list-style-type: none">Discuss Deforestation, its causes and impactsExplain Green energy and Impacts of mining.Carbon footprint and its impact on global warming
21.	20COM1678	Naimish Verma	<ul style="list-style-type: none">Dam building on environment: Taking one example discuss how dam building affects ecological balance of ecosystemElaborate Jhoom cultivation
22.	20COM1682	Nidhi Devi	<ul style="list-style-type: none">Explain Composition & Structure of Earth's AtmosphereEcosystems and evolutionWith appropriate examples, discuss the contribution of women in protecting the environment and raising environmental awareness in India.
23.	20COM1683	Nikhil Singh	<ul style="list-style-type: none">Explain different pollution case studiesImpacts of Climate Change on human communities.
24.	20COM1684	Nikita Gupta	<ul style="list-style-type: none">Ecosystem Services. Write Explanatory notes on its importanceNational Solar MissionDifferentiate b/w Ex-situ and In-situ; Photosynthesis and Respiration.
25.	20COM1685	Nikita Singhal	<ul style="list-style-type: none">Discuss the role of disaster management to control recurrent floods in Indian plains.What are the causes of global warming? Discuss its effects on the human communities and agriculture.

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S.No.	Roll No.	Name of the Student	Name of the Topic
26.	20COM1687	Nishtha Malhotra	<ul style="list-style-type: none">Describe Wasteland ReclamationCyclones in India and Ecotourism
27.	20COM1688	Nistha Sharma	<ul style="list-style-type: none">Explain the importance of Nature reservesTribal populations and rightsHuman wildlife conflicts in Indian context.
28.	20COM1689	Nitish Brahma	<ul style="list-style-type: none">Human health hazards from Nuclear power plants,Pesticides and human healthGlobal warming.
29.	20COM1691	Pakhi Garg	<ul style="list-style-type: none">Explain briefly the R's principle of waste management.'Waste segregation is the primary step for efficient solid waste management, yet it is in minimal practice in India'. Justify the statementAir quality index.
30.	20COM1696	Piyush Aggarwal	<ul style="list-style-type: none">Multidisciplinary nature of environmental studiesExplain London Smog and Los Angeles SmogDescribe Eutrophication and Agenda-21Discuss Project tiger, India
31.	20COM1697	Piyush Kumar Singh	<ul style="list-style-type: none">Write objective of Swachh Bharat Abhiyan. Discuss the challenges and means to make it more effective and successfulImpacts of Air pollutionExplain the steps that need to be taken at the individual level and by the government for conservation of water in India.
32.	20COM1698	Pooja Meena	<ul style="list-style-type: none">Human population explosion is causing severe resource depletion and environmental degradation. Justify giving examplesWrite importance of One horned rhinoceros, Asiatic lions, Mangrove forest, Bishnois, Jim Corbett National Park, Shifting cultivation
33.	20COM1699	Pothula Sujinder Chaitanya	<ul style="list-style-type: none">Environmental Pollution. Explain Air and Water-Types, causes, effects, controlEnlist some important steps and practices that can be taken by citizens to control indoor and outdoor air pollution in urban areas.
34.	20COM1701	Pranjal Jain	<ul style="list-style-type: none">Environmental Pollution. Explain Soil and Noise-Types, causes, effects, controlLand degradation and desertification are one of the major challenges faced by humanity today. Justify the statement with respect to social, economic and environmental impacts.
35.	20COM1703	Pritika Ganotra	<ul style="list-style-type: none">Discuss Ecosystem servicesProject tiger, Project Elephant, Project Crocodile
36.	20COM1704	Priyanshi Jain	<ul style="list-style-type: none">Man wildlife conflicts: case studiesDescribe Biomagnification and Project Brown Antlered Deer
37.	20COM1705	Priyanshi Tandon	<ul style="list-style-type: none">Environmental ethics: role of Indian and other religions in conservation of environmentDuring a recent visit to your village in south India, you come to know that a multinational company is setting up its pesticide manufacturing unit in the outskirts of the village. The villagers are not much aware of the possible harmful impacts of such an industry in their village. Based on your knowledge about Bhopal Gas Tragedy and Minamata Disease Tragedy, explain the potential harm of this industry to the

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S.No.	Roll No.	Name of the Student	Name of the Topic
			villagers. Also, suggest ways how villagers should coordinate with the government and the company to avoid any such tragedy in the village.
38.	20COM1707	Raina Tuteja	<ul style="list-style-type: none">Year 2020 was a terrible year for Climate Disasters. Explain the statement using Australia's bushfire as a case study.
39.	20COM1708	Rajat Jaiswal	<ul style="list-style-type: none">Explain Forest and Grassland Ecosystem in detailProject Great Indian Bustard
40.	20COM1709	Rajneesh Kumar	<ul style="list-style-type: none">Explain Desert and Aquatic Ecosystem in detailBhopal Gas Tragedy
41.	20COM1710	Renkal Rathore	<ul style="list-style-type: none">Write short notes on: Ecosystem, Energy flow, Food chain, Food web, Food Pyramid and Ecological SuccessionExplain Kyoto Protocol & Conference of Parties (CoP)
42.	20COM1712	Rishabh Jain	<ul style="list-style-type: none">Explain the importance of wetlands with regard to biodiversity and water conservation. Write a short note on Ramsar Convention on Wetlands.Explain Water Audit and National Solar MissionExplain the role of human communities to safeguard environment at local level.
43.	20COM1714	Rishi Manjhi	<ul style="list-style-type: none">"The next world war may be fought over water". Justify the statement with suitable examples.Explain Air quality index and Ganga Action Plan
44.	20COM1715	Ritik Rajput	<ul style="list-style-type: none">What are invasive species? How are they threat to biodiversity?Differentiate b/w National park and Zoological Park, Biogas and Liquefied petroleum gas, Biosphere and Atmosphere
45.	20COM1716	Riya Das	<ul style="list-style-type: none">Environmental Laws: Air, Water, Wildlife protection act, forest act and EPA
46.	20COM1718	Robin Ahuja	<ul style="list-style-type: none">Write Vision of Eco-friendly products and Green EnergyDeforestation: causes and impactsUsing examples of various international summits and treaties, explain the importance of international co-operation for tackling global environmental issues.
47.	20COM1719	Rohit Kumar Meena	<ul style="list-style-type: none">Describe Kerala Floods, Landslides in IndiaOdd-even formula and its impact on air qualityVulture breeding program
48.	20COM1720	Rohit Nareda	<ul style="list-style-type: none">Differentiate Pollutants and Toxicants, Primary and Secondary successionJustify statement: Most floods are anthropogenic.Describe the various stages of succession on rock and water.
49.	20COM1721	Rudra Pratap Singh	<ul style="list-style-type: none">Mining is an essential environmental evil. Justify with a case studyDiscuss Solid Waste Management (SWM)Explain the various dangers and problems associated with landfills in metropolitan areas like Delhi. Also write a note on solid waste disposal measures that need to be taken to reduce the burden on existing landfills.
50.	20COM1722	Jai Shree	<ul style="list-style-type: none">National Environmental Awareness Campaign (NEAC),National Green Corps (NGC) and Eco Club Programme
51.	20COM1723	Janvi Saini	<ul style="list-style-type: none">Describe Plastic Free India and Paris Convention/AgreementComposition & Structure of Earth's Atmosphere

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S.No.	Roll No.	Name of the Student	Name of the Topic
52.	20COM1577	Ayushi Kumari	<ul style="list-style-type: none">Project Great Indian Bustard, Project Tiger, Project Elephant, Vulture breeding programme, Save Western Ghats movement,Explain Homeostasis, Species reintroduction and translocation.
53.	20COM1578	Darshika Sharma	<ul style="list-style-type: none">Explain UNEP and CITESDifferentiate between Photosynthesis and Respiration, Biotic and Abiotic Components, Biomagnification and Eutrophication.
54.	20COM1579	Deepa Saini	<ul style="list-style-type: none">India as Mega-diversity spot. Comment giving examplesWith the help of a case study each, explain the in-situ and ex-situ approach for protecting the biodiversity.
55.	20COM1581	Harshit Arora	<ul style="list-style-type: none">Explain: Vulture breeding programmeDifferentiate b/w E-waste and Kitchen wet waste; EPA and wildlife Protection Act; Global Warming and Ozone layer depletion, Pesticide and Compost.
56.	20COM1582	Himanshu	<ul style="list-style-type: none">Explain Land resources and land use changeSoil erosion, Desertification, Bioamplification and Sacred forests.
57.	20COM1583	Aashray Sena	<ul style="list-style-type: none">In contrast to rituals of the ancient Indian society the activities of modern Indian society have harmed the environment and biodiversity. Explain.Comment on the statement 'environmental damage can give rise to tremendous social and economic inequality'.
58.	20COM1584	Aadya Dubey	<ul style="list-style-type: none">Mining is an essential environmental evil. Justify with a case studyExplain with suitable examples, why Indian megacities are more prone to facing water crisis in the next decade. As a resident of Delhi and as a concerned citizen, suggest some water conservation policies that the State Government should adopt in their master plan for the next 10 years (till 2030).Explain Role of Public Awareness
59.	20COM1585	Himanshu	<ul style="list-style-type: none">Explain Case Studies: Cauvery river water conflict, Sardar sarovar dam, Tarun Bharat Sangh, Kali Bachao Andolan and Silent valley movement.
60.	20COM1586	Ansh Jain	<ul style="list-style-type: none">Explain different species with examples: Keystone, Flagship, Umbrella, Indicator, Endemic and Exotic species."Increasing consumerism has a major impact on environment with respect to resource depletion and pollution". Elaborate using relevant examples and case studies.
61.	20COM1587	Bhumit	<ul style="list-style-type: none">Explain importance of Rainwater harvesting in urban areasEnvironmental effects of COVID-19 pandemic and potential strategies of sustainability
62.	20COM1588	Dhruv Kumar	<ul style="list-style-type: none">Discuss Yamuna action planEcosystem preservation and conservation strategiesBasics of Ecosystem restoration.

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AECC- Environmental Science : 72182801

Course Name: B.Com. (H) Sec-C Sem. I

Name of the Faculty: Dr. Pramod Kumar

INTERNAL ASSESSMENT ASSIGNMENT

S.No.	Roll No.	Name of the Student	Name of the Topic
1.	20COM1851	Saket Kumar Choudhary	<ul style="list-style-type: none"> Solid waste management and its control measures Problems and challenges of e-waste management in India. Explain how various environmental issues have been responsible for increasing cases of farmer suicides in India? What measures should the government take to improve the agricultural sector in the country?
2.	20COM1853	Sakshi Lohani	<ul style="list-style-type: none"> Explain different species with examples: Keystone, Flagship, Umbrella, Indicator, Endemic and Exotic species. "Increasing consumerism has a major impact on environment with respect to resource depletion and pollution". Elaborate using relevant examples and case studies.
3.	20COM1854	Sameer Saini	<ul style="list-style-type: none"> Describe Odd-even formula and its impact on air quality Wildlife Trafficking "Desert areas in India are a unique ecosystem that is ecologically, socially, and economically very important but at the same time are threatened due to human population pressure". Justify this statement giving relevant examples and arguments.
4.	20COM1857	Sanjana Kumari	<ul style="list-style-type: none"> What are invasive species? How are they threat to biodiversity? Differentiate b/w National park and Zoological Park, Biogas and Liquefied petroleum gas, Biosphere and Atmosphere Explain Conservation of biodiversity.
5.	20COM1859	Sanskar Garg	<ul style="list-style-type: none"> Explain extinction of Vulture and Carbon footprint Effects of Modern Agriculture Explain the importance of wetlands with regard to biodiversity and water conservation. Write a short note on Ramsar Convention on Wetlands.
6.	20COM1860	Sarthak Meena	<ul style="list-style-type: none"> Explain Biodiversity, Levels and its importance Write a brief note on Smart cities Explain how indigenous and local communities can contribute towards the protection of biodiversity as well as conservation of forest and water resources
7.	20COM1861	Saurav Meena	<ul style="list-style-type: none"> Explain Climate change, Global warming, Acid rain and Ozone depletion Despite various anti-pollution laws and policies, India's metropolitan cities remain among the most polluted cities in the world. Why?
8.	20COM1862	Shakti	<ul style="list-style-type: none"> Discuss Environmental laws and acts in India are inappropriate. Differentiate b/w Chipko movement and Beej bachao andolan, Appiko Movement Explain Biological invasions. What are invasive species? How are they threat to biodiversity?
9.	20COM1864	Shivam Ranga	<ul style="list-style-type: none"> Concept of sustainability and sustainable development Think global and act local for sustainable development-how this is practically possible for urban city? Discuss giving examples

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S.No.	Roll No.	Name of the Student	Name of the Topic
			<ul style="list-style-type: none"> Describe Vermicomposting and Joint forest management.
10.	20COM1867	Shreya Aggarwal	<ul style="list-style-type: none"> Describe Groundwater recharge What kinds of practices are required to manage the ever increasing urban and industrial waste generated in the metropolitan cities of India? Discuss. Explain Multidisciplinary nature of environmental studies Describe scope and importance of Environmental studies for human welfare. Write a note on Eutrophication.
11.	20COM1868	Shreya Rawat	<ul style="list-style-type: none"> Explain reasons for increased air pollution in Delhi Write objective of Swachh Bharat Abhiyan. Discuss the challenges and means to make it more effective and successful, Differentiate b/w Primary and Secondary air pollutants, Freshwater and Marine ecosystem
12.	20COM1869	Shreyas Achal	<ul style="list-style-type: none"> Explain Nuclear hazards and human health risks What are the strategies adopted to minimize the damages caused by earthquakes? Biogeochemical cycles: H_2O, O_2, N_2, Carbon, S and P
13.	20COM1871	Shruti Goel	<ul style="list-style-type: none"> Pollution Case Studies: Smog, Exxon Valdez oil spill disaster, Bhopal Gas Tragedy, Chernobyl and Hiroshima and Nagasaki Nuclear disaster
14.	20COM1874	Shubhanshi Gupta	<ul style="list-style-type: none"> Explain Conflicts over water (international and inter-state) What are oil spills? How they contribute to marine pollution. Explain briefly, your views on the preparedness of Delhi state to tackle an earthquake disaster.
15.	20COM1875	Shubhanshu Dhaka	<ul style="list-style-type: none"> Describe Ecological Succession and Food Pyramid Discuss IUCN, Red data book and Global 200 in detail. What are the major Environmental issues today?
16.	20COM1876	Siddharth Jain	<ul style="list-style-type: none"> Dam building on environment: Taking one example discuss how dam building affects ecological balance of ecosystem Do various environmental legislations lead to human-wildlife conflict in our country? Explain in detail. Elaborate Jhoom cultivation
17.	20COM1879	Sonakshi Gupta	<ul style="list-style-type: none"> Explain Composition & Structure of Earth's Atmosphere Ecosystems and evolution With appropriate examples, discuss the contribution of women in protecting the environment and raising environmental awareness in India.
18.	20COM1880	Sonia Prasad	<ul style="list-style-type: none"> Discuss the role of disaster management to control recurrent floods in Indian plains. What are the causes of global warming? Discuss its effects on the human communities and agriculture. Describe Biogeographic zones of India and Biodiversity hotspots.
19.	20COM1883	Sudipika	<ul style="list-style-type: none"> Ecosystem Services. Write Explanatory notes on its importance National Solar Mission Differentiate b/w Ex-situ and In-situ; Photosynthesis and Respiration.
20.	20COM1885	Sukhvinder Kaur	<ul style="list-style-type: none"> Discuss Deforestation, its causes and impacts Explain Green energy and Impacts of mining. Carbon footprint and its impact on global warming

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Pranali

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S.No.	Roll No.	Name of the Student	Name of the Topic
21.	20COM1886	Sumit Yadav	<ul style="list-style-type: none">• Explain briefly, the R's principle of waste management.• 'Waste segregation is the primary step for efficient solid waste management, yet it is in minimal practice in India'. Justify the statement• Air quality index.• Impacts of Climate Change on human communities.
22.	20COM1888	Suraj Kumar	<ul style="list-style-type: none">• Multidisciplinary nature of environmental studies• Explain London Smog and Los Angeles Smog• Describe Eutrophication and Agenda-21• Discuss Project tiger, India
23.	20COM1889	Swecha Tyagi	<ul style="list-style-type: none">• Write objective of Swachh Bharat Abhiyan. Discuss the challenges and means to make it more effective and successful• Impacts of Air pollution• Explain the steps that need to be taken at the individual level and by the government for conservation of water in India.
24.	20COM1890	Tanisha Gupta	<ul style="list-style-type: none">• Describe Wasteland Reclamation• Cyclones in India and Ecotourism• Explain Homeostasis, Species reintroduction and translocation.
25.	20COM1892	Tejas Goyal	<ul style="list-style-type: none">• Environmental Pollution. Explain Soil and Noise-Types, causes, effects, control• Land degradation and desertification are one of the major challenges faced by humanity today. Justify the statement with respect to social, economic and environmental impacts.
26.	20COM1897	Vanshika Thareja	<ul style="list-style-type: none">• Explain the importance of Nature reserves• Tribal populations and rights• Human wildlife conflicts in Indian context.• In contrast to rituals of the ancient Indian society the activities of modern Indian society have harmed the environment and biodiversity. Explain.
27.	20COM1898	Vartika Garg	<ul style="list-style-type: none">• Man wildlife conflicts: case studies• Describe Biomagnification• Project Brown Antlered Deer, Project tiger, Project Elephant and Project Crocodile• Project Great Indian Bustard, Vulture breeding programme, Save Western Ghats movement.
28.	20COM1900	Vicky Kumar Shah	<ul style="list-style-type: none">• Human population explosion is causing severe resource depletion and environmental degradation. Justify giving examples• Write importance of One horned rhinoceros, Asiatic lions, Mangrove forest, Bishnoi, Jim Corbett National Park, Shifting cultivation
29.	20COM1901	Vijay Koli	<ul style="list-style-type: none">• Environmental ethics of Indian and other religions in conservation of environment• During a recent visit to your village in south India, you come to know that a multinational company is setting up its pesticide manufacturing unit in the outskirts of the village. The villagers are not much aware of the possible harmful impacts of such an industry in their village. Based on your knowledge about Bhopal Gas Tragedy and Minamata Disease Tragedy, explain the potential harm of this industry to the villagers. Also, suggest ways how villagers should coordinate with the government and the company

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S.No.	Roll No.	Name of the Student	Name of the Topic
			to avoid any such tragedy in the village.
30.	20COM1902	Vikas Rana	<ul style="list-style-type: none">Explain Water Audit and National Solar MissionDifferentiate b/w Ex-situ and In-situ; Photosynthesis and Respiration, pollutant and Toxicant, Petroleum and BiogasExplain the role of human communities to safeguard environment at local level.
31.	20COM1904	Vishal Kumar	<ul style="list-style-type: none">Write short notes on: Ecosystem, Energy flow, Food chain, Food web, Food Pyramid and Ecological SuccessionExplain Kyoto Protocol & Conference of Parties (CoP)
32.	20COM1908	Siddharth Sethia	<ul style="list-style-type: none">Environmental Pollution. Explain Air and Water-Types, causes, effects, controlEnlist some important steps and practices that can be taken by citizens to control indoor and outdoor air pollution in urban areas.
33.	20COM1909	Md. Sahir Aalam	<ul style="list-style-type: none">Write Vision of Eco-friendly products and Green EnergyDeforestation: causes and impactsUsing examples of various international summits and treaties, explain the importance of international co-operation for tackling global environmental issues.
34.	20COM1910	Subhankar Mishra	<ul style="list-style-type: none">"The next world war may be fought over water". Justify the statement with suitable examples.Explain Ganga Action PlanFloods and droughts
35.	20COM1911	Shweta	<ul style="list-style-type: none">Environmental Laws: Air, Water, Wildlife protection act, forest act and EPAWater resources: Use and Over-exploitation
36.	20COM1913	Tanshika Dhiman	<ul style="list-style-type: none">Mining is an essential environmental evil. Justify with a case studyDiscuss Solid Waste Management (SWM)Explain the various dangers and problems associated with landfills in metropolitan areas like Delhi. Also write a note on solid waste disposal measures that need to be taken to reduce the burden on existing landfills.
37.	20COM1915	Vishal	<ul style="list-style-type: none">Explain different pollution case studiesHuman health hazards from Nuclear power plantsPesticides and human healthGlobal warming.
38.	20COM1916	Yashica Gupta	<ul style="list-style-type: none">Justify statement: Most floods are anthropogenic.Describe the various stages of succession on rock and water.Differentiate b/w National park and Zoological Park, Biogas and Liquefied petroleum gas, Biosphere and Atmosphere
39.	20COM1917	Sanjana Sarraf	<ul style="list-style-type: none">Describe Kerala Floods, Landslides in IndiaOdd-even formula and its impact on air qualityExplain with suitable examples, why Indian megacities are more prone to facing water crisis in the next decade. As a resident of Delhi and as a concerned citizen, suggest some water conservation policies that the State Government should adopt in their master plan for the next 10 years (till 2030).
40.	20COM1918	Sarthak Sahu	<ul style="list-style-type: none">National Environmental Awareness Campaign (NEAC)National Green Corps (NGC) and Eco Club ProgrammeExplain Case Studies: Cauvery river water conflict, Sardar Sarovar Dam, Tarun Bharat Sangh, Kali Bachao Andolan and Silent



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S.No.	Roll No.	Name of the Student	Name of the Topic
			Valley Movement.
41.	20COM1919	Satyam Tyagi	<ul style="list-style-type: none">• Explain Land resources and land use change• Soil erosion, Desertification, Bioamplification and Sacred forests.• Differentiate b/w E-waste and Kitchen wet waste; EPA and wildlife Protection Act; Global Warming and Ozone layer depletion, Pesticide and Compost.
42.	20COM1920	Saurabh Kumar Singh	<ul style="list-style-type: none">• Describe Plastic Free India and Paris Convention/Agreement• Composition & Structure of Earth's Atmosphere• Ecosystems and evolution• Differentiate Pollutants and Toxicants, Primary and Secondary Succession
43.	20COM1921	Saurabh Rajpoot	<ul style="list-style-type: none">• Explain UNEP and CITES• Differentiate between Photosynthesis and Respiration, Biotic and Abiotic Components, Biomagnification and Eutrophication.• Explain importance of Rainwater harvesting in urban areas• Environmental effects of COVID-19 pandemic and potential strategies of sustainability
44.	20COM1923	Sumit Yadav	<ul style="list-style-type: none">• India as Mega-diversity spot. Comment giving examples• With the help of a case study each, explain the in-situ and ex-situ approach for protecting the biodiversity.• Explain Role of Public Awareness
45.	20COM1924	Simran	<ul style="list-style-type: none">• Explain Forest and Grassland Ecosystem in detail• Comment on the statement 'environmental damage can give rise to tremendous social and economic inequality'.• Bhopal Gas Tragedy• Discuss Yamuna action plan• Ecosystem preservation and conservation strategies• Basics of Ecosystem restoration.

Pramod

Dr. Pramod Kumar

Assistant Professor

Department of Environmental Studies

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Pramod

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ENVIRONMENTAL STUDIES

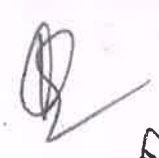




LIST OF ASSIGNMENTS FOR THE STUDENTS OF BMS


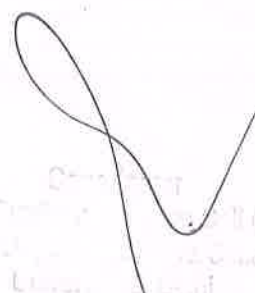
2020-2021


S.N	Roll No	Student Name	TOPIC ASSIGNED
1	20BMS0301	AASHIMA VERMA	Air Quality Index : ambient air quality of different Indian cities
2	20BMS0302	ABHIMAN SHARMA	Photochemical Smog: London and Delhi; Intellectual Property rights and Ethnic Diversity
3	20BMS0305	ADITYA GOLANI	Kyoto Protocol: Joint Implementation
4	20BMS0306	AKASH KUMAR	Ozone layer Depletion
5	20BMS0307	AKSHAT BHARDWAJ	Montreal Protocol
6	20BMS0308	ANANNAY AGGARWAL	The Air (Prevention and Control of Pollution) Act, 1981; Water(Prevention and Control of Pollution) Act, 1974
7	20BMS0309	ANMOL	Environmental Communication and Public Awareness
8	20BMS0310	ANSH SETHI	Global Warming: Causes and Impacts
9	20BMS0311	ARCHITA JAIN	Climate change : Causes and Impacts
10	20BMS0312	ARYAN BHATIA	Nuclear Energy
11	20BMS0313	AYUSH MAVI	Acid Rain and Ocean Acidification
12	20BMS0314	AYUSH CHOUDHARY	Chipko Movement and Western Ghat movement
13	20BMS0315	BHANU YADAV	Wildlife Protection Act; Forest Conservation Act
14	20BMS0316	BHAVIKA GUPTA	Biogeographic Zones of India
15	20BMS0317	CHARU KUSHWAHA	Biosphere Reserves; Project Tiger
16	20BMS0318	CHEVY JAIN	Resettlement and Rehabilitation of Project affected people
17	20BMS0319	CHIRANSHI ARORA	Interstate River Water Disputes,
18	20BMS0320	DHRUV CHOULA	Interlinking of Rivers
19	20BMS0321	DHRUV KHULLAR	Solid Waste Management
20	20BMS0322	EKTA SHROFF	The Good and Bad of 'Odd-Even Formula' - air pollution
21	20BMS0323	GAURAV KUMAR MEENA	Impacts of Dams on Tribal Population and human communities;
22	20BMS0324	GURLEEN KAUR	Invasive Species and theory of invasion

23	20BMS0325	HANSIKA CHHABRA	Eutrophication and Bio magnification
24	20BMS0326	KANAK RUSTAGI	Ex Situ Conservation for plant and animal conservation; Species reintroduction and translocation
25	20BMS0327	KANCHAN RUHELA	In situ biodiversity Conservation: Crocodile conservation project
26	20BMS0328	KANISHKA PACHAURY	Earthquakes and Cyclones
27	20BMS0329	KARAN YADAV	Think Global and Act Local : Case Studies
28	20BMS0330	KARTIKEY CHANDRA	Human Population and Resource Depletion
29	20BMS0331	KUSHALA PRASAD	Cultural Practices and Environmental Protection
30	20BMS0332	LAVANYA PURI	Noise Pollution; Thermal Pollution; Bio Amplification
31	20BMS0333	MANAN YADAV	Hotspots of Biodiversity, Endemic Species and theory of Endemism
32	20BMS0334	NIHARIKA MOTWANI	Smart Cities; Beej Bachao Andolan;
33	20BMS0335	PRARTHANA JOSHI	Mining is an Essential Evil
34	20BMS0336	PRATEEK PANDEY	Floods and Droughts : impacting Indian states
35	20BMS0338	RAGHAV POONIA	Ecosystem Services offered by different ecosystems
36	20BMS0339	RITIKA KAPOOR	Man-Wildlife conflict : Case Studies
37	20BMS0340	SAHIL ARORA	Red Data Book, Key stone Species, Flagship Species, Indicator Species, Umbrella Species
38	20BMS0342	SANYA GUPTA	Ground water recharge and rain water harvesting
39	20BMS0343	SATVIK SRIVASTAVA	Food Security and Climate Change
40	20BMS0344	SHAILENDRA PRATAP SINGH	Silent Valley, Narmada Bachao Andolan; Bishnois, Jhum Cultivation
41	20BMS0345	SHIV BANSAL	Impact of urbanization on Environment
42	20BMS0346	SHIVAM GARG	Chernobyl Nuclear Disaster , Fukushima Nuclear Disaster; Bhopal Gas Tragedy
43	20BMS0347	SHUBHI AGARWAL	India as mega Diverse Nation; Convention on Biodiversity
44	20BMS0348	SIMAR SEKHRI	Mangroves, Ramsar Convention
45	20BMS0350	SRISHTI KUMAR	Watershed Management
46	20BMS0351	SUJAL KUMAR	E-waste recycling in India
47	20BMS0352	SUMIT VERMA	Nuclear Winter: Global Consequences of Nuclear Explosions
48	20BMS0354	VANSH SACHDEVA	Non-Conventional Sources of Energy/ Renewables

49	20BMS0355	VARNIKA VISHWAKARMA	Ecological Pyramids: types, limitations importance; Olive Ridley Turtle : Conservation Case Study; Oil Spill Case Studies
50	20BMS0356	VATSAL AGARWAL	Multidisciplinary nature of environmental studies
51	20BMS0357	YASH RAJPUT	Ecosystem : Concept and Structure
52	20BMS0360	AMAN KUMAR	Sustainable Development; Agenda 21 and Earth Summit;
53	20BMS0361	ARYAN TIWARI	Conventional sources of energy/ Non-Renewables
54	20BMS0362	KUMAR SAURABH JAISWAL	Food Chain and Food Web
55	20BMS0363	LAKSHA	Ecological Succession; UNCCD: Land Degradation, Soil Erosion
56	20BMS0364	RHYTHM PURI	Threats to biodiversity: HABITAT LOSS, HABITAT DEGRADATION, HABITAT FRAGMENTATION
57	20BMS0365	SHIVAM DHIRAN	Threats to biodiversity: POACHING, HUMAN WILDLIFE CONFLICTS
58	20BMS0366	SHUBHAM CHAUDHARY	Threats to biodiversity: INVASIVE SPECIES AND BIOLOGICAL INVASION
59	20BMS0367	URVASHI KRISHNATRA	Biodiversity conservation strategies: in-situ methods of conservation
60	20BMS0368	VANSH MAHESHWARI	Biodiversity conservation strategies: ex-situ methods of conservation



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AECC- Environmental Science : 72182801

Course Name: B.Sc. Life Sciences Sem. II

Name of the Faculty: Dr. Pramod Kumar

INTERNAL ASSESSMENT

S.No.	Roll No.	Name of the Student	Topic of the Assignment
1.	20LFS7701	Abhishek	<ul style="list-style-type: none"> Explain extinction of Vulture and Carbon footprint Effects of Modern Agriculture Explain the importance of wetlands with regard to biodiversity and water conservation. Write a short note on Ramsar Convention on Wetlands.
2.	20LFS7702	Archana Dhillon	<ul style="list-style-type: none"> What are the major Environmental issues today? Year 2020 was a terrible year for Climate Disasters. Explain the statement using Australia's bushfire as a case study.
3.	20LFS7703	Arun Arun Arun	<ul style="list-style-type: none"> Year 2020 was a terrible year for Climate Disasters. Explain the statement using California wildfires as a case study. Explain Composition & Structure of Earth's Atmosphere
4.	20LFS7704	Aryan Negi	<ul style="list-style-type: none"> Concept of sustainability and sustainable development Think global and act local for sustainable development-how this is practically possible for urban city? Discuss giving examples Describe Vermicomposting and Joint forest management.
5.	20LFS7705	Bhagirani Leishangthem	<ul style="list-style-type: none"> Multidisciplinary nature of environmental studies Explain London Smog and Los Angeles Smog Describe Eutrophication and Agenda-21 You have been invited to speak about Chipko Andolan and its importance with respect to protection of forests, women empowerment, mass environmental awareness and role of local communities in environmental protection. Prepare a speech in about 1000 words, with concluding remarks on the relevance of Chipko movement in the 21st century, using appropriate examples.
6.	20LFS7706	Bhawna	<ul style="list-style-type: none"> Biogeochemical cycles: H₂O, O₂, N₂, Carbon, S and P Describe scope and importance of Environmental studies for human welfare. Describe the various stages of succession on rock and water.
7.	20LFS7707	Hardik Kumar Sah	<ul style="list-style-type: none"> Describe Ecological Succession and Food Pyramid "Desert areas in India are a unique ecosystem that is ecologically, socially, and economically very important but at the same time are threatened due to human population pressure". Justify this statement giving relevant examples and arguments.
8.	20LFS7709	Kamal Singh	<ul style="list-style-type: none"> Ecosystems and evolution With appropriate examples, discuss the contribution of women in protecting the environment and raising environmental awareness in India. Using an example of a natural pond and a small aquarium, explain the structure of an aquatic ecosystem. Between the pond and the aquarium, which of the two is a self-sustaining ecosystem? Give reasons in support of your answer.
9.	20LFS7710	Khushboo	<ul style="list-style-type: none"> Write short notes on: Ecosystem, Energy flow, Food chain, Food web, Food Pyramid and Ecological Succession Differentiate between Biotic and Abiotic Components, Biomagnification and Eutrophication.

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S.No.	Roll No.	Name of the Student	Topic of the Assignment
10.	20LFS7711	Kshitij Grover	<ul style="list-style-type: none">Ecosystem Services. Write Explanatory notes on its importanceNational Solar MissionDifferentiate b/w Ex-situ and In-situ; Photosynthesis and Respiration, pollutant and Toxicant, Petroleum and BiogasExplain the role of human communities to safeguard environment at local level.
11.	20LFS7712	Lakshika Singh	<ul style="list-style-type: none">Discuss Yamuna action planEcosystem preservation and conservation strategiesBasics of Ecosystem restoration.
12.	20LFS7713	Manish Kumar	<ul style="list-style-type: none">Explain problems associated with Natural ResourcesA geographic survey by a mining company has identified a particular patch of forest to be rich in coal reserves. The state government is keen on giving the contract to the mining company for extracting the coal reserves. However, there is a tribal community which has been residing in the forest area for several decades and is dependent on the forest resources for their survival and livelihood. Suggest measures that need to be taken by the Government, keeping in mind the economic utilization of the area, minimal environmental damage, and ensuring effective resettlement of the tribal community.
13.	20LFS7714	Manisha Rawat	<ul style="list-style-type: none">Explain Conflicts over water (international and inter-state)Describe Groundwater rechargeJustify statement: Most floods are anthropogenic.
14.	20LFS7716	Monika	<ul style="list-style-type: none">Discuss Deforestation, its causes and impactsExplain Green energy and Impacts of mining.Carbon footprint and its impact on global warming
15.	20LFS7717	Neha	<ul style="list-style-type: none">Dam building on environment: Taking one example discuss how dam building affects ecological balance of ecosystemElaborate Jhoom cultivation
16.	20LFS7718	Neha Yadav	<ul style="list-style-type: none">What are invasive species? How are they threat to biodiversity?Differentiate b/w National park and Zoological Park, Biogas and Liquefied petroleum gas, Biosphere and AtmosphereExplain Wildlife Trafficking
17.	20LFS7719	Nisha Kumari	<ul style="list-style-type: none">"Increasing consumerism has a major impact on environment with respect to resource depletion and pollution". Elaborate using relevant examples and case studies.Discuss Solid Waste Management (SWM)
18.	20LFS7720	Pooja	<ul style="list-style-type: none">Land degradation and desertification are one of the major challenges faced by humanity today. Justify the statement with respect to social, economic and environmental impacts.'Plastic waste is a by-product of urban lifestyle and is considered as a necessary evil'. Provide your critical views on this statement, focusing on utility of plastic in the growth of urban lifestyle and impacts of plastic waste on the environment (including humans) in 1000 words.
19.	20LFS7721	Rahul Peter Turkey	<ul style="list-style-type: none">Do various environmental legislations lead to human-wildlife conflict in our country? Explain in detail.Describe Biogeographic zones of India and Biodiversity hotspots.Explain Human wildlife conflicts in Indian context along with case studies
20.	20LFS7723	Saloni Masand	<ul style="list-style-type: none">Explain Land resources and land use changeSoil erosion, Desertification, Bioamplification and Sacred forests.

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S.No.	Roll No.	Name of the Student	Topic of the Assignment
21.	20LFS7724	Sarthak Dhar	<ul style="list-style-type: none">• "The next world war may be fought over water". Justify the statement with suitable examples.• Mining is an essential environmental evil. Justify with a case study.• Explain the various dangers and problems associated with landfills in metropolitan areas like Delhi. Also write a note on solid waste disposal measures that need to be taken to reduce the burden on existing landfills.
22.	20LFS7725	Shalu	<ul style="list-style-type: none">• Explain importance of Rainwater harvesting in urban areas• Environmental effects of COVID-19 pandemic and potential strategies of sustainability.
23.	20LFS7726	Shivam	<ul style="list-style-type: none">• Explain Biological invasions. What are invasive species? How are they threat to biodiversity?• Explain Conservation of biodiversity.• Do you think that local and traditional knowledge that we obtain from communities living in rural and forest areas across India can play a significant role in devising ways to conserve biodiversity and protecting natural resources? Justify your answer with relevant examples.
24.	20LFS7727	Shivani	<ul style="list-style-type: none">• Explain Climate change, Global warming, Acid rain and Ozone depletion.• Despite various anti-pollution laws and policies, India's metropolitan cities remain among the most polluted cities in the world. Why?
25.	20LFS7728	Shreya Upadhyay	<ul style="list-style-type: none">• Explain how indigenous and local communities can contribute towards the protection of biodiversity as well as conservation of forest and water resources.• Take an example of any environmental issue that is a major concern to residents of the area, where your college is located. Discuss how your college eco-club can collaborate with other student societies, to raise awareness on the particular environmental issue among the residents and help them with the ways to overcome the specific problem.
26.	20LFS7729	Shruti	<ul style="list-style-type: none">• In contrast to rituals of the ancient Indian society the activities of modern Indian society have harmed the environment and biodiversity. Explain.• Comment on the statement 'environmental damage can give rise to tremendous social and economic inequality'.• Malabar civets, a critically endangered species is also endemic to the Western Ghats. They are currently distributed in the forests of Kerala and Karnataka. Habitat destruction, habitat fragmentation, poaching, and hunting are the major threats faced by the species. Explain how you can facilitate conservation of this species using both ex-situ and in-situ conservation strategies.
27.	20LFS7730	Shruti Kumari	<ul style="list-style-type: none">• Explain various threats to biodiversity• Discuss IUCN, Red data book and Global 200 in detail.• Explain different species with examples: Keystone, Flagship, Umbrella, Indicator, Endemic and Exotic species.• Project tiger, Project Elephant and Project Crocodile, Project Great Indian Bustard, Project Brown Antlered Deer, Vulture breeding program, Save Western Ghats movement
28.	20LFS7731	Shubham	<ul style="list-style-type: none">• India as Mega-diversity spot. Comment giving examples• With the help of a case study each, explain the in-situ and ex-situ approach for protecting the biodiversity.



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S.No.	Roll No.	Name of the Student	Topic of the Assignment
29.	20LFS7732	Simran	<ul style="list-style-type: none">• Explain reasons for increased air pollution in Delhi• Write objective of Swachh Bharat Abhiyan. Discuss the challenges and means to make it more effective and successful.• Differentiate b/w Primary and Secondary air pollutants, Freshwater and Marine ecosystem.
30.	20LFS7734	Surajit Mondal	<ul style="list-style-type: none">• Solid waste management and its control measures• Problems and challenges of e-waste management in India.• Explain how various environmental issues have been responsible for increasing cases of farmer suicides in India? What measures should the government take to improve the agricultural sector in the country?
31.	20LFS7735	Sweta Sharma	<ul style="list-style-type: none">• Explain Biodiversity, Levels and its importance• Explain Homeostasis, Species reintroduction and translocation.• Cultural practices are powerful tools to protect the environment and could also be threats to our ecosystem health. Justify the statement with examples.
32.	20LFS7736	Tamanna	<ul style="list-style-type: none">• Explain Nuclear hazards and human health risks• Describe Odd-even formula and its impact on air quality• Pesticides and human health• Describe Biomagnification
33.	20LFS7737	Tanisha Sharma	<ul style="list-style-type: none">• Pollution Case Studies: Smog, Exxon Valdez oil spill disaster, Bhopal Gas Tragedy, Chernobyl and Hiroshima and Nagasaki Nuclear disaster
34.	20LFS7738	Vaidehi Jain	<ul style="list-style-type: none">• What are oil spills? How they contribute to marine pollution. Explain with case studies.• Explain Water Audit
35.	20LFS7739	Vikas	<ul style="list-style-type: none">• What kinds of practices are required to manage the ever increasing urban and industrial waste generated in the metropolitan cities of India? Discuss.• If world average temperature increases up to 4°C by 2050, then explain the possible impact of global warming on human communities and biodiversity of Rajasthan desert, Central India forest, and coastal areas of India, respectively.
36.	20LFS7740	Vikas Pandey	<ul style="list-style-type: none">• Explain different pollution case studies• You have been invited by the Resident Welfare Association of your housing society to speak on the topic of Noise pollution. The society you live in is very near to an industrial area. In the speech, you decide to focus on the causes of noise pollution, its impact on the residents (focusing on different age groups), and possible ways to tackle this problem through seeking necessary help from the government and the industrial units. Draft a speech in a minimum of 750 words.
37.	20LFS7741	Vivek	<ul style="list-style-type: none">• Explain briefly, the R's principle of waste management.• 'Waste segregation is the primary step for efficient solid waste management, yet it is in minimal practice in India'. Justify the statement• Explain Air quality index and Ganga Action Plan
38.	20LFS7742	Yash	<ul style="list-style-type: none">• Environmental Pollution. Explain Air and Water-Types, causes, effects, control• Enlist some important steps and practices that can be taken by citizens to control indoor and outdoor air pollution in urban areas.

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S.No.	Roll No.	Name of the Student	Topic of the Assignment
39.	20LFS7743	Yashika Trivedi	<ul style="list-style-type: none">During a recent visit to your village in south India, you come to know that a multinational company is setting up its pesticide manufacturing unit in the outskirts of the village. The villagers are not much aware of the possible harmful impacts of such an industry in their village. Based on your knowledge about Bhopal Gas Tragedy and Minamata Disease Tragedy, explain the potential harm of this industry to the villagers. Also, suggest ways how villagers should coordinate with the government and the company to avoid any such tragedy in the village.Using examples of various international summits and treaties, explain the importance of international co-operation for tackling global environmental issues.
40.	20LFS7746	Chhavi Basra	<ul style="list-style-type: none">Write objective of Swachh Bharat Abhiyan. Discuss the challenges and means to make it more effective and successfulExplain various impacts of Air pollutionExplain the steps that need to be taken at the individual level and by the government for conservation of water in India.
41.	20LFS7748	Prachi Kumari	<ul style="list-style-type: none">Differentiate b/w E-waste and Kitchen wet waste; EPA and wildlife Protection Act; Global Warming and Ozone layer depletion, Pesticide and Compost.What are oil spills? How they contribute to marine pollution. Explain with case studies.Explain UNEP and CITESExplain Case Studies: Cauvery river water conflict, Sardar Sarovar Dam, Tarun Bharat Sangh, Kali Bachao Andolan and Silent Valley Movement.
42.	20LFS7749	Preeti	<ul style="list-style-type: none">What are the strategies adopted to minimize the damages caused by earthquakes?Explain briefly, your views on the preparedness of Delhi state to tackle an earthquake disaster.National Environmental Awareness Campaign (NEAC)National Green Corps (NGC) and Eco Club Programme
43.	20LFS7750	Rohit	<ul style="list-style-type: none">Write a brief note on Smart citiesDiscuss Environmental laws and acts in India are inappropriate.Differentiate b/w Chipko movement, Beej Bachao Andolan and Appiko MovementShifting to renewable energy resources is going to be very vital for developing countries in order to tackle the problems of pollution, achieving Climate related targets, social upliftment and economic development. Elaborate on this statement in about 750 words. Also discuss the uses, advantages and disadvantages of any two renewable energy resources which you think have high potential in India.

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Dr. Pramod Kumar
Assistant Professor

Department of Environmental Studies

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AECC- Environmental Science : 72182801

Course Name: B.Sc. (H) Mathematics Sem. I

Name of the Faculty: Dr. Pramod Kumar

INTERNAL ASSESSMENT ASSIGNMENT

S.No.	Roll No.	Name of the Student	Name of the Topic
1.	20HMT3102	Aakriti	<ul style="list-style-type: none"> Describe Odd-even formula and its impact on air quality Wildlife Trafficking "Desert areas in India are a unique ecosystem that is ecologically, socially, and economically very important but at the same time are threatened due to human population pressure". Justify this statement giving relevant examples and arguments.
2.	20HMT3103	Aanchal Shekhawat	<ul style="list-style-type: none"> Concept of sustainability and sustainable development Think global and act local for sustainable development-how this is practically possible for urban city? Discuss giving examples Describe Vermicomposting and Joint forest management.
3.	20HMT3105	Abdul Wajid	<ul style="list-style-type: none"> Explain the importance of wetlands with regard to biodiversity and water conservation. Write a short note on Ramsar Convention on Wetlands. Explain Water Audit and National Solar Mission Explain the role of human communities to safeguard environment at local level.
4.	20HMT3106	Abhishek	<ul style="list-style-type: none"> Explain Biological invasions. What are invasive species? How are they threat to biodiversity? Explain Conservation of biodiversity.
5.	20HMT3107	Abhishek Bhagat	<ul style="list-style-type: none"> Explain Nuclear hazards and human health risks What are the strategies adopted to minimize the damages caused by earthquakes? Biogeochemical cycles: H₂O, O₂, N₂, Carbon, S and P
6.	20HMT3108	Aditya	<ul style="list-style-type: none"> Explain Multidisciplinary nature of environmental studies Describe scope and importance of Environmental studies for human welfare. Write a note on Eutrophication.
7.	20HMT3109	Agni Tag	<ul style="list-style-type: none"> Environmental Pollution. Explain Soil and Noise-Types, causes, effects, control Land degradation and desertification are one of the major challenges faced by humanity today. Justify the statement with respect to social, economic and environmental impacts.
8.	20HMT3110	Akash Jaiswal	<ul style="list-style-type: none"> Cultural practices are powerful tools to protect the environment and could also be threats to our ecosystem health. Justify the statement with examples. Explain problems associated with Natural Resources
9.	20HMT3111	Akshansh Yadav	<ul style="list-style-type: none"> Describe Ecological Succession and Food Pyramid Explain briefly, your views on the preparedness of Delhi state to tackle an earthquake disaster.
10.	20HMT3112	Amandeep	<ul style="list-style-type: none"> Explain Biodiversity, Levels and its importance Write a brief note on Smart cities Explain how indigenous and local communities can contribute towards the protection of biodiversity as well as conservation of forest and water resources

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S.No.	Roll No.	Name of the Student	Name of the Topic
11.	20HMT3113	Anisha	<ul style="list-style-type: none">Discuss Environmental laws and acts in India are inappropriate.Differentiate b/w Chipko movement and Beej bachao andolan, Appiko Movement
12.	20HMT3114	Anjali	<ul style="list-style-type: none">Year 2020 was a terrible year for Climate Disasters. Explain the statement using California wildfires as a case study.
13.	20HMT3115	Ankur Kushwaha	<ul style="list-style-type: none">Explain Climate change, Global warming, Acid rain and Ozone depletion,Despite various anti-pollution laws and policies, India's metropolitan cities remain among the most polluted cities in the world. Why?
14.	20HMT3116	Anuj	<ul style="list-style-type: none">Explain Conflicts over water (international and inter-state)What are oil spills? How they contribute to marine pollution.
15.	20HMT3117	Arpit Singh	<ul style="list-style-type: none">Pollution Case Studies: Smog, Exxon Valdez oil spill disaster, Bhopal Gas Tragedy, Chernobyl and Hiroshima and Nagasaki Nuclear disaster
16.	20HMT3118	Arpita	<ul style="list-style-type: none">Explain various threats to biodiversityDescribe Groundwater rechargeWhat kinds of practices are required to manage the ever increasing urban and industrial waste generated in the metropolitan cities of India? Discuss.
17.	20HMT3119	Arushi Kumari	<ul style="list-style-type: none">Discuss IUCN, Red data book and Global 200 in detail.What are the major Environmental issues today?
18.	20HMT3120	Aryaman Yadav	<ul style="list-style-type: none">What are invasive species? How are they threat to biodiversity?Differentiate b/w National park and Zoological Park, Biogas and Liquefied petroleum gas, Biosphere and Atmosphere
19.	20HMT3121	Aryushi	<ul style="list-style-type: none">Do various environmental legislations lead to human-wildlife conflict in our country? Explain in detail.Describe Biogeographic zones of India and Biodiversity hotspots.
20.	20HMT3122	Asha Poonia	<ul style="list-style-type: none">Discuss Deforestation, its causes and impactsExplain Green energy and Impacts of mining.Carbon footprint and its impact on global warming
21.	20HMT3123	Avichal Dixit	<ul style="list-style-type: none">Dam building on environment: Taking one example discuss how dam building affects ecological balance of ecosystemElaborate Jhoom cultivation
22.	20HMT3124	Ayushi Modak	<ul style="list-style-type: none">Explain Composition & Structure of Earth's AtmosphereEcosystems and evolutionWith appropriate examples, discuss the contribution of women in protecting the environment and raising environmental awareness in India.
23.	20HMT3125	Ayushi Tiwari	<ul style="list-style-type: none">Explain different pollution case studiesImpacts of Climate Change on human communities.
24.	20HMT3126	Basant Kumar	<ul style="list-style-type: none">Ecosystem Services. Write Explanatory notes on its importanceNational Solar MissionDifferentiate b/w Ex-situ and In-situ; Photosynthesis and Respiration.
25.	20HMT3127	Bhavika Gupta	<ul style="list-style-type: none">Discuss the role of disaster management to control recurrent floods in Indian plains.What are the causes of global warming? Discuss its effects on the human communities and agriculture.

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S.No.	Roll No.	Name of the Student	Name of the Topic
26.	20HMT3129	Brajesh Gaur	<ul style="list-style-type: none">Describe Wasteland ReclamationCyclones in India and Ecotourism
27.	20HMT3130	Deepa Yadav	<ul style="list-style-type: none">Explain the importance of Nature reservesTribal populations and rightsHuman wildlife conflicts in Indian context.
28.	20HMT3131	Deepti Turan	<ul style="list-style-type: none">Human health hazards from Nuclear power plants,Pesticides and human healthGlobal warming.
29.	20HMT3132	Devanand Yadav	<ul style="list-style-type: none">Explain briefly, the R's principle of waste management.'Waste segregation is the primary step for efficient solid waste management, yet it is in minimal practice in India'. Justify the statementAir quality index.
30.	20HMT3133	Devang Meena	<ul style="list-style-type: none">Multidisciplinary nature of environmental studiesExplain London Smog and Los Angeles SmogDescribe Eutrophication and Agenda-21Discuss Project tiger, India
31.	20HMT3134	Devdutt Chauhan	<ul style="list-style-type: none">Write objective of Swachh Bharat Abhiyan. Discuss the challenges and means to make it more effective and successfulImpacts of Air pollutionExplain the steps that need to be taken at the individual level and by the government for conservation of water in India.
32.	20HMT3136	Divyanshu Raj	<ul style="list-style-type: none">Human population explosion is causing severe resource depletion and environmental degradation. Justify giving examplesWrite importance of One horned rhinoceros, Asiatic lions, Mangrove forest, Bishnois, Jim Corbett National Park, Shifting cultivation
33.	20HMT3137	Fahmi Ansari	<ul style="list-style-type: none">Environmental Pollution. Explain Air and Water-Types, causes, effects, controlEnlist some important steps and practices that can be taken by citizens to control indoor and outdoor air pollution in urban areas.
34.	20HMT3138	Garvit Mathur	<ul style="list-style-type: none">Year 2020 was a terrible year for Climate Disasters. Explain the statement using Australia's bushfire as a case study.
35.	20HMT3139	Geniya	<ul style="list-style-type: none">Discuss Ecosystem servicesProject tiger, Project Elephant and Project Crocodile
36.	20HMT3140	Harish Kumar	<ul style="list-style-type: none">Man wildlife conflicts: case studiesDescribe Biomagnification and Project Brown Antlered Deer
37.	20HMT3141	Harsh Gautam	<ul style="list-style-type: none">Environmental ethics: role of religion and other religions in conservation of environmentDuring a recent visit to your village in south India, you come to know that a multinational company is setting up its pesticide manufacturing unit in the outskirts of the village. The villagers are not much aware of the possible harmful impacts of such an industry in their village. Based on your knowledge about Bhopal Gas Tragedy and Minamata Disease Tragedy, explain the potential harm of this industry to the villagers. Also, suggest ways how villagers should coordinate with the government and the company to avoid any such tragedy in the village.

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S.No.	Roll No.	Name of the Student	Name of the Topic
38.	20HMT3142	Harshit Rana	<ul style="list-style-type: none">Water resources: Use and Over-exploitationFloods and droughts
39.	20HMT3143	Harshita	<ul style="list-style-type: none">Explain Forest and Grassland Ecosystem in detailProject Great Indian Bustard
40.	20HMT3144	Hitesh	<ul style="list-style-type: none">Explain Desert and Aquatic Ecosystem in detailBhopal Gas Tragedy
41.	20HMT3145	Hitesh	<ul style="list-style-type: none">Write short notes on: Ecosystem, Energy flow, Food chain, Food web, Food Pyramid and Ecological SuccessionExplain Kyoto Protocol & Conference of Parties (CoP)
42.	20HMT3146	Isha Gupta	<ul style="list-style-type: none">Explain Water Audit and National Solar MissionDifferentiate b/w Ex-situ and In-situ; Photosynthesis and Respiration, pollutant and Toxicant, Petroleum and BiogasExplain the role of human communities to safeguard environment at local level.
43.	20HMT3147	Jyoti Yadav	<ul style="list-style-type: none">"The next world war may be fought over water". Justify the statement with suitable examples.Explain Air quality index and Ganga Action Plan
44.	20HMT3148	Jyotsna	<ul style="list-style-type: none">What are invasive species? How are they threat to biodiversity?Differentiate b/w National park and Zoological Park, Biogas and Liquefied petroleum gas, Biosphere and Atmosphere
45.	20HMT3149	Kajal	<ul style="list-style-type: none">Environmental Laws: Air, Water, Wildlife protection act, forest act and EPA
46.	20HMT3150	Kriti Makhija	<ul style="list-style-type: none">Write Vision of Eco-friendly products and Green EnergyDeforestation: causes and impactsUsing examples of various international summits and treaties, explain the importance of international co-operation for tackling global environmental issues.
47.	20HMT3151	Kunal Chhikara	<ul style="list-style-type: none">Describe Kerala Floods, Landslides in IndiaOdd-even formula and its impact on air qualityVulture breeding program
48.	20HMT3152	Lokesh Yadav	<ul style="list-style-type: none">Differentiate Pollutants and Toxicants, Primary and Secondary successionJustify statement: Most floods are anthropogenic.Describe the various stages of succession on rock and water.
49.	20HMT3153	Lovish Vyas	<ul style="list-style-type: none">Mining is an essential environmental evil. Justify with a case studyDiscuss Solid Waste Management (SWM)Explain the various dangers and problems associated with landfills in metropolitan areas like Delhi. Also write a note on solid waste disposal measures that need to be taken to reduce the burden on existing landfills.
50.	20HMT3154	Mahima Yaduvanshi	<ul style="list-style-type: none">National Environmental Awareness Campaign (NEAC),National Green Corps (NGC) and Eco Club Programme
51.	20HMT3155	Mandeep Kodan	<ul style="list-style-type: none">Describe Plastic Free India and Paris Convention/AgreementComposition & Structure of Earth's AtmosphereEcosystems and evolution
52.	20HMT3156	Manish Sen	<ul style="list-style-type: none">Project Great Indian Bustard, Project Tiger, Project Elephant, Vulture breeding programme, Save Western Ghats movement,Explain Homeostasis, Species reintroduction and translocation.

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53.	20HMT3157	Mayank	<ul style="list-style-type: none">• Explain UNEP and CITES• Differentiate between Photosynthesis and Respiration, Biotic and Abiotic Components, Biomagnification and Eutrophication.
54.	20HMT3158	Megha	<ul style="list-style-type: none">• India as Mega-diversity spot. Comment giving examples• With the help of a case study each, explain the in-situ and ex-situ approach for protecting the biodiversity.
55.	20HMT3159	Naveen Kumar	<ul style="list-style-type: none">• Explain: Vulture breeding programme• Differentiate b/w E-waste and Kitchen wet waste; EPA and wildlife Protection Act; Global Warming and Ozone layer depletion, Pesticide and Compost.
56.	20HMT3160	Neekita	<ul style="list-style-type: none">• Explain Land resources and land use change• Soil erosion, Desertification, Bioamplification and Sacred forests.
57.	20HMT3162	Nipun Sharma	<ul style="list-style-type: none">• In contrast to rituals of the ancient Indian society the activities of modern Indian society have harmed the environment and biodiversity. Explain.• Comment on the statement 'environmental damage can give rise to tremendous social and economic inequality'.
58.	20HMT3163	Nishant Verma	<ul style="list-style-type: none">• Mining is an essential environmental evil. Justify with a case study• Explain with suitable examples, why Indian megacities are more prone to facing water crisis in the next decade. As a resident of Delhi and as a concerned citizen, suggest some water conservation policies that the State Government should adopt in their master plan for the next 10 years (till 2030).• Explain Role of Public Awareness
59.	20HMT3164	Nitin Kumar	<ul style="list-style-type: none">• Explain Case Studies: Cauvery river water conflict, Sardar sarovar dam, Tarun Bharat Sangh, Kali Bachao Andolan and Silent valley movement.
60.	20HMT3166	Payal	<ul style="list-style-type: none">• Explain different species with examples: Keystone, Flagship, Umbrella, Indicator, Endemic and Exotic species.• "Increasing consumerism has a major impact on environment with respect to resource depletion and pollution". Elaborate using relevant examples and case studies.
61.	20HMT3167	Pooja Daila	<ul style="list-style-type: none">• Explain importance of Rainwater harvesting in urban areas• Environmental effects of COVID-19 pandemic and potential strategies of sustainability
62.	20HMT3168	Pranjal Sharma	<ul style="list-style-type: none">• Discuss Yamuna action plan• Ecosystem preservation and conservation strategies.• Basics of Ecosystem restoration.
63.	20HMT3169	Praphull Kumar Rajput	<ul style="list-style-type: none">• Explain extinction of Vulture and Carbon footprint• Effects of Modern Agriculture• Explain the importance of Wetlands with regard to biodiversity and water conservation. Write a short note on Ramsar Convention on Wetlands.
64.	20HMT3170	Prashansa Kanwal	<ul style="list-style-type: none">• Explain reasons for increased air pollution in Delhi• Write objective of Swachh Bharat Abhiyan. Discuss the challenges and means to make it more effective and successful,• Differentiate b/w Primary and Secondary air pollutants, Freshwater and Marine ecosystem

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65.	20HMT3171	Pravesh Kumar Yadav	<ul style="list-style-type: none">• Solid waste management and its control measures• Problems and challenges of e-waste management in India.• Explain how various environmental issues have been responsible for increasing cases of farmer suicides in India? What measures should the government take to improve the agricultural sector in the country?
66.	20HMT3172	Rahul Prajapat	<ul style="list-style-type: none">• Solid waste management and its control measures• Problems and challenges of e-waste management in India.• Explain how various environmental issues have been responsible for increasing cases of farmer suicides in India? What measures should the government take to improve the agricultural sector in the country?
67.	20HMT3176	Rajneesh Gautam	<ul style="list-style-type: none">• Explain different species with examples: Keystone, Flagship, Umbrella, Indicator, Endemic and Exotic species.• "Increasing consumerism has a major impact on environment with respect to resource depletion and pollution". Elaborate using relevant examples and case studies.
68.	20HMT3178	Renu Kumari	<ul style="list-style-type: none">• Describe Odd-even formula and its impact on air quality• Wildlife Trafficking• "Desert areas in India are a unique ecosystem that is ecologically, socially, and economically very important but at the same time are threatened due to human population pressure". Justify this statement giving relevant examples and arguments.
69.	20HMT3179	Rishika Kapoor	<ul style="list-style-type: none">• What are invasive species? How are they threat to biodiversity?• Differentiate b/w National park and Zoological Park, Biogas and Liquefied petroleum gas, Biosphere and Atmosphere• Explain Conservation of biodiversity.
70.	20HMT3180	Rohit	<ul style="list-style-type: none">• Explain extinction of Vulture and Carbon footprint• Effects of Modern Agriculture• Explain the importance of wetlands with regard to biodiversity and water conservation. Write a short note on Ramsar Convention on Wetlands.
71.	20HMT3181	Rohit	<ul style="list-style-type: none">• Explain Biodiversity, Levels and its importance• Write a brief note on Smart cities• Explain how indigenous and local communities can contribute towards the protection of biodiversity as well as conservation of forest and water resources
72.	20HMT3182	Rohit	<ul style="list-style-type: none">• Explain Climate change, Global warming, Acid rain and Ozone depletion• Despite various anti-pollution laws and policies, India's metropolitan cities remain among the most polluted cities in the world. Why?
73.	20HMT3183	Rohit Kumar	<ul style="list-style-type: none">• Discuss Environmental laws and acts in India are inappropriate.• Differentiate b/w Chipko movement and Beej bachao andolan, Appiko Movement• Explain Biological invasions. What are invasive species? How are they threat to biodiversity?
74.	20HMT3184	Rohit Kundu	<ul style="list-style-type: none">• Concept of sustainability and sustainable development• Think global and act local for sustainable development-how this is practically possible for urban city? Discuss giving examples



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S.No.	Roll No.	Name of the Student	Name of the Topic
			<ul style="list-style-type: none">Describe Vermicomposting and Joint forest management.Describe Groundwater rechargeWhat kinds of practices are required to manage the ever increasing urban and industrial waste generated in the metropolitan cities of India? Discuss.Explain Multidisciplinary nature of environmental studiesDescribe scope and importance of Environmental studies for human welfare. Write a note on Eutrophication.
75.	20HMT3185	Ruchika	
76.	20HMT3186	Rudransh Bisht	<ul style="list-style-type: none">Explain reasons for increased air pollution in DelhiWrite objective of Swachh Bharat Abhiyan. Discuss the challenges and means to make it more effective and successful,Differentiate b/w Primary and Secondary air pollutants, Freshwater and Marine ecosystem
77.	20HMT3187	Rupali Yadav	<ul style="list-style-type: none">Explain Nuclear hazards and human health risksWhat are the strategies adopted to minimize the damages caused by earthquakes?Biogeochemical cycles: H₂O, O₂, N₂, Carbon, S and P
78.	20HMT3190	Sahil	<ul style="list-style-type: none">Pollution Case Studies: Smog, Exxon Valdez oil spill disaster, Bhopal Gas Tragedy, Chernobyl and Hiroshima and Nagasaki Nuclear disaster
79.	20HMT3191	Satvik Tyagi	<ul style="list-style-type: none">Explain Conflicts over water (international and inter-state)What are oil spills? How they contribute to marine pollution.Explain briefly, your views on the preparedness of Delhi state to tackle an earthquake disaster.
80.	20HMT3193	Saurav Parcha	<ul style="list-style-type: none">Describe Ecological Succession and Food PyramidDiscuss IUCN, Red data book and Global 200 in detail.What are the major Environmental issues today?
81.	20HMT3194	Shrishti Srivastava	<ul style="list-style-type: none">Dam building on environment: Taking one example discuss how dam building affects ecological balance of ecosystemDo various environmental legislations lead to human-wildlife conflict in our country? Explain in detail.Elaborate Jhoom cultivation
82.	20HMT3195	Shruti Agarwal	<ul style="list-style-type: none">Explain Composition & Structure of Earth's AtmosphereEcosystems and evolutionWith appropriate examples, discuss the contribution of women in protecting the environment and raising environmental awareness in India.
83.	20HMT3196	Shubham Dahiya	<ul style="list-style-type: none">Discuss the role of disaster management to control recurrent floods in Indian plains.What are the causes of global warming? Discuss its effects on the human communities and agricultureDescribe Biogeographic zones of India and Biodiversity hotspots.
84.	20HMT3197	Sourabh Choudhary	<ul style="list-style-type: none">Ecosystem Services. Write Explanatory notes on its importanceNational Solar MissionDifferentiate b/w Ex-situ and In-situ; Photosynthesis and Respiration.
85.	20HMT3198	Sweetly	<ul style="list-style-type: none">Discuss Deforestation, its causes and impactsExplain Green energy and Impacts of mining.Carbon footprint and its impact on global warming

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86.	20HMT3199	Swikriti Patel	<ul style="list-style-type: none">• Explain briefly, the R's principle of waste management.• 'Waste segregation is the primary step for efficient solid waste management, yet it is in minimal practice in India'. Justify the statement• Air quality index.• Impacts of Climate Change on human communities.
87.	20HMT3200	Tamanna	<ul style="list-style-type: none">• Multidisciplinary nature of environmental studies• Explain London Smog and Los Angeles Smog• Describe Eutrophication and Agenda-21• Discuss Project tiger, India
88.	20HMT3201	Vartika Rawat	<ul style="list-style-type: none">• Write objective of Swachh Bharat Abhiyan. Discuss the challenges and means to make it more effective and successful• Impacts of Air pollution• Explain the steps that need to be taken at the individual level and by the government for conservation of water in India.
89.	20HMT3202	Vineet Chamoli	<ul style="list-style-type: none">• Describe Wasteland Reclamation• Cyclones in India and Ecotourism• Explain Homeostasis, Species reintroduction and translocation.
90.	20HMT3203	Vinod Kumar Meena	<ul style="list-style-type: none">• Environmental Pollution. Explain Soil and Noise-Types, causes, effects, control• Land degradation and desertification are one of the major challenges faced by humanity today. Justify the statement with respect to social, economic and environmental impacts.
91.	20HMT3204	Vishal	<ul style="list-style-type: none">• Explain the importance of Nature reserves• Tribal populations and rights• Human wildlife conflicts in Indian context.• In contrast to rituals of the ancient Indian society the activities of modern Indian society have harmed the environment and biodiversity. Explain.
92.	20HMT3205	Yashpal	<ul style="list-style-type: none">• Man wildlife conflicts: case studies• Describe Biomagnification• Project Brown Antlered Deer, Project tiger, Project Elephant and Project Crocodile• Project Great Indian Bustard, Vulture breeding programme, Save Western Ghats movement
93.	20HMT3206	Yug Kumar	<ul style="list-style-type: none">• Human population explosion is causing severe resource depletion and environmental degradation. Justify giving examples• Write importance of One horned rhinoceros, Asiatic lions, Mangrove forest, Bishnois, Jim Corbett National Park, Shifting cultivation
94.	20HMT3208	Anjali Joshi	<ul style="list-style-type: none">• Environmental ethics: role of Indian and other religions in conservation of environment• During a recent visit to your village in south India, you come to know that a multinational company is setting up its pesticide manufacturing unit in the outskirts of the village. The villagers are not much aware of the possible harmful impacts of such an industry in their village. Based on your knowledge about Bhopal Gas Tragedy and Minamata Disease Tragedy, explain the potential harm of this industry to the villagers. Also, suggest ways how villagers should coordinate with the government and

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S.No.	Roll No.	Name of the Student	Name of the Topic
			the company to avoid any such tragedy in the village.
95.	20HMT3209	Avni Chauhan	<ul style="list-style-type: none">• Explain Water Audit and National Solar Mission• Differentiate b/w Ex-situ and In-situ; Photosynthesis and Respiration, pollutant and Toxicant, Petroleum and Biogas• Explain the role of human communities to safeguard environment at local level.
96.	20HMT3210	Hansika Jain	<ul style="list-style-type: none">• Write short notes on: Ecosystem, Energy flow, Food chain, Food web, Food Pyramid and Ecological Succession• Explain Kyoto Protocol & Conference of Parties (CoP)
97.	20HMT3211	Jatin Dhaka	<ul style="list-style-type: none">• Environmental Pollution. Explain Air and Water-Types, causes, effects, control• Enlist some important steps and practices that can be taken by citizens to control indoor and outdoor air pollution in urban areas.
98.	20HMT3213	Mudrika Pandey	<ul style="list-style-type: none">• Write Vision of Eco-friendly products and Green Energy• Deforestation: causes and impacts• Using examples of various international summits and treaties, explain the importance of international co-operation for tackling global environmental issues.
99.	20HMT3214	Priyanshi Aggarwal	<ul style="list-style-type: none">• "The next world war may be fought over water". Justify the statement with suitable examples.• Explain Ganga Action Plan• Floods and droughts
100.	20HMT3215	Sahil Rathee	<ul style="list-style-type: none">• Environmental Laws: Air, Water, Wildlife protection act, forest act and EPA• Water resources: Use and Over-exploitation
101.	20HMT3216	Sharad Sharma	<ul style="list-style-type: none">• Mining is an essential environmental evil. Justify with a case study• Discuss Solid Waste Management (SWM)• Explain the various dangers and problems associated with landfills in metropolitan areas like Delhi. Also write a note on solid waste disposal measures that need to be taken to reduce the burden on existing landfills.
102.	20HMT3217	Tanvi Goel	<ul style="list-style-type: none">• Explain different pollution case studies• Human health hazards from Nuclear power plants• Pesticides and human health• Global warming.
103.	20HMT3218	Utkarsh Jain	<ul style="list-style-type: none">• Justify statement: Most floods are anthropogenic.• Describe the various stages of succession on rock and water.• Differentiate b/w National park and Zoological Park, Biogas and Liquefied petroleum gas, Biosphere and Atmosphere
104.	20HMT3219	Vansh Jain	<ul style="list-style-type: none">• Describe Kerala Floods, Landslides in India• Odd-even formula and its impact on air quality• Explain with suitable examples, why Indian megacities are more prone to facing water crisis in the next decade. As a resident of Delhi and as a concerned citizen, suggest some water conservation policies that the State Government should adopt in their master plan for the next 10 years (till 2030).
105.	20HMT3220	Vansh Jindal	<ul style="list-style-type: none">• National Environmental Awareness Campaign (NEAC)• National Green Corps (NGC) and Eco Club Programme



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S.No.	Roll No.	Name of the Student	Name of the Topic
			<ul style="list-style-type: none">Explain Case Studies: Cauvery river water conflict, Sardar Sarovar Dam, Tarun Bharat Sangh, Kali Bachao Andolan and Silent Valley Movement.
106.	20HMT3224	Nitin Ahlawat	<ul style="list-style-type: none">Explain Land resources and land use changeSoil erosion, Desertification, Bioamplification and Sacred forests.Differentiate b/w E-waste and Kitchen wet waste; EPA and wildlife Protection Act; Global Warming and Ozone layer depletion, Pesticide and Compost.
107.	20HMT3225	Tarun Dwivedi	<ul style="list-style-type: none">Describe Plastic Free India and Paris Convention/AgreementComposition & Structure of Earth's AtmosphereEcosystems and evolutionDifferentiate Pollutants and Toxicants, Primary and Secondary Succession
108.	20HMT3226	Abhishek Bhargava	<ul style="list-style-type: none">Explain UNEP and CITESDifferentiate between Photosynthesis and Respiration, Biotic and Abiotic Components, Biomagnification and Eutrophication.Explain importance of Rainwater harvesting in urban areasEnvironmental effects of COVID-19 pandemic and potential strategies of sustainability
109.	20HMT3227	Anurag Khokhar	<ul style="list-style-type: none">India as Mega-diversity spot. Comment giving examplesWith the help of a case study each, explain the in-situ and ex-situ approach for protecting the biodiversity.Explain Role of Public Awareness
110.	20HMT3228	Shivam Singh Parihar	<ul style="list-style-type: none">Explain Forest and Grassland Ecosystem in detailComment on the statement 'environmental damage can give rise to tremendous social and economic inequality'.Bhopal Gas TragedyDiscuss Yamuna action planEcosystem preservation and conservation strategiesBasics of Ecosystem restoration.

Pramod K.

Dr. Pramod Kumar

Assistant Professor

Department of Environmental Studies

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University of Delhi

ENVIRONMENTAL STUDIES

LIST OF ASSIGNMENTS FOR THE STUDENTS OF B.Sc PHYSICAL SCIENCES (CHEMISTRY)

(2020-2021)

S.N	Roll No	Student Name	TOPIC ASSIGNED
1	20PHS6102	AKASH	Ground water recharge and rain water harvesting; Air Quality Index : ambient air quality of different Indian cities
2	20PHS6144	AMIT KUMAR YADAV	Photochemical Smog: London and Delhi; Intellectual Property rights and Ethnic Diversity
3	20PHS6103	ANJALI	Kyoto protocol: joint implementation
4	20PHS6105	ASHISH KUMAR	Ozone layer Depletion; Montreal Protocol
5	20PHS6107	DEEPALI	Hotspots of Biodiversity, Endemic Species and theory of Endemism
6	20PHS6141	DEEPANSHU	The Air (Prevention and Control of Pollution) Act, 1981; Water(Prevention and Control of Pollution) Act, 1974
7	20PHS6108	DEEPANSHU GULIA	Environmental Communication and Public Awareness
8	20PHS6142	DHEERAJ KUMAR	Global Warming: Causes and Impacts
9	20PHS6109	DIVAS GAUR	Climate change : Causes and Impacts; Food Security and Climate Change
10	20PHS6110	GAURAV AHLAWAT	Nuclear Energy as resource; Chernobyl Nuclear Disaster , Fukushima Nuclear Disaster; Bhopal Gas Tragedy; Nuclear Winter: Global Consequences of Nuclear Explosions
11	20PHS6111	GAURAV MEENA	Acid Rain and Ocean Acidification
12	20PHS6150	HAPPY BAGHEL	Chipko Movement and Western Ghat movement; Smart Cities; Beej bachaoandolan;
13	20PHS6112	HITESH	WILDLIFE PROTECTION ACT; FOREST CONSERVATION ACT; SILENT VALLEY, NARMADA BACHAOANDOLAN, BISHNOIS, JHUMCULEVA
14	20PHS6113	HITESH KUMAR	Biogeographic Zones of India; Man-Wildlife conflict : Case Studies
15	20PHS6114	ISHANT SHUKLA	Biosphere Reserves; Project Tiger; India as mega Diverse Nation; Convention on Biodiversity
16	20PHS6145	JITEN KUMAR YADAV	Resettlement and Rehabilitation of Project affected people; Impact of urbanization on Environment
17	20PHS6115	KAMALDEEP	Interstate River Water Disputes, Interlinking of

			Rivers; Mangroves, Ramsar Convention
18	20PHS6116	KANISHK YADAV	Non-Conventional Sources of Energy/ Renewables
19	20PHS6117	KAPINDER YADAV	Solid Waste Management; E-waste recycling in India
20	20PHS6118	KARISHMA	Ecosystem : Concept and Structure; The Good and Bad of 'Odd-Even Formula'- air pollution
21	20PHS6119	KHUSHBU YADAV	Sustainable Development; Agenda 21 and Earth Summit; Watershed Management
22	20PHS6146	KIRAN	Ecological Pyramids: types, limitations importance; Olive Ridley Turtle : Conservation Case Study; Oil Spill Case Studies; Invasive Species and theory of invasion
23	20PHS6147	MANISH	Conventional sources of energy/ Non-Renewables; Eutrophication and Bio magnification
24	20PHS6148	MAYANK KUMAR	Ex Situ Conservation for plant and animal conservation; Species reintroduction and translocation
25	20PHS6122	NIKHIL	In situ biodiversity Conservation: Crocodile conservation project
26	20PHS6123	NISHA	Earthquakes and Cyclones; Ecosystem Services offered by different ecosystems
27	20PHS6125	PARDEEP KUMAR JYANI	Ecological Succession; UNCCD: Land Degradation, Soil Erosion; Think Global and Act Local : Case Studies
28	20PHS6127	PRADEEP GENWA	Human Population and Resource Depletion; Multidisciplinary nature of environmental studies
29	20PHS6128	PRINCE PUNDIR	Cultural Practices and Environmental Protection; Red Data Book, Key stone Species, Flagship Species, Indicator Species, Umbrella Species
30	20PHS6129	PRIYA	Noise pollution; thermal pollution; bio amplification
31	20PHS6130	PRIYA AHLAWAT	National environmental awareness campaign (neac)
32	20PHS6131	RANJIT	National green corps (ngc), eco club programe
33	20PHS6132	RIGZEN NURBOO	Air polluton: types, sources, causes, effects and control
34	20PHS6149	RITIK	Water polluton: types, sources, causes, effects and control
35	20PHS6133	RITIK CHATURVEDI	Noise polluton: types, sources, causes, effects and control
36	20PHS6134	ROHIT KUMAR	SOIL polluton: types, sources, causes, effects and control
37	20PHS6143	SANJAY KHANNEOTRA	Mangrooves, jhum cultivation
38	20PHS6135	SATYAM	Ecological Pyramids: types, limitations importance; Olive Ridley Turtle : Conservation Case Study; Oil Spill Case Studies
39	20PHS6137	SIVANI	Multidisciplinary nature of environmental studies
40	20PHS6139	VIPIN KUMAR	Ecosystem : Concept and Structure
41	20PHS6140	YUVRAJ TOKAS	Sustainable Development; Agenda 21 and Earth

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Internal Quality Assurance Cell (IQAC)
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AECC- Environmental Science : 72182801

Course Name: B.Sc. (H) Botany Sem. II

Name of the Faculty: Dr. Pramod Kumar



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INTERNAL ASSESSMENT

S.No.	Roll No.	Name of the Student	Topic of the Assignment
1.	20HBT6501	Aayush Ratna Bajpai	<ul style="list-style-type: none">• "The next world war may be fought over water". Justify the statement with suitable examples.• Mining is an essential environmental evil. Justify with a case study.• Explain the various dangers and problems associated with landfills in metropolitan areas like Delhi. Also write a note on solid waste disposal measures that need to be taken to reduce the burden on existing landfills.
2.	20HBT6502	Alice Mibang	<ul style="list-style-type: none">• Explain importance of Rainwater harvesting in urban areas• Environmental effects of COVID-19 pandemic and potential strategies of sustainability.
3.	20HBT6503	Anshu	<ul style="list-style-type: none">• Explain Biological invasions. What are invasive species? How are they threat to biodiversity?• Explain Conservation of biodiversity.• Do you think that local and traditional knowledge that we obtain from communities living in rural and forest areas across India can play a significant role in devising ways to conserve biodiversity and protecting natural resources? Justify your answer with relevant examples.
4.	20HBT6504	Anuj Kumar	<ul style="list-style-type: none">• India as Mega-diversity spot. Comment giving examples• With the help of a case study each, explain the in-situ and ex-situ approach for protecting the biodiversity.
5.	20HBT6505	Aparna Jangir	<ul style="list-style-type: none">• Explain how indigenous and local communities can contribute towards the protection of biodiversity as well as conservation of forest and water resources.• Take an example of any environmental issue that is a major concern to residents of the area, where your college is located. Discuss how your college eco-club can collaborate with other student societies, to raise awareness on the particular environmental issue among the residents and help them with the ways to overcome the specific problem.
6.	20HBT6506	Arun	<ul style="list-style-type: none">• In contrast to rituals of the ancient Indian society the activities of modern Indian society have harmed the environment and biodiversity. Explain.• Comment on the statement "environmental damage can give rise to tremendous social and economic inequality".• Malabar civets, a critically endangered species is also endemic to the Western Ghats. They are currently distributed in the forests of Kerala and Karnataka. Habitat destruction, habitat fragmentation, poaching, and hunting are the major threats faced by the species. Explain how you can facilitate conservation of this species using both ex-situ and in-situ conservation strategies.
7.	20HBT6507	Ashish	<ul style="list-style-type: none">• Discuss IUCN, Red data book and Global 200 in detail.• Explain different species with examples: Keystone, Flagship, Umbrella, Indicator, Endemic and Exotic species.• Project tiger, Project Elephant and Project Crocodile, Project Great Indian Bustard, Project Brown Antlered Deer, Vulture breeding program, Save Western Ghats movement

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S.No.	Roll No.	Name of the Student	Topic of the Assignment
8.	20HBT6508	Avdhi Kaushik	<ul style="list-style-type: none">Explain Climate change, Global warming, Acid rain and Ozone depletion.Despite various anti-pollution laws and policies, India's metropolitan cities remain among the most polluted cities in the world. Why?
9.	20HBT6510	Bhanu Kaushik	<ul style="list-style-type: none">Explain extinction of Vulture and Carbon footprintEffects of Modern AgricultureExplain the importance of wetlands with regard to biodiversity and water conservation. Write a short note on Ramsar Convention on Wetlands.
10.	20HBT6512	Chetna	<ul style="list-style-type: none">What are the major Environmental issues today?Year 2020 was a terrible year for Climate Disasters. Explain the statement using Australia's bushfire as a case study.
11.	20HBT6514	Devender	<ul style="list-style-type: none">Year 2020 was a terrible year for Climate Disasters. Explain the statement using California wildfires as a case study.Explain Composition & Structure of Earth's Atmosphere
12.	20HBT6515	Divya	<ul style="list-style-type: none">Concept of sustainability and sustainable developmentThink global and act local for sustainable development-how this is practically possible for urban city? Discuss giving examplesDescribe Vermicomposting and Joint forest management.Explain various threats to biodiversity
13.	20HBT6516	Garima Khatri	<ul style="list-style-type: none">Multidisciplinary nature of environmental studiesExplain London Smog and Los Angeles SmogDescribe Eutrophication and Agenda-21You have been invited to speak about Chipko Andolan and its importance with respect to protection of forests, women empowerment, mass environmental awareness and role of local communities in environmental protection. Prepare a speech in about 1000 words, with concluding remarks on the relevance of Chipko movement in the 21st century, using appropriate examples.
14.	20HBT6517	Gaurav Rathore	<ul style="list-style-type: none">Discuss Yamuna action planEcosystem preservation and conservation strategiesBasics of Ecosystem restoration.
15.	20HBT6518	Geetanjali	<ul style="list-style-type: none">Describe Ecological Succession and Food Pyramid"Desert areas in India are a unique ecosystem that is ecologically, socially, and economically very important but at the same time are threatened due to human population pressure". Justify this statement giving relevant examples and arguments.
16.	20HBT6520	Kheroon Nissa	<ul style="list-style-type: none">Ecosystems and evolutionWith appropriate examples, discuss the contribution of women in protecting the environment and raising environmental awareness in India.Using an example of a natural pond and a small aquarium, explain the structure of an aquatic ecosystem. Between the pond and the aquarium, which of the two is a self-sustaining ecosystem? Give reasons in support of your answer.
17.	20HBT6522	Lham Drema	<ul style="list-style-type: none">Ecosystem Services. Write Explanatory notes on its importanceNational Solar MissionDifferentiate b/w Ex-situ and In-situ; Photosynthesis and Respiration, pollutant and Toxicant, Petroleum and BiogasExplain the role of human communities to safeguard environment at local level.



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S.No.	Roll No.	Name of the Student	Topic of the Assignment
18.	20HBT6523	Luv Gupta	<ul style="list-style-type: none">Biogeochemical cycles: H₂O, O₂, N₂, Carbon, S and PDescribe scope and importance of Environmental studies for human welfare.Describe the various stages of succession on rock and water.
19.	20HBT6524	Mahima Chaudhary	<ul style="list-style-type: none">Write short notes on: Ecosystem, Energy flow, Food chain, Food web, Food Pyramid and Ecological SuccessionDifferentiate between Biotic and Abiotic Components, Biomagnification and Eutrophication.
20.	20HBT6527	Manjeet Kumar	<ul style="list-style-type: none">Explain problems associated with Natural ResourcesA geographic survey by a mining company has identified a particular patch of forest to be rich in coal reserves. The state government is keen on giving the contract to the mining company for extracting the coal reserves. However, there is a tribal community which has been residing in the forest area for several decades and is dependent on the forest resources for their survival and livelihood. Suggest measures that need to be taken by the Government, keeping in mind the economic utilization of the area, minimal environmental damage, and ensuring effective resettlement of the tribal community.
21.	20HBT6529	Nancy	<ul style="list-style-type: none">Explain Conflicts over water (international and inter-state)Describe Groundwater rechargeJustify statement: Most floods are anthropogenic.
22.	20HBT6531	Nighat Naz Neen	<ul style="list-style-type: none">Discuss Deforestation, its causes and impactsExplain Green energy and Impacts of mining.Carbon footprint and its impact on global warming
23.	20HBT6532	Nikita Bisht	<ul style="list-style-type: none">Dam building on environment: Taking one example discuss how dam building affects ecological balance of ecosystemElaborate Jhoom cultivation
24.	20HBT6533	Nikita Shrivastava	<ul style="list-style-type: none">What are invasive species? How are they threat to biodiversity?Differentiate b/w National park and Zoological Park, Biogas and Liquefied petroleum gas, Biosphere and AtmosphereExplain Wildlife Trafficking
25.	20HBT6534	Nilza Angmo	<ul style="list-style-type: none">"Increasing consumerism has a major impact on environment with respect to resource depletion and pollution". Elaborate using relevant examples and case studies.Discuss Solid Waste Management (SWM)
26.	20HBT6535	Pooja	<ul style="list-style-type: none">Land degradation and desertification are one of the major challenges faced by humanity today. Justify the statement with respect to social, economic and environmental impacts.'Plastic waste is a by-product of urban lifestyle and is considered as a necessary evil'. Provide your critical views on this statement, focusing on utility of plastic in the growth of urban lifestyle and impacts of plastic waste on the environment (including humans) in 1000 words.
27.	20HBT6536	Manisha Tandon	<ul style="list-style-type: none">Do various environmental legislations lead to human-wildlife conflict in our country? Explain in detail.Describe Biogeographic zones of India and Biodiversity hotspots.Explain Human wildlife conflicts in Indian context along with case studies
28.	20HBT6539	Preeti Vishwakarma	<ul style="list-style-type: none">What are oil spills? How they contribute to marine pollution. Explain with case studies.Explain Water Audit



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S.No.	Roll No.	Name of the Student	Topic of the Assignment
29.	20HBT6542	Sanyukta Bhowmick	<ul style="list-style-type: none">• Explain reasons for increased air pollution in Delhi• Write objective of Swachh Bharat Abhiyan. Discuss the challenges and means to make it more effective and successful.• Differentiate b/w Primary and Secondary air pollutants, Freshwater and Marine ecosystem.
30.	20HBT6542	Shivani Koundal	<ul style="list-style-type: none">• Solid waste management and its control measures• Problems and challenges of e-waste management in India.• Explain how various environmental issues have been responsible for increasing cases of farmer suicides in India? What measures should the government take to improve the agricultural sector in the country?
31.	20HBT6547	Shruti Ray	<ul style="list-style-type: none">• Explain Biodiversity, Levels and its importance• Explain Homeostasis, Species reintroduction and translocation.• Cultural practices are powerful tools to protect the environment and could also be threats to our ecosystem health. Justify the statement with examples.
32.	20HBT6548	Smile	<ul style="list-style-type: none">• Explain Nuclear hazards and human health risks• Describe Odd-even formula and its impact on air quality• Pesticides and human health• Describe Biomagnification
33.	20HBT6550	Sunaina	<ul style="list-style-type: none">• Pollution Case Studies: Smog, Exxon Valdez oil spill disaster, Bhopal Gas Tragedy, Chernobyl and Hiroshima and Nagasaki Nuclear disaster
34.	20HBT6551	Sushankita Srivastava	<ul style="list-style-type: none">• Explain Land resources and land use change• Soil erosion, Desertification, Bioamplification and Sacred forests.
35.	20HBT6552	Swati Chauhan	<ul style="list-style-type: none">• What kinds of practices are required to manage the ever increasing urban and industrial waste generated in the metropolitan cities of India? Discuss.• If world average temperature increases up to 4°C by 2050, then explain the possible impact of global warming on human communities and biodiversity of Rajasthan desert, Central India forest, and coastal areas of India, respectively.
36.	20HBT6553	Tanu Chauhan	<ul style="list-style-type: none">• Explain different pollution case studies• You have been invited by the Resident Welfare Association of your housing society to speak on the topic of Noise pollution. The society you live in is very near to an industrial area. In the speech, you decide to focus on the causes of noise pollution, its impact on the residents (focusing on different age groups), and possible ways to tackle this problem through seeking necessary help from the government and the industrial units. Draft a speech in a minimum of 750 words.
37.	20HBT6554	Trisha Mehra	<ul style="list-style-type: none">• Explain briefly, the R's principle of waste management.• 'Waste segregation is the primary step for efficient solid waste management, yet it is in minimal practice in India'. Justify the statement• Explain Air quality index and Ganga Action Plan
38.	20HBT6555	Twinkle Yadav	<ul style="list-style-type: none">• Write objective of Swachh Bharat Abhiyan. Discuss the challenges and means to make it more effective and successful• Explain various impacts of Air pollution• Explain the steps that need to be taken at the individual level and by the government for conservation of water in India.



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S.No.	Roll No.	Name of the Student	Topic of the Assignment
39.	20HBT6558	Nikita Pandey	<ul style="list-style-type: none">During a recent visit to your village in south India, you come to know that a multinational company is setting up its pesticide manufacturing unit in the outskirts of the village. The villagers are not much aware of the possible harmful impacts of such an industry in their village. Based on your knowledge about Bhopal Gas Tragedy and Minamata Disease Tragedy, explain the potential harm of this industry to the villagers. Also, suggest ways how villagers should coordinate with the government and the company to avoid any such tragedy in the village.Using examples of various international summits and treaties, explain the importance of international co-operation for tackling global environmental issues.
40.	20HBT6559	Raghav Shivkumar Choubey	<ul style="list-style-type: none">Environmental Pollution. Explain Air and Water-Types, causes, effects, controlEnlist some important steps and practices that can be taken by citizens to control indoor and outdoor air pollution in urban areas.
41.	20HBT6560	Maheshwari Symond Premkumar	<ul style="list-style-type: none">Differentiate b/w E-waste and Kitchen wet waste; EPA and wildlife Protection Act; Global Warming and Ozone layer depletion, Pesticide and Compost.What are oil spills? How they contribute to marine pollution. Explain with case studies.Explain UNEP and CITESExplain Case Studies: Cauvery river water conflict, Sardar Sarovar Dam, Tarun Bharat Sangh, Kali Bachao Andolan and Silent Valley Movement.
42.	20HBT6561	Sakshi Yadav	<ul style="list-style-type: none">What are the strategies adopted to minimize the damages caused by earthquakes?Explain briefly, your views on the preparedness of Delhi state to tackle an earthquake disaster.National Environmental Awareness Campaign (NEAC)National Green Corps (NGC) and Eco Club Programme
43.	20HBT6562	Shubham Kumar	<ul style="list-style-type: none">Write a brief note on Smart citiesDiscuss Environmental laws and acts in India are inappropriate.Differentiate b/w Chipko movement, Beej Bachao Andolan and Appiko MovementShifting to renewable energy resources is going to be very vital for developing countries in order to tackle the problems of pollution, achieving Climate related targets, social upliftment and economic development. Elaborate on this statement in about 750 words. Also discuss the uses, advantages and disadvantages of any two renewable energy resources which you think have high potential in India.
44.	20HBT6563	Vidushi Singh	<ul style="list-style-type: none">National Environmental Awareness Campaign (NEAC),National Green Corps (NGC) and Eco Club ProgrammeExplain with suitable examples why Indian megacities are more prone to facing water crisis in the next decade. As a resident of Delhi and as a concerned citizen, suggest some water conservation policies that the State Government should adopt in their master plan for the next 10 years (till 2030).Explain Role of Public Awareness
45.	20HBT6564	Nancy Yadav	<ul style="list-style-type: none">Explain Kyoto Protocol & Conference of Parties (CoP)Describe Plastic Free India and Paris Convention/AgreementEcosystems and evolution

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S.No.	Roll No.	Name of the Student	Topic of the Assignment
46.	20HBT6565	Ankit Dabla	<ul style="list-style-type: none">• Write Vision of Eco-friendly products and Green Energy• Using examples of various international summits and treaties, explain the importance of international co-operation for tackling global environmental issues.
47.	20HBT6566	Kartik	<ul style="list-style-type: none">• Describe Kerala Floods,• Landslides in India• Environmental Laws: Air, Water, Wildlife protection act, forest act and EPA

Pramod

Dr. Pramod Kumar

Assistant Professor

Department of Environmental Studies

Internal Quality Assurance Cell (IQAC)
Deen Dayal Upadhyaya College
University of Delhi

ENVIRONMENTAL STUDIES

LIST OF ASSIGNMENTS FOR THE STUDENTS OF B.Sc. (H) CHEMISTRY

2020-2021

S.N	Roll No	Student Name	TOPIC ASSIGNED
1	20HCH8601	AAKANKSHA	Air Quality Index : ambient air quality of different Indian cities
2	20HCH8602	ANJALI GAUTAM	Photochemical Smog: London and Delhi; Intellectual Property rights and Ethnic Diversity
3	20HCH8603	ANKITA RAWAT	Kyoto Protocol: Joint Implementation
4	20HCH8631	ANKUSH KUMAR	Ozone layer Depletion
5	20HCH8632	ANUSH	Montreal Protocol; Ecological Succession; UNCCD: Land Degradation, Soil Erosion
6	20HCH8633	ARYAN DOODWAL	The Air (Prevention and Control of Pollution) Act, 1981; Water(Prevention and Control of Pollution) Act, 1974
7	20HCH8634	DHRUV	Environmental Communication and Public Awareness
8	20HCH8635	DHRUV GAHLAN	Global Warming: Causes and Impacts
9	20HCH8605	GURNOOR KAUR	Climate change : Causes and Impacts
10	20HCH8606	HARSH SHARMA	Nuclear Energy
11	20HCH8607	ISHU GOYAL	Acid Rain and Ocean Acidification
12	20HCH8636	JAIVEER	Chipko Movement and Western Ghat movement
13	20HCH8608	KESHAV BASUDEV	Wildlife protection act; forest conservation act
14	20HCH8637	KRISHANKANT	Biogeographic Zones of India
15	20HCH8609	KUMUD SAINI	Biosphere reserves; project tiger
16	20HCH8610	LAIMI DEBBARMA	Resettlement and Rehabilitation of Project affected people
17	20HCH8611	MANDEEP	Interstate river water disputes,
18	20HCH8612	MUKUL SINGH	Interlinking of Rivers
19	20HCH8638	MUSKAN SHARMA	Solid waste management
20	20HCH8613	NANCY	The Good and Bad of Odd-Even Formula - air pollution
21	20HCH8646	NANCY	Impacts of Dams on Tribal Population and human communities;
22	20HCH8614	NEHA	Invasive Species and theory of invasion
23	20HCH8628	NEHA YADAV	Eutrophication and Bio magnification
24	20HCH8615	NIHARIKA SAHAY	Ex Situ-Conservation for plant and animal conservation; Species reintroduction and

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25	20HCH8616	NIKITA ROY	In situ biodiversity Conservation: Crocodile conservation project
26	20HCH8617	NISHANT NANDA	Earthquakes and Cyclones
27	20HCH8647	PRANJAL RAJ	Think Global and Act Local : Case Studies; Food Chain and Food Web
28	20HCH8618	PRIYANKA	Human Population and Resource Depletion
29	20HCH8619	RAVI MISHRA	Cultural Practices and Environmental Protection
30	20HCH8640	RESHAB KARANWAL	Noise Pollution; Thermal Pollution; Bio Amplification
31	20HCH8620	RITISH	Hotspots of Biodiversity, Endemic Species and theory of Endemism
32	20HCH8641	ROHIT KUMAR MAURYA	Smart Cities; Beej BachaoAndolan;
33	20HCH8642	SACHIN MEENA	Mining is an Essential Evil
34	20HCH8643	SAHIL YADAV	Floods and Droughts : impacting Indian states
35	20HCH8644	SANSKAR	Ecosystem Services offered by different ecosystems
36	20HCH8621	SHISHRAM DHAKA	Man-Wildlife conflict : Case Studies
37	20HCH8622	SHIV SHANKAR MEENA	Red Data Book, Key stone Species, Flagship Species, Indicator Species, Umbrella Species
38	20HCH8623	SOMYA UPADHYAY	Ground water recharge and rain water harvesting
39	20HCH8629	SWATI VISHWKARMA	Food Security and Climate Change
40	20HCH8648	Tanya Gupta	Silent Valley, Narmada BachaoAndolan; Bishnois, Jhum Cultivation
41	20HCH8624	TARUN KUMAR	Impact of urbanization on Environment
42	20HCH8645	UMESH RATHORE	Chernobyl Nuclear Disaster , Fukushima Nuclear Disaster; Bhopal Gas Tragedy
43	20HCH8625	VAISHANVI	India as mega Diverse Nation; Convention on Biodiversity
44	20HCH8626	VINAY KUMAR	Mangroves, Ramsar Convention
45	20HCH8630	VISHAL	Watershed Management

ENVIRONMENTAL STUDIES

LIST OF ASSIGNMENTS FOR THE STUDENTS OF COMPUTER SCIENCE

2020-2021

S. N	Roll No	Student Name	TOPIC ASSIGNED
1	20HCS4101	ABHAY YADAV	Air Quality Index : ambient air quality of different Indian cities
2	20HCS4102	ABHISHEK MARTOLIA	Photochemical Smog: London and Delhi; Intellectual Property rights and Ethnic Diversity
3	20HCS4103	ABHISHEK SINGH YADAV	Kyoto Protocol: Joint Implementation
4	20HCS4104	ADARSH KUMAR SINGH	Ozone layer Depletion
5	20HCS4106	ADITYARAJ SHARMA	Montreal Protocol
6	20HCS4107	AJAY KUMAR MEENA	The Air (Prevention and Control of Pollution) Act, 1981; Water(Prevention and Control of Pollution) Act, 1974
7	20HCS4109	AKSHIT SINGH	Environmental Communication and Public Awareness
8	20HCS4110	AMISHA	Global Warming: Causes and Impacts
9	20HCS4111	ANIKET	Climate change : Causes and Impacts
10	20HCS4113	ANNIRESH RAI	Nuclear Energy
11	20HCS4114	ANSH SHARMA	Acid Rain and Ocean Acidification
12	20HCS4115	ANSHITESH KUMAR	Chipko Movement and Western Ghat movement
13	20HCS4116	ANSHU RAJ	Wildlife Protection Act; Forest Conservation Act
14	20HCS4117	ASHISH SHAKYA	Biogeographic Zones of India
15	20HCS4118	AVANTIKA AJIT	Biosphere Reserves; Project Tiger
16	20HCS4119	CHARU PATEL	Resettlement and Rehabilitation of Project affected people
17	20HCS4120	DEVJYOTI MUKHERJEE	Interstate River Water Disputes,
18	20HCS4121	DIVYANSH	Interlinking of Rivers

		MAGAN	
19	20HCS4122	GAURAV KUMAR	Solid Waste Management
20	20HCS4123	HARSH BHARDWAJ	The Good and Bad of 'Odd-Even Formula' - air pollution
21	20HCS4124	HARSH YADAV	Impacts of Dams on Tribal Population and human communities;
22	20HCS4125	ISHA CHAUHAN	Invasive Species and theory of invasion
23	20HCS4126	ISHIKA CASLEY	Eutrophication and Bio magnification
24	20HCS4128	ISHIKA SARASWAT	Ex Situ Conservation for plant and animal conservation; Species reintroduction and translocation
25	20HCS4129	JATIN ADHIKARI	In situ biodiversity Conservation: Crocodile conservation project
26	20HCS4130	KARAN SINGH	Earthquakes and Cyclones
27	20HCS4131	KOMAL SAHOO	Think Global and Act Local : Case Studies
28	20HCS4132	KRIKA	Human Population and Resource Depletion
29	20HCS4133	LALIT KUMAR	Cultural Practices and Environmental Protection
30	20HCS4135	MANTSHA	Noise Pollution; Thermal Pollution; Bio Amplification
31	20HCS4136	NANDINI BISHT	Hotspots of Biodiversity, Endemic Species and theory of Endemism
32	20HCS4137	NANDINI MOTWANI	Smart Cities; Beej BachaoAndolan;
33	20HCS4138	PALAK PANDEY	Mining is an Essential Evil
34	20HCS4141	PRAGATI RATHI	Floods and Droughts : impacting Indian states
35	20HCS4142	PRAKRITI SINGH	Ecosystem Services offered by different ecosystems
36	20HCS4143	PRANJAL GUPTA	Man-Wildlife conflict : Case Studies
37	20HCS4144	PRATEEK	Red Data Book, Key stone Species, Flagship Species, Indicator Species, Umbrella Species
38	20HCS4145	PRIYA	Ground water recharge and rain water harvesting
39	20HCS4146	PRIYANSHU RANJAN	Food Security and Climate Change

40	20HCS4147	RAHUL KUMAR MANJHI	Silent Valley, Narmada Bachao Andolan; Bishnois, Jhum Cultivation
41	20HCS4148	RAJ RAUNAK KUMAR	Impact of urbanization on Environment
42	20HCS4149	RITIKA	Chernobyl Nuclear Disaster , Fukushima Nuclear Disaster; Bhopal Gas Tragedy
43	20HCS4150	RITU KUMARI	India as mega Diverse Nation; Convention on Biodiversity
44	20HCS4151	ROHIT KUMAR SINGH	Mangroves, Ramsar Convention
45	20HCS4152	SAGAR PRAJAPATI	Conventional sources of energy/ Non-Renewables
46	20HCS4153	SANCHIT SATIJA	Food Chain and Food Web
47	20HCS4154	SANJANA DAS	Ecological Succession; UNCCD: Land Degradation, Soil Erosion
48	20HCS4155	SANJANA GOEL	Threats to biodiversity: HABITAT LOSS, HABITAT DEGRADATION, HABITAT FRAGMENTATION
49	20HCS4156	SEEMA KUMARI	Threats to biodiversity: POACHING, HUMAN WILDLIFE CONFLICTS
50	20HCS4157	SHAGUN PANDEY	Threats to biodiversity: INVASIVE SPECIES AND BIOLOGICAL INVASION
51	20HCS4158	SHIVAM DALAL	Biodiversity conservation strategies: in-situ methods of conservation
52	20HCS4159	SHRESHTHA KUMAR GUPTA	Biodiversity conservation strategies: ex-situ methods of conservation
53	20HCS4160	SHUBHAM YADAV	Noise pollution; thermal pollution; bio amplification
54	20HCS4162	SIMRAN	National environmental awareness campaign (neac)
55	20HCS4163	TANVI	National green corps (ngc), eco club programme
56	20HCS4164	VANSHIKA GUPTA	Air polluton: types, sources, causes, effects and control
57	20HCS4165	VINAY KHANDURI	Water polluton: types, sources, causes, effects and control
58	20HCS4166	VISHAL KUMAR	Noise polluton: types, sources, causes, effects and control
59	20HCS4167	AZIZAH NOORI	SOIL polluton: types, sources, causes, effects and control
60	20HCS4168	BELO ABHIGYAN	Mangrooves, jhum cultivation

61	20HCS4169	LOBURI FRED EDWARD MONGGA	Types of Ecosystems: TERRESTRIAL ECOSYSTEMS
62	20HCS4170	PARWIZ	Interstate River Water Disputes,
63	20HCS4172	AVINASH KUMAR THAKUR	Interlinking of Rivers
64	20HCS4173	ANUJ PRATAP SINGH	Solid Waste Management
65	20HCS4174	ASHUTOSH TIWARI	The Good and Bad of 'Odd-Even Formula'- air pollution
66	20HCS4175	BINTU SINGH CHAUHAN	Impacts of Dams on Tribal Population and human communities;
67	20HCS4177	MAYANK AGARWALLA	Invasive Species and theory of invasion
68	20HCS4179	HARSHIT	Eutrophication and Bio magnification
69	20HCS4181	ANISH GUPTA	Ex Situ Conservation for plant and animal conservation; Species reintroduction and translocation

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AECC- Environmental Science : 72182801

Course Name: B.Sc. (H) Electronics Sem. II

Name of the Faculty: Dr. Pramod Kumar

INTERNAL ASSESSMENT

S.No.	Roll No.	Name of the Student	Topic of the Assignment
1.	20HEL2102	Aditya Jayant	<ul style="list-style-type: none"> Explain Climate change, Global warming, Acid rain and Ozone depletion. Despite various anti-pollution laws and policies, India's metropolitan cities remain among the most polluted cities in the world. Why?
2.	20HEL2103	Aditya Kumar Mishra	<ul style="list-style-type: none"> Explain extinction of Vulture and Carbon footprint Effects of Modern Agriculture Explain the importance of wetlands with regard to biodiversity and water conservation. Write a short note on Ramsar Convention on Wetlands.
3.	20HEL2104	Akash Kumar Maurya	<ul style="list-style-type: none"> What are the major Environmental issues today? Year 2020 was a terrible year for Climate Disasters. Explain the statement using Australia's bushfire as a case study.
4.	20HEL2106	Alok Raj	<ul style="list-style-type: none"> Year 2020 was a terrible year for Climate Disasters. Explain the statement using California wildfires as a case study. Explain Composition & Structure of Earth's Atmosphere
5.	20HEL2107	Animesh Kumar	<ul style="list-style-type: none"> Describe Ecosystem, Energy flow, Food chain, Food web, Ecological Succession, Food Pyramid
6.	20HEL2108	Ankit Gupta	<ul style="list-style-type: none"> Multidisciplinary nature of environmental studies Explain London Smog and Los Angeles Smog Describe Eutrophication and Agenda-21 You have been invited to speak about Chipko Andolan and its importance with respect to protection of forests, women empowerment, mass environmental awareness and role of local communities in environmental protection. Prepare a speech in about 1000 words, with concluding remarks on the relevance of Chipko movement in the 21st century, using appropriate examples.
7.	20HEL2109	Ankush Shekhawat	<ul style="list-style-type: none"> Discuss Yamuna action plan Ecosystem preservation and conservation strategies Basics of Ecosystem restoration.
8.	20HEL2110	Anmol Sharma	<ul style="list-style-type: none"> Describe Ecological Succession and Food Pyramid "Desert areas in India are ecologically, socially, and economically very important but at the same time are threatened due to human population pressure". Justify this statement giving relevant examples and arguments.
9.	20HEL2111	Anshuman Singh	<ul style="list-style-type: none"> Explain importance of Rainwater harvesting in urban areas Environmental effects of COVID-19 pandemic and potential strategies of sustainability.
10.	20HEL2112	Dasrath	<ul style="list-style-type: none"> Explain Global climate change and its causes. Describe some clean energy alternatives to overcome global climate change.



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S.No.	Roll No.	Name of the Student	Topic of the Assignment
11.	20HEL2113	Diksha Singh	<ul style="list-style-type: none">India as Mega-diversity spot. Comment giving examplesWith the help of a case study each, explain the in-situ and ex-situ approach for protecting the biodiversity.
12.	20HEL2114	Dixit	<ul style="list-style-type: none">Explain how indigenous and local communities can contribute towards the protection of biodiversity as well as conservation of forest and water resources.Take an example of any environmental issue that is a major concern to residents of the area, where your college is located. Discuss how your college eco-club can collaborate with other student societies, to raise awareness on the particular environmental issue among the residents and help them with the ways to overcome the specific problem.
13.	20HEL2115	Harsh Jawla	<ul style="list-style-type: none">Explain various Biogeographic zones of IndiaElaborate biodiversity hotspots
14.	20HEL2116	Harshvardhan Singh Tomar	<ul style="list-style-type: none">Discuss IUCN, Red data book and Global 200 in detail.Explain different species with examples: Keystone, Flagship, Umbrella, Indicator, Endemic and Exotic species.Project tiger, Project Elephant and Project Crocodile, Project Great Indian Bustard, Project Brown Antlered Deer, Vulture breeding program, Save Western Ghats movement
15.	20HEL2117	Ishita Joshi	<ul style="list-style-type: none">"The next world war may be fought over water". Justify the statement with suitable examples.Mining is an essential environmental evil. Justify with a case study.Explain the various dangers and problems associated with landfills in metropolitan areas like Delhi. Also write a note on solid waste disposal measures that need to be taken to reduce the burden on existing landfills.
16.	20HEL2118	Lalit Kumar Chauhan	<ul style="list-style-type: none">Ecosystems and evolutionWith appropriate examples, discuss the contribution of women in protecting the environment and raising environmental awareness in India.Using an example of a natural pond and a small aquarium, explain the structure of an aquatic ecosystem. Between the pond and the aquarium, which of the two is a self-sustaining ecosystem? Give reasons in support of your answer.
17.	20HEL2119	Mangesh Poonar	<ul style="list-style-type: none">Ecosystem Services. Write Explanatory notes on its importanceNational Solar MissionDifferentiate b/w Ex-situ and In-situ; Photosynthesis and Respiration, pollutant and Toxicant, Petroleum and BiogasExplain the role of human communities to safeguard environment at local level.
18.	20HEL2120	Manish Kumar	<ul style="list-style-type: none">Biogeochemical cycles: H₂O, O₂, N₂, Carbon, S and PDescribe scope and importance of Environmental studies for human welfare.Describe the various stages of succession on rock and water.



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S.No.	Roll No.	Name of the Student	Topic of the Assignment
19.	20HEL2121	Mayank	<ul style="list-style-type: none">Write short notes on: Ecosystem, Energy flow, Food chain, Food web, Food Pyramid and Ecological SuccessionDifferentiate between Biotic and Abiotic Components, Biomagnification and Eutrophication.
20.	20HEL2122	Meer Samad Khan	<ul style="list-style-type: none">Explain problems associated with Natural ResourcesA geographic survey by a mining company has identified a particular patch of forest to be rich in coal reserves. The state government is keen on giving the contract to the mining company for extracting the coal reserves. However, there is a tribal community which has been residing in the forest area for several decades and is dependent on the forest resources for their survival and livelihood. Suggest measures that need to be taken by the Government, keeping in mind the economic utilization of the area, minimal environmental damage, and ensuring effective resettlement of the tribal community.
21.	20HEL2123	Milan	<ul style="list-style-type: none">Write a note on Disaster Management.Explain Floods and Cyclones disasters
22.	20HEL2124	Mohit Ahirwar	<ul style="list-style-type: none">Discuss Deforestation, its causes and impactsExplain Green energy and Impacts of mining.Carbon footprint and its impact on global warming
23.	20HEL2125	Muskan Seth	<ul style="list-style-type: none">Explain Disaster ManagementWrite a note on Earthquakes and Landslides disasters
24.	20HEL2126	Nikhil Yadav	<ul style="list-style-type: none">What are invasive species? How are they threat to biodiversity?Differentiate b/w National park and Zoological Park, Biogas and Liquefied petroleum gas, Biosphere and AtmosphereExplain Wildlife Trafficking
25.	20HEL2127	Nitin Yadav	<ul style="list-style-type: none">"Increasing consumerism has a major impact on environment with respect to resource depletion and pollution". Elaborate using relevant examples and case studies.Discuss Solid Waste Management (SWM)
26.	20HEL2128	Prajwal Baranwal	<ul style="list-style-type: none">Land degradation and desertification are one of the major challenges faced by humanity today. Justify the statement with respect to social, economic and environmental impacts.'Plastic waste, is a by-product of urban lifestyle and is considered as a necessary evil'. Provide your critical views on this statement, focusing on utility of plastic in the growth of urban lifestyle and impacts of plastic waste on the environment (including humans) in 1000 words.
27.	20HEL2129	Prince	<ul style="list-style-type: none">Write the importance of media for environmental issues.Explain Islands of India
28.	20HEL2130	Priyanshu Aggarwal	<ul style="list-style-type: none">Explain briefly, the R's principle of waste management.'Waste segregation is the primary step for efficient solid waste management, yet it is in minimal practice in India'. Justify the statementExplain Air quality index and Ganga Action Plan



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S.No.	Roll No.	Name of the Student	Topic of the Assignment
29.	20HEL2131	Puneet	<ul style="list-style-type: none">Explain reasons for increased air pollution in DelhiWrite objective of Swachh Bharat Abhiyan. Discuss the challenges and means to make it more effective and successful.Differentiate b/w Primary and Secondary air pollutants, Freshwater and Marine ecosystem.
30.	20HEL2132	R Hari Narayan	<ul style="list-style-type: none">Solid waste management and its control measuresProblems and challenges of e-waste management in India.Explain how various environmental issues have been responsible for increasing cases of farmer suicides in India? What measures should the government take to improve the agricultural sector in the country?
31.	20HEL2134	Rahul Yadav	<ul style="list-style-type: none">Write objective of Swachh Bharat Abhiyan. Discuss the challenges and means to make it more effective and successfulExplain in detail various impacts of Air pollution
32.	20HEL2136	Rajan Kumar Jha	<ul style="list-style-type: none">Explain Nuclear hazards and human health risksDescribe Odd-even formula and its impact on air qualityPesticides and human healthDescribe Biomagnification
33.	20HEL2137	Rakesh Kumar	<ul style="list-style-type: none">Pollution Case Studies: Smog, Exxon Valdez oil spill disaster, Bhopal Gas Tragedy, Chernobyl and Hiroshima and Nagasaki Nuclear disaster
34.	20HEL2138	Rashik Roushan	<ul style="list-style-type: none">Explain Land resources and land use changeSoil erosion, Desertification, Bioamplification and Sacred forests.
35.	20HEL2139	Ritnesh	<ul style="list-style-type: none">What kinds of practices are required to manage the ever increasing urban and industrial waste generated in the metropolitan cities of India? Discuss.If world average temperature increases up to 4°C by 2050, then explain the possible impact of global warming on human communities and biodiversity of Rajasthan desert, Central India forest, and coastal areas of India, respectively.
36.	20HEL2140	Rohan	<ul style="list-style-type: none">Explain different pollution case studiesYou have been invited by the Resident Welfare Association of your housing society to speak on the topic of Noise pollution. The society you live in is very near to an industrial area. In the speech, you decide to focus on the causes of noise pollution, its impact on the residents (focusing on different age groups), and possible ways to tackle this problem through seeking necessary help from the government and the industrial units. Draft a speech in a minimum of 750 words.
37.	20HEL2141	Sahil	<ul style="list-style-type: none">What are oil spills? How they contribute to marine pollution. Explain with case studies.Explain Water Audit
38.	20HEL2142	Sharat Singh	<ul style="list-style-type: none">Write Vision of Eco-friendly products and Green EnergyUsing examples of various international summits and treaties, explain the importance of international co-operation for tackling global environmental issues.

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S.No.	Roll No.	Name of the Student	Topic of the Assignment
39.	20HEL2143	Shashank Chauhan	<ul style="list-style-type: none">During a recent visit to your village in south India, you come to know that a multinational company is setting up its pesticide manufacturing unit in the outskirts of the village. The villagers are not much aware of the possible harmful impacts of such an industry in their village. Based on your knowledge about Bhopal Gas Tragedy and Minamata Disease Tragedy, explain the potential harm of this industry to the villagers. Also, suggest ways how villagers should coordinate with the government and the company to avoid any such tragedy in the village.Using examples of various international summits and treaties, explain the importance of international co-operation for tackling global environmental issues.
40.	20HEL2146	Shrashank Singh Tilak	<ul style="list-style-type: none">Environmental Pollution. Explain Air and Water-Types, causes, effects, controlEnlist some important steps and practices that can be taken by citizens to control indoor and outdoor air pollution in urban areas.
41.	20HEL2147	Suyash Tripathi	<ul style="list-style-type: none">Differentiate b/w E-waste and Kitchen wet waste; EPA and wildlife Protection Act; Global Warming and Ozone layer depletion, Pesticide and Compost.What are oil spills? How they contribute to marine pollution. Explain with case studies.Explain UNEP and CITESExplain Case Studies: Cauvery river water conflict, Sardar Sarovar Dam, Tarun Bharat Sangh, Kali Bachao Andolan and Silent Valley Movement.
42.	20HEL2149	Tashi Phunchok	<ul style="list-style-type: none">What are the strategies adopted to minimize the damages caused by earthquakes?Explain briefly, your views on the preparedness of Delhi state to tackle an earthquake disaster.National Environmental Awareness Campaign (NEAC)National Green Corps (NGC) and Eco Club Programme
43.	20HEL2150	Utkarsh Chamoli	<ul style="list-style-type: none">Explain Biodiversity, Levels and its importanceExplain Homeostasis, Species reintroduction and translocation.Cultural practices are powerful tools to protect the environment and could also be threats to our ecosystem health. Justify the statement with examples.
44.	20HEL2152	Varchasv Gupta	<ul style="list-style-type: none">Write various impacts of human population growth on environment, human health.Explain carbon footprint.
45.	20HEL2153	Vinit Kumar	<ul style="list-style-type: none">Explain Kyoto Protocol & Conference of Parties (CoP)Describe Plastic Free IndiaWrite a note on Paris Convention Agreement
46.	20HEL2154	Aniket	<ul style="list-style-type: none">Write objective of Swachh Bharat Abhiyan. Discuss the challenges and means to make it more effective and successfulExplain various impacts of Air pollutionExplain the steps that need to be taken at the individual level and by the govt. for conservation of water in India.



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S.No.	Roll No.	Name of the Student	Topic of the Assignment
47.	20HEL2155	Gaurav Rajput	<ul style="list-style-type: none">Describe Kerala Floods,Landslides in IndiaEnvironmental Laws: Air, Water, Wildlife protection act, forest act and EPA
48.	20HEL2156	Jatin Singh	<ul style="list-style-type: none">Concept of sustainability and sustainable developmentThink global and act local for sustainable development-how this is practically possible for urban city? Discuss giving examplesDescribe Vermicomposting and Joint forest management.Explain various threats to biodiversity
49.	20HEL2157	Rudraksh Maurya	<ul style="list-style-type: none">Write a brief note on Smart citiesDifferentiate b/w Chipko movement, Beej Bachao Andolan and Appiko MovementShifting to renewable energy resources is going to be very vital for developing countries in order to tackle the problems of pollution, achieving Climate related targets, social upliftment and economic development. Elaborate on this statement in about 750 words. Also discuss the uses, advantages and disadvantages of any two renewable energy resources which you think have high potential in India.
50.	20HEL2159	Abhishek Pal	<ul style="list-style-type: none">In contrast to rituals of the ancient Indian society the activities of modern Indian society have harmed the environment and biodiversity. Explain.Comment on the statement 'environmental damage can give rise to tremendous social and economic inequality'.Malabar civets, a critically endangered species is also endemic to the Western Ghats. They are currently distributed in the forests of Kerala and Karnataka. Habitat destruction, habitat fragmentation, poaching, and hunting are the major threats faced by the species. Explain how you can facilitate conservation of this species using both ex-situ and in-situ conservation strategies.
51.	20HEL2161	Prashant Kumar Singh	<ul style="list-style-type: none">Explain Conflicts over water (international and inter-state)Describe Groundwater rechargeJustify statement: Most floods are anthropogenic.
52.	20HEL2162	Ravi Bhushan Kumar	<ul style="list-style-type: none">Dam building on environment: Taking one example discuss how dam building affects ecological balance of ecosystemDiscuss Environmental laws and acts in India are inappropriate.Elaborate Jhoom cultivation
53.	20HEL2163	Sahil Kumar Yadav	<ul style="list-style-type: none">Do various environmental legislations lead to human-wildlife conflict in our country? Explain in detail.Describe Biogeographic zones of India and Biodiversity hotspots.Explain Human wildlife conflicts in Indian context along with case studies
54.	20HEL2164	Vedanti Kiran	<ul style="list-style-type: none">Explain various sustainable development goals.Elaborate India's National Action Plan on Climate Change and its major missions.



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S.No.	Roll No.	Name of the Student	Topic of the Assignment
55.	20HEL2165	Vikrant Yadav	<ul style="list-style-type: none">Explain Biological invasions. What are invasive species? How are they threat to biodiversity?Explain Conservation of biodiversity.Do you think that local and traditional knowledge that we obtain from communities living in rural and forest areas across India can play a significant role in devising ways to conserve biodiversity and protecting natural resources? Justify your answer with relevant examples.
56.	20HEL2166	Sagar Mishra	<ul style="list-style-type: none">National Environmental Awareness Campaign (NEAC),National Green Corps (NGC) and Eco Club ProgrammeExplain with suitable examples, why Indian megacities are more prone to facing water crisis in the next decade. As a resident of Delhi and as a concerned citizen, suggest some water conservation policies that the State Government should adopt in their master plan for the next 10 years (till 2030).Explain Role of Public Awareness

Pramod

Pramod

Dr. Pramod Kumar

Assistant Professor

Department of Environmental Studies

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Officiating Principal
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Sector-3, Dwarka, New Delhi-78

ENVIRONMENTAL STUDIES

LIST OF ASSIGNMENTS FOR THE STUDENTS OF B.Sc MATHEMATICAL SCIENCES (2020-2021)

S.N	Roll No	Student Name	TOPIC ASSIGNED
1	20MTS5702	ABHISHEK	Ground water recharge and rain water harvesting; Air Quality Index : ambient air quality of different Indian cities
2	20MTS5703	ABHISHEK MEENA	Photochemical Smog: London and Delhi; Intellectual Property rights and Ethnic Diversity
3	20MTS5704	ANKIT KUMAR	Kyoto protocol: joint implementation
4	20MTS5705	ANSH	Ozone layer Depletion; Montreal Protocol
5	20MTS5706	DIBYANSHU GOSWAMI	Hotspots of Biodiversity, Endemic Species and theory of Endemism
6	20MTS5707	DIKSHA YADAV	The Air (Prevention and Control of Pollution) Act, 1981; Water(Prevention and Control of Pollution) Act, 1974
7	20MTS5708	DISHA PATTNAIK	Environmental Communication and Public Awareness
8	20MTS5710	EKTA GANDHI	Global Warming: Causes and Impacts
9	20MTS5711	FARHAAN	Climate change : Causes and Impacts; Food Security and Climate Change
10	20MTS5712	GAUTAM	Nuclear Energy as resource; Chernobyl Nuclear Disaster , Fukushima Nuclear Disaster; Bhopal Gas Tragedy; Nuclear Winter: Global Consequences of Nuclear Explosions
11	20MTS5713	GHANSHYAM YADAV	Acid Rain and Ocean Acidification
12	20MTS5714	HAMZA MOINI	Chipko Movement and Western Ghat movement; Smart Cities; Beej bachao andolan;
13	20MTS5715	HARSH KANSAL	WILDLIFE PROTECTION ACT; FOREST CONSERVATION ACT; SILENT VALLEY, NARMADA BACHAO ANDOLAN; BISHNOIS, JHUM CULTIVATION
14	20MTS5716	HARSH VERMA	Biogeographic Zones of India; Man-Wildlife conflict : Case Studies
15	20MTS5717	JITENDER	Biosphere Reserves, Project Tiger; India as a mega Diverse Nation; Convention on Biodiversity
16	20MTS5718	MOHIT KUMAR MISHRA	Resettlement and Rehabilitation of Project affected people; Impact of urbanization on Environment
17	20MTS5719	NEHA	Interstate River Water Disputes, Interlinking of Rivers; Mangroves, Ramsar Convention
18	20MTS5720	NIKHIL KUMAR	Non-Conventional Sources of Energy/ Renewables

19	20MTS5721	PRATIKSHA	Solid Waste Management; E-waste recycling in India
20	20MTS5722	RAJA GOLA	Ecosystem : Concept and Structure; The Good and Bad of 'Odd-Even Formula' - air pollution
21	20MTS5723	RAJKUMAR YADAV	Sustainable Development; Agenda 21 and Earth Summit; Watershed Management
22	20MTS5725	RISHIKESH BARELA	Ecological Pyramids: types, limitations importance; Olive Ridley Turtle : Conservation Case Study; Oil Spill Case Studies; Invasive Species and theory of invasion
23	20MTS5726	RIVA YADAV	Conventional sources of energy/ Non-Renewables; Eutrophication and Bio magnification
24	20MTS5728	RUDRA PRATAP SINGH	Ex Situ Conservation for plant and animal conservation; Species reintroduction and translocation
25	20MTS5729	SAHIL LUTHRA	In situ biodiversity Conservation: Crocodile conservation project
26	20MTS5730	SHASHANK KUMAR PRAJAPATI	Earthquakes and Cyclones; Ecosystem Services offered by different ecosystems
27	20MTS5731	SHIVANI RAWAT	Ecological Succession; UNCCD: Land Degradation, Soil Erosion; Think Global and Act Local : Case Studies
28	20MTS5732	SHREYA SRIVASTAVA	Human Population and Resource Depletion; Multidisciplinary nature of environmental studies
29	20MTS5733	SHRUTI VARSHNEYA	Cultural Practices and Environmental Protection; Red Data Book, Key stone Species, Flagship Species, Indicator Species, Umbrella Species
30	20MTS5734	TANMAY AGRAWAL	Noise pollution; thermal pollution; bio amplification
31	20MTS5735	TEJASHWANI DUBEY	National environmental awareness campaign (neac)
32	20MTS5736	UTKARSH PRATAP SINGH	National green corps (ngc), eco club programe
33	20MTS5737	YATHARTH MANROY	Air polluton: types, sources, causes, effects and control
34	20MTS5739	AJAY KUMAR	Water polluton: types, sources, causes, effects and control
35	20MTS5740	ROHAN TAMTA	Noise polluton: types, sources, causes, effects and control
36	20MTS5741	ANTRA DAS	SOIL polluton: types, sources, causes, effects and control
37	20MTS5742	PRASHANT	Mangrooves, jhum cultivation
38	20MTS5743	RAGHAV SAHI	Types of Ecosystems: TERRESTRIAL ECOSYSTEMS

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Gurgaon

ENVIRONMENTAL STUDIES

LIST OF ASSIGNMENTS FOR THE STUDENTS OF B.Sc. (H) PHYSICS

2020-2021

S.N	Roll No	Student Name	TOPIC ASSIGNED
1	20HPH2601	AASHISH PRASAD	Air Quality Index : ambient air quality of different Indian cities
2	20HPH2602	AAYUSHI JOSHI	Photochemical Smog: London and Delhi; Intellectual Property rights and Ethnic Diversity
3	20HPH2603	ABHINAV ACHARYA	Kyoto Protocol: Joint Implementation
4	20HPH2604	ADITYA CHECHI	Ozone layer Depletion
5	20HPH2659	ADITYA PRATAP SINGH	Montreal Protocol
6	20HPH2652	AKHIL PRATAP SINGH	The Air (Prevention and Control of Pollution) Act, 1981; Water(Prevention and Control of Pollution) Act, 1974
7	20HPH2605	AKSHAY KUMAR	Environmental Communication and Public Awareness
8	20HPH2606	AKSHIT GUPTA	Global Warming: Causes and Impacts
9	20HPH2607	AMAN VERMA	Climate change : Causes and Impacts
10	20HPH2608	AMBER MISHRA	Nuclear Energy
11	20HPH2609	AMIT KUMAR GOND	Acid Rain and Ocean Acidification
12	20HPH2610	ANIL GOSWAMI	Chipko Movement and Western Ghat movement
13	20HPH2611	ANIRUDH SINGH	Wildlife Protection Act; Forest Conservation Act
14	20HPH2612	ANKIT RANA	Biogeographic Zones of India
15	20HPH2613	ANKUR DWIVEDI	Biosphere Reserves, Project Tiger
16	20HPH2614	ANSHU GAUTAM	Resettlement and Rehabilitation of Project affected people
17	20HPH2616	ANUJ PRAVESH	Interstate River Water Disputes
18	20HPH2660	DRON JOSHI	Interlinking of Rivers
19	20HPH2619	HARISH	Solid Waste Management
20	20HPH2620	HEMANT KUMAR	The Good and Bad of 'Odd-Even Formula'- air pollution
21	20HPH2654	HIMANSHU	Impacts of Dams on Tribal Population and human communities;
22	20HPH2621	HRITIK	Invasive Species and theory of invasion
23	20HPH2622	KANISHKA VARSHNEY	Eutrophication and Bio magnification

24	20HPH2623	LAVKUSH PATEL	Ex Situ Conservation for plant and animal conservation; Species reintroduction and translocation
25	20HPH2624	MANISH KUMAR MINA	In situ biodiversity Conservation: Crocodile conservation project
26	20HPH2625	MAYANK KUMAR	Earthquakes and Cyclones
27	20HPH2626	NISHA	Think Global and Act Local : Case Studies
28	20HPH2627	NITIN RAGHAV	Human Population and Resource Depletion
29	20HPH2661	NITISH JOON	Cultural Practices and Environmental Protection
30	20HPH2628	OMPRAKASH KARWA	Noise Pollution; Thermal Pollution; Bio Amplification
31	20HPH2629	PRADEEP YADAV	Hotspots of Biodiversity, Endemic Species and theory of Endemism
32	20HPH2662	PRAVEEN KUMAR	Smart Cities; Beej BachaoAndolan;
33	20HPH2630	PRINCE KUMAR CHOBEY	Mining is an Essential Evil
34	20HPH2631	PRIYANKA	Floods and Droughts : impacting Indian states
35	20HPH2663	PRIYANSHU KUNWAR	Ecosystem Services offered by different ecosystems
36	20HPH2632	RAHUL	Man-Wildlife conflict : Case Studies
37	20HPH2664	RAHUL MEENA	Red Data Book, Key stone Species, Flagship Species, Indicator Species, Umbrella Species
38	20HPH2633	RAHUL BHATTI	Ground water recharge and rain water harvesting
39	20HPH2634	RAUNAQ GOHAIN	Food Security and Climate Change
40	20HPH2635	RHITIK CHAUHAN	Silent Valley, Narmada BachaoAndolan; Bishnois, Jhum Cultivation
41	20HPH2637	RISHIKA THAKUR	Impact of urbanization on Environment
42	20HPH2638	ROHAN SINGH	Chernobyl Nuclear Disaster , Fukushima Nuclear Disaster; Bhopal Gas Tragedy
43	20HPH2655	ROHAN JOSHI	India as mega Diverse Nation; Convention on Biodiversity
44	20HPH2665	SACHIN PANDEY	Mangroves, Ramsar Convention
45	20HPH2639	SAKSHI BISHT	Watershed Management
46	20HPH2666	SAMEEP SATIJA	E-waste recycling in India
47	20HPH2640	SATYAM	Nuclear Winter: Global Consequences of Nuclear Explosions
48	20HPH2641	SAURAV KUMAR	Non-Conventional Sources of Energy/ Renewables
49	20HPH2642	SHUBHAM BHARDWAJ	Ecological Pyramids: types, limitations importance; Olive Ridley Turtle : Conservation Case Study; Oil Spill Case Studies
50	20HPH2643	SHWETA KOTECHEA	Multidisciplinary nature of environmental studies

51	20HPH2644	SHYAM	Ecosystem : Concept and Structure
52	20HPH2656	SIDHARTH	Sustainable Development; Agenda 21 and Earth Summit;
53	20HPH2657	SOMRAJ MEENA	Conventional sources of energy/ Non-Renewables
54	20HPH2645	SONU KUMAR	Food Chain and Food-Web
55	20HPH2667	SPARSH JAIN	Ecological Succession; UNCCD: Land Degradation, Soil Erosion
56	20HPH2646	TANISHA	Threats to biodiversity: HABITAT LOSS, HABITAT DEGRADATION, HABITAT FRAGMENTATION
57	20HPH2647	TUSHAR	Threats to biodiversity: POACHING, HUMAN WILDLIFE CONFLICTS
58	20HPH2648	UPASANA GAHTORI	Threats to biodiversity: INVASIVE SPECIES AND BIOLOGICAL INVASION
59	20HPH2658	VIDHAN CHANDEL	Biodiversity conservation strategies: in-situ methods of conservation
	20HPH2649	VIKAS KUMAR	Biodiversity conservation strategies: ex-situ methods of conservation
	20HPH2650	VIKAS KUMAR	Sustainable Development; Agenda 21 and Earth Summit;
60	20HPH2651	YASH	Conventional sources of energy/ Non-Renewables

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ENVIRONMENTAL STUDIES

LIST OF ASSIGNMENTS FOR THE STUDENTS OF B.Sc. PHYSICAL SCIENCES (COMP SCIENCES)

2020-2021

S.N	Roll No	Student Name	TOPIC ASSIGNED
1	20PCS5101	AMAN KUMAR	Air Quality Index : ambient air quality of different Indian cities
2	20PCS5146	AMIT KHATRI	Photochemical Smog: London and Delhi; Intellectual Property rights and Ethnic Diversity
3	20PCS5102	AMIT KUMAR	Kyoto Protocol: Joint Implementation
4	20PCS5103	ANKIT KUMAR	Ozone layer Depletion
5	20PCS5144	ARVIND KUMAR	Montreal Protocol; Ecological Succession; UNCCD: Land Degradation, Soil Erosion
6	20PCS5136	ARYAN SINGH	The Air (Prevention and Control of Pollution) Act, 1981; Water(Prevention and Control of Pollution) Act, 1974
7	20PCS5147	ASHISH KUMAR	Environmental Communication and Public Awareness
8	20PCS5104	AYUSH BHARDWAJ	Global Warming: Causes and Impacts
9	20PCS5105	AZAD	Climate change : Causes and Impacts
10	20PCS5106	BHALENDER	Nuclear Energy
11	20PCS5148	DANISH NAWAZ	Acid Rain and Ocean Acidification
12	20PCS5107	DEGAVAT ROHIT NAIK	Chipko Movement and Western Ghat movement
13	20PCS5108	DIWAKER MARCHHAL	Wildlife protection act; forest conservation act
14	20PCS5109	HARSHIT DHAKA	Biogeographic Zones of India
15	20PCS5110	INDRAJEET KUMAR PASWAN	Biosphere reserves; project tiger
16	20PCS5137	ISHITA BATRA	Resettlement and Rehabilitation of Project affected people
17	20PCS5112	KAMAL SINGH	Interstate river water disputes,
18	20PCS5113	KISHAN KUMAR	Interlinking of Rivers
19	20PCS5114	LOKENDRA SINGH	Solid waste management
20	20PCS5115	MOHINISH KUMAR	The Good and Bad of 'Odd-Even Formula'- air pollution
21	20PCS5116	MOHIT RAWAT	Impacts of Dams on Tribal Population and human communities;
22	20PCS5117	MUKESH KUMAR	Invasive Species and theory of invasion
23	20PCS5138	NIKHIL NEGI	Eutrophication and Bio magnification
24	20PCS5118	NUPUR KUMARI	Ex Situ Conservation for plant and animal conservation; Species reintroduction and translocation

25	20PCS5119	PARTHIV DAS	In situ biodiversity Conservation: Crocodile conservation project
26	20PCS5121	RAHUL ARORA	Earthquakes and Cyclones
27	20PCS5122	RAHUL KUMAR	Think Global and Act Local : Case Studies; Food Chain and Food Web
28	20PCS5123	REBECCA DAGAR	Human Population and Resource Depletion
29	20PCS5124	RIYA	Cultural Practices and Environmental Protection
30	20PCS5125	SAHIL	Noise Pollution; Thermal Pollution; Bio Amplification
31	20PCS5126	SAKSHAM JAISWAL	Hotspots of Biodiversity, Endemic Species and theory of Endemism
32	20PCS5127	SALONI RAJ	Smart Cities; Beej BachaoAndolan;
33	20PCS5128	SANDEEP PATEL	Mining is an Essential Evil
34	20PCS5129	SATTWIK TIWARI	Floods and Droughts : impacting Indian states
35	20PCS5130	SHIVAM JAIN	Ecosystem Services offered by different ecosystems
36	20PCS5140	SHUBHAM SINGH BHANDARI	Man-Wildlife conflict : Case Studies
37	20PCS5141	SIDDHANT PUNDIR	Red Data Book, Key stone Species, Flagship Species, Indicator Species, Umbrella Species
38	20PCS5142	SIDDHARTH SHARAVAT	Ground water recharge and rain water harvesting
39	20PCS5143	SITA RAM ROY	Food Security and Climate Change
40	20PCS5131	SOURABH CHOUHAN	Silent Valley, Narmada BachaoAndolan; Bishnois, Jhum Cultivation
41	20PCS5132	SURAJ	Impact of urbanization on Environment
42	20PCS5133	VICKY KUMAR	Chernobyl Nuclear Disaster , Fukushima Nuclear Disaster; Bhopal Gas Tragedy
43	20PCS5134	VIPUL KUMAR	India as mega Diverse Nation; Convention on Biodiversity
44	20PCS5135	YOGESH BISHT	Mangroves, Ramsar Convention

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AECC- Environmental Science : 72182801

Course Name: B.Sc. (H) Zoology Sem. Ist

Name of the Faculty: Dr. Pramod Kumar

INTERNAL ASSESSMENT

S.No.	Roll No.	Name of the Student	Topic of the Assignment
1.	20HZL7101	Abhirupa Barman	<ul style="list-style-type: none"> Explain extinction of Vulture and Carbon footprint Effects of Modern Agriculture Explain the importance of wetlands with regard to biodiversity and water conservation. Write a short note on Ramsar Convention on Wetlands.
2.	20HZL7102	Arjun Ram	<ul style="list-style-type: none"> What are the major Environmental issues today? Year 2020 was a terrible year for Climate Disasters. Explain the statement using Australia's bushfire as a case study.
3.	20HZL7103	Arka Kumar Chowdhury	<ul style="list-style-type: none"> Year 2020 was a terrible year for Climate Disasters. Explain the statement using California wildfires as a case study. Explain Composition & Structure of Earth's Atmosphere
4.	20HZL7104	Ashish Kumar Singh	<ul style="list-style-type: none"> Concept of sustainability and sustainable development Think global and act local for sustainable development-how this is practically possible for urban city? Discuss giving examples Describe Vermicomposting and Joint forest management.
5.	20HZL7106	Bhavya	<ul style="list-style-type: none"> Multidisciplinary nature of environmental studies Explain London Smog and Los Angeles Smog Describe Eutrophication and Agenda-21 You have been invited to speak about Chipko Andolan and its importance with respect to protection of forests, women empowerment, mass environmental awareness and role of local communities in environmental protection. Prepare a speech in about 1000 words, with concluding remarks on the relevance of Chipko movement in the 21st century, using appropriate examples.
6.	20HZL7107	Deepalaxmi Brahma	<ul style="list-style-type: none"> Biogeochemical cycles: H₂O, O₂, N₂, Carbon, S and P Describe scope and importance of Environmental studies for human welfare. Describe the various stages of succession on rock and water.
7.	20HZL7108	Ganesh Kumar	<ul style="list-style-type: none"> Describe Ecological Succession and Food Pyramid "Desert areas in India are a unique ecosystem that is ecologically, socially, and economically very important but at the same time are threatened due to human population pressure". Justify this statement giving relevant examples and arguments.
8.	20HZL7109	Gaurav Yadav	<ul style="list-style-type: none"> Ecosystems and evolution With appropriate examples, discuss the contribution of women in protecting the environment and raising environmental awareness in India. Using an example of a natural pond and a small aquarium, explain the structure of an aquatic ecosystem. Between the pond and the aquarium, which of the two is a self-sustaining ecosystem? Give reasons in support of your answer.
9.	20HZL7111	Janvi	<ul style="list-style-type: none"> Write short notes on: Ecosystem, Energy flow, Food chain, Food web, Food Pyramid and Ecological Succession Differentiate between Biotic and Abiotic Components, Biomagnification and Eutrophication.

Official stamp of Deen Dayal Upadhyaya College, Sector-3, Dwarka, New Delhi-110078. The stamp is partially obscured by handwritten signatures and marks. There are several handwritten signatures in blue ink at the bottom of the page, including one that appears to be 'Pramod Kumar' and another that is a stylized signature. There is also a handwritten number '271' in a circle at the bottom right.



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S.No.	Roll No.	Name of the Student	Topic of the Assignment
10.	20HZL7112	Jaya	<ul style="list-style-type: none">Ecosystem Services. Write Explanatory notes on its importanceNational Solar MissionDifferentiate b/w Ex-situ and In-situ; Photosynthesis and Respiration, pollutant and Toxicant, Petroleum and BiogasExplain the role of human communities to safeguard environment at local level.
11.	20HZL7113	Jyoti Yadav	<ul style="list-style-type: none">Discuss Yamuna action planEcosystem preservation and conservation strategiesBasics of Ecosystem restoration.
12.	20HZL7114	Kalyani Sinha	<ul style="list-style-type: none">Explain problems associated with Natural ResourcesA geographic survey by a mining company has identified a particular patch of forest to be rich in coal reserves. The state government is keen on giving the contract to the mining company for extracting the coal reserves. However, there is a tribal community which has been residing in the forest area for several decades and is dependent on the forest resources for their survival and livelihood. Suggest measures that need to be taken by the Government, keeping in mind the economic utilization of the area, minimal environmental damage, and ensuring effective resettlement of the tribal community.
13.	20HZL7115	Kanika Ghugtiyal	<ul style="list-style-type: none">Explain Conflicts over water (international and inter-state)Describe Groundwater rechargeJustify statement: Most floods are anthropogenic.
14.	20HZL7116	Khushi Patel	<ul style="list-style-type: none">Discuss Deforestation, its causes and impactsExplain Green energy and Impacts of mining.Carbon footprint and its impact on global warming
15.	20HZL7117	Kumari Honey	<ul style="list-style-type: none">Dam building on environment: Taking one example discuss how dam building affects ecological balance of ecosystemElaborate Jhoom cultivation
16.	20HZL7119	Mahak Tickoo	<ul style="list-style-type: none">What are invasive species? How are they threat to biodiversity?Differentiate b/w National park and Zoological Park, Biogas and Liquefied petroleum gas, Biosphere and AtmosphereExplain Wildlife Trafficking
17.	20HZL7120	Manish Kumar	<ul style="list-style-type: none">"Increasing consumerism has a major impact on environment with respect to resource depletion and pollution". Elaborate using relevant examples and case studies.Discuss Solid Waste Management (SWM)
18.	20HZL7122	Naman Kumar Patodia	<ul style="list-style-type: none">Land degradation and desertification are one of the major challenges faced by humanity today. Justify the statement with respect to social, economic and environmental impacts.'Plastic waste is a by-product of urban lifestyle and is considered as a necessary evil'. Provide your critical views on this statement, focusing on utility of plastic in the growth of urban lifestyle and impacts of plastic waste on the environment (including humans) in 1000 words.
19.	20HZL7123	Nikita	<ul style="list-style-type: none">Do various environmental legislations lead to human-wildlife conflict in our country? Explain in detail.Describe Biogeographic zones of India and Biodiversity hotspots.Explain Human wildlife conflicts in Indian context along with case studies
20.	20HZL7124	Nikita Rohilla	<ul style="list-style-type: none">Explain importance of Rainwater harvesting in urban areasEnvironmental effects of COVID-19 pandemic and potential strategies of sustainability.

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S.No.	Roll No.	Name of the Student	Topic of the Assignment
21.	20HZL7125	Piyush Dadhich	<ul style="list-style-type: none">• "The next world war may be fought over water". Justify the statement with suitable examples.• Mining is an essential environmental evil. Justify with a case study.• Explain the various dangers and problems associated with landfills in metropolitan areas like Delhi. Also write a note on solid waste disposal measures that need to be taken to reduce the burden on existing landfills.
22.	20HZL7128	Ritik Yadav	<ul style="list-style-type: none">• Explain Land resources and land use change• Soil erosion, Desertification, Bioamplification and Sacred forests.
23.	20HZL7129	Ritu Thakur	<ul style="list-style-type: none">• Explain Biological invasions. What are invasive species? How are they threat to biodiversity?• Explain Conservation of biodiversity.• Do you think that local and traditional knowledge that we obtain from communities living in rural and forest areas across India can play a significant role in devising ways to conserve biodiversity and protecting natural resources? Justify your answer with relevant examples.
24.	20HZL7130	Riya Sharma	<ul style="list-style-type: none">• Explain Climate change, Global warming, Acid rain and Ozone depletion.• Despite various anti-pollution laws and policies, India's metropolitan cities remain among the most polluted cities in the world. Why?
25.	20HZL7132	Sandhya Kumari	<ul style="list-style-type: none">• Explain how indigenous and local communities can contribute towards the protection of biodiversity as well as conservation of forest and water resources.• Take an example of any environmental issue that is a major concern to residents of the area, where your college is located. Discuss how your college eco-club can collaborate with other student societies, to raise awareness on the particular environmental issue among the residents and help them with the ways to overcome the specific problem.
26.	20HZL7134	Simran	<ul style="list-style-type: none">• In contrast to rituals of the ancient Indian society the activities of modern Indian society have harmed the environment and biodiversity. Explain.• Comment on the statement 'environmental damage can give rise to tremendous social and economic inequality'.• Malabar civets, a critically endangered species is also endemic to the Western Ghats. They are currently distributed in the forests of Kerala and Karnataka. Habitat destruction, habitat fragmentation, poaching, and hunting are the major threats faced by the species. Explain how you can facilitate conservation of this species using both ex-situ and in-situ conservation strategies.
27.	20HZL7135	Sonika Seth	<ul style="list-style-type: none">• Explain various threats to biodiversity• Discuss IUCN, Red data book and Global 200 in detail.• Explain different species with examples: Keystone, Flagship, Umbrella, Indicator, Endemic and Exotic species.• Project tiger, Project Elephant and Project Crocodile, Project Great Indian Bustard, Project Brown Antlered Deer, Vulture breeding program, Save Western Ghats movement
28.	20HZL7136	Tanya Mishra	<ul style="list-style-type: none">• Explain Nuclear hazards and human health risks• Describe Odd-even formula and its impact on air quality• Pesticides and human health• Describe Biomagnification

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S.No.	Roll No.	Name of the Student	Topic of the Assignment
29.	20HZL7138	Tulsimayee Tudu	<ul style="list-style-type: none">Explain reasons for increased air pollution in DelhiWrite objective of Swachh Bharat Abhiyan. Discuss the challenges and means to make it more effective and successful.Differentiate b/w Primary and Secondary air pollutants, Freshwater and Marine ecosystem.
30.	20HZL7139	Tushant Kumar Saini	<ul style="list-style-type: none">Solid waste management and its control measuresProblems and challenges of e-waste management in India.Explain how various environmental issues have been responsible for increasing cases of farmer suicides in India? What measures should the government take to improve the agricultural sector in the country?
31.	20HZL7140	Yogita	<ul style="list-style-type: none">Explain Biodiversity, Levels and its importanceExplain Homeostasis, Species reintroduction and translocation.Cultural practices are powerful tools to protect the environment and could also be threats to our ecosystem health. Justify the statement with examples.
32.	20HZL7141	Ranjita	<ul style="list-style-type: none">India as Mega-diversity spot. Comment giving examplesWith the help of a case study each, explain the in-situ and ex-situ approach for protecting the biodiversity.
33.	20HZL7142	Anjali	<ul style="list-style-type: none">Pollution Case Studies: Smog, Exxon Valdez oil spill disaster, Bhopal Gas Tragedy, Chernobyl and Hiroshima and Nagasaki Nuclear disaster
34.	20HZL7143	Ankush Singh	<ul style="list-style-type: none">What are oil spills? How they contribute to marine pollution. Explain with case studies.Explain UNEP and CITESExplain Case Studies: Cauvery river water conflict, Sardar Sarovar Dam, Tarun Bharat Sangh, Kali Bachao Andolan and Silent Valley Movement.
35.	20HZL7145	Khushi Kumari	<ul style="list-style-type: none">What kinds of practices are required to manage the ever increasing urban and industrial waste generated in the metropolitan cities of India? Discuss.If world average temperature increases up to 4°C by 2050, then explain the possible impact of global warming on human communities and biodiversity of Rajasthan desert, Central India forest, and coastal areas of India, respectively.
36.	20HZL7146	Priyanshi	<ul style="list-style-type: none">Explain different pollution case studiesYou have been invited by the Resident Welfare Association of your housing society to speak on the topic of Noise pollution. The society you live in is very near to an industrial area. In the speech, you decide to focus on the causes of noise pollution, its impact on the residents (focusing on different age groups), and possible ways to tackle this problem through seeking necessary help from the government and the industrial units. Draft a speech in a minimum of 750 words.
37.	20HZL7147	Shruti Agarwal	<ul style="list-style-type: none">Explain briefly, the R's principle of waste management.'Waste segregation is the primary step for efficient solid waste management, yet it is in minimal practice in India'. Justify the statementExplain Air quality index and Ganga Action Plan
38.	20HZL7148	Sonali Phogat	<ul style="list-style-type: none">Environmental Pollution. Explain Air and Water-Types, causes, effects, controlEnlist some important steps and practices that can be taken by citizens to control indoor and outdoor air pollution in urban areas.

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S.No.	Roll No.	Name of the Student	Topic of the Assignment
39.	20HZL7149	Vijay Kumar Sharma	<ul style="list-style-type: none">Differentiate b/w E-waste and Kitchen wet waste; EPA and wildlife Protection Act; Global Warming and Ozone layer depletion, Pesticide and Compost.Human population explosion is causing severe resource depletion and environmental degradation. Justify giving examplesWrite importance of One horned rhinoceros, Asiatic lions, Mangrove forest, Bishnois, Jim Corbett National Park, Shifting cultivation
40.	20HZL7150	Nisha Meena	<ul style="list-style-type: none">Write objective of Swachh Bharat Abhiyan. Discuss the challenges and means to make it more effective and successfulExplain various impacts of Air pollutionExplain the steps that need to be taken at the individual level and by the government for conservation of water in India.
41.	20HZL7151	Subhi Pandey	<ul style="list-style-type: none">During a recent visit to your village in south India, you come to know that a multinational company is setting up its pesticide manufacturing unit in the outskirts of the village. The villagers are not much aware of the possible harmful impacts of such an industry in their village. Based on your knowledge about Bhopal Gas Tragedy and Minamata Disease Tragedy, explain the potential harm of this industry to the villagers. Also, suggest ways how villagers should coordinate with the government and the company to avoid any such tragedy in the village.Explain Water Audit
42.	20HZL7153	Anchal Jha	<ul style="list-style-type: none">What are the strategies adopted to minimize the damages caused by earthquakes?Explain briefly, your views on the preparedness of Delhi state to tackle an earthquake disaster.National Environmental Awareness Campaign (NEAC)National Green Corps (NGC) and Eco Club Programme
43.	20HZL7154	Balwant Singh Solanki	<ul style="list-style-type: none">Write a brief note on Smart citiesDiscuss Environmental laws and acts in India are inappropriate.Differentiate b/w Chipko movement, Beej Bachao Andolan and Appiko MovementShifting to renewable energy resources is going to be very vital for developing countries in order to tackle the problems of pollution, achieving Climate related targets, social upliftment and economic development. Elaborate on this statement in about 750 words. Also discuss the uses, advantages and disadvantages of any two renewable energy resources which you think have high potential in India.
44.	20HZL7155	Neeraj Yadav	<ul style="list-style-type: none">National Environmental Awareness Campaign (NEAC)National Green Corps (NGC) and Eco Club ProgrammeExplain with suitable examples, why Indian megacities are more prone to facing water crisis in the next decade. As a resident of Delhi and as a concerned citizen, suggest some water conservation policies that the State Government should adopt in their master plan for the next 10 years (till 2030).Explain Role of Public Awareness

Dr. Pramod Kumar
Assistant Professor

Department of Environmental Studies

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ZH Core-II: Principles of Ecology

Course Learning Objective:

The primary aim of the syllabus is to sensitize the students about the paramount role and importance of nature. The study of Ecology imparts us the knowledge about the judicious use of existing ecological resources for sustainable development. Ecology is the only branch of science which briefs us on the ways and means of living with nature for mutual benefit. Study of ecology will provide students opportunity to understand its practical aspects and helps them to solve many contemporary ecological issues such as global warming, land degradation, habitat loss, desertification and pollution etc. The hands-on experiences of laboratory will also enable students to understand the ecosystem and ecology in a better way.

Course Learning Outcome:

Upon completion of the course, students should be able to:

- Demonstrate an understanding of key concepts in ecology with emphasis on historical perspective, role of physical factors and concept of limiting factors.
- Comprehend the population characteristics, dynamics, growth models and interactions.
- Understand the community characteristics, ecosystem development and climax theories.
- Know about the types of ecosystems, food chains, food webs, energy models, and ecological efficiencies.
- Apply the basic principles of ecology in wildlife conservation and management.
- Inculcate scientific quantitative skills, evaluate experimental design, read graphs, and analyse and use information available in scientific literature.

Course Content:

Theory [Credits: 4]

60 hrs

Unit1: Introduction to Ecology

5 hrs

History and Scope of ecology, Autecology and synecology, Laws of limiting factors, Study of physical factors: Temperature and Light

(Chapter 1: Smith, R. L.; Chapter 1 and 5: Odum, E.P.; Chapter 1 and 5: Odum, E. P. and G. W. Barrette)

Unit 2: Population

24 hrs

Unitary and Modular populations; Unique and group attributes of population: Density, natality, mortality, life tables, fecundity tables, survivorship curves, age ratio, sex ratio, dispersal and dispersion; Exponential and logistic growth, equation and patterns, r and k strategies, Population regulation; Density-dependent and independent factors; Population interactions; Gause's Principle with laboratory and field examples, Lotka-Volterra equation for competition and predation; Functional and numerical responses

(Chapter 17, 18, 19, 20, 22 and 23: Smith, R. L.; Chapter 6 and 7: Odum, E. P. and G. W. Barrette)

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Unit 3: Community

12 hrs

Community characteristics: species richness, dominance, diversity, abundance, Guilds, Ecotone and edge effect; Ecological succession with examples and types; Theories pertaining to climax community.

(Chapter 28 and 30: Smith, R. L.; Chapter 7: Odum, E. P. and G. W. Barrette)

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Unit 4: Ecosystem

14 hrs

Types of ecosystems with detailed study of any one: Forest Ecosystem, Pond or Lake ecosystem, Mangrove and Coral reef ecosystem. Vertical stratification in Forest and Aquatic ecosystem, Food chain: Detritus and grazing food chains, Linear and Y-shaped food chains, Food web, Energy flow through the ecosystem, Ecological pyramids and Ecological efficiencies, Nutrient and biogeochemical cycle with one example of Nitrogen cycle
(Chapter 10, 11 and 12: Smith, R. L.; Chapter 2 and 4: Odum, E. P. and G. W. Barrette)

Unit 5: Applied Ecology

5 hrs

Ecology in wildlife conservation and management, Biodiversity types, Importance & threats, Protected areas: National Parks, Bioreserves and Sanctuaries, Restoration ecology, Global climate change and its mitigation
(Chapters 1 and 3: Saha and Mazumdar)

Practical [Credits: 2]

1. Study of life tables and plotting of survivorship curves of different types from the hypothetical/real data provided
2. Determination of population density in a natural/hypothetical community by quadrat method and calculation of Shannon-Weiner diversity index for the same community
3. Study of an aquatic ecosystem: phytoplankton and zooplankton, measurement of area, temperature, turbidity/penetration of light, determination of pH, and dissolved oxygen content (Winkler's method), chemical oxygen demand and free CO₂, alkalinity
4. Report on a visit to National Park/Biodiversity Park/Wildlife sanctuary

Teaching and Learning Process:

The course involves four hours each of classroom teaching and laboratory activity per week. Classroom work would include lectures based on textbook and scientific journal readings. Lectures will consist of traditional board teaching as well as power point presentations. Learning process will also include participatory activities like focused group discussions, presentations by students, experience sharing, brainstorming and project writing. Field trip activities to National parks and Eco-parks would complement and enhance understanding of the course concepts and information about the wildlife and its conservation. Laboratory work will provide students the first hands-on experience for better understanding of the subject.

Assessment Methods:

- Evaluation will determine the extent to which the students demonstrate desired learning outcomes.
- Multiple assessment methods will be used as evaluation criteria which include continuous assessment, assignments, tests, class presentations and mock tests.
- Project writing based on learnings from field trips will also be held for comparative evaluation of students.

Keywords:

Ecology, Community ecology, Population ecology, Biodiversity, Wildlife, Food Chain, Food web, Food pyramids

Recommended Books:

- Odum, E.P. (2008). Fundamentals of Ecology. Indian Edition. Brooks/Cole
- Smith, R. L. (2000). Ecology and field biology. Harper and Row publisher

Suggested Readings:

- Krebs, C. J. (2001). Ecology. VI Edition. Benjamin Cummings.
- Ricklefs, R.E. (2000). Ecology. V Edition. Chiron Press.

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University of Delhi
Session 2020-2021

Course Name- B.Sc. (H) Zoology Sem I

Month: Nov 20-March 21

Paper: Principles of Ecology

Faculty: Dr. Priya Goel & Dr. Nitish K. Mahato

**Submission of Project report - Visit to National park/wildlife sanctuary/
zoological park**

S. No.	College Roll No	Student Name	Topic of Project submitted
1	20HZL7102	ARJUN RAM	Ranthambhore National Park
2	20HZL7104	ASHISH KUMAR SINGH	Indravati National Park
3	20HZL7107	DEEPALAXMI BRAHMA	Kaziranga National Park
4	20HZL7108	GANESH KUMAR	Desert National Park, Jaisalmer
5	20HZL7109	GAURAV YADAV	Havelock Island
6	20HZL7112	JAYA	Virtual Visit to Satpura National Park
7	20HZL7113	JYOTI YADAV	Virtual Visit to Hemis National Park
8	20HZL7115	KANIKA GHUGTIYAL	Gangotri National Park
9	20HZL7116	KHUSHI PATEL	Keibul Lamjao National Park
10	20HZL7117	KUMARI HONEY	Kanha National Park
11	20HZL7120	MANISH KUMAR	Rajaji National Park
12	20HZL7122	NAMAN KUMAR PATODIA	Kaziranga National Park
13	20HZL7123	NIKITA	Jim Corbett National Park
14	20HZL7124	NIKITA ROHILLA	Sundarbans National Park
15	20HZL7125	PIYUSH DADHICH	Sariska Tiger Reserve
16	20HZL7128	RITIK YADAV	Pench National Park
17	20HZL7130	RIYA SHARMA	Keoladeo National Park
18	20HZL7132	SANDHYA KUMARI	Manas National Park
19	20HZL7134	SIMRAN	Jim Corbett National Park
20	20HZL7135	SONIKA SETH	Virtual Visit to Pench National Park
21	20HZL7136	TANYA MISHRA	Aravalli Biodiversity Park
22	20HZL7138	TULSIMAYEE TUDU	Virtual Visit to Simlipal National Park
23	20HZL7139	TUSHANT KUMAR SAINI	Khangchendzonga National Park
24	20HZL7140	YOGITA	Panchmari Biosphere Reserve
25	20HZL7141	RANJITA	Periyar National Park, Kerala
26	20HZL7142	ANJALI	Jim Corbett National Park
27	20HZL7143	ANKUSH	Nawab Wajid Ali Shah Zoological Garden
28	20HZL7145	KHUSHI KUMARI	Silent Valley National Park
29	20HZL7146	PRIYANSHI	Aravalli Biodiversity Park

30	20HZL7147	SHRUTI AGARWAL	Virtual Visit to Dudhwa National Park
31	20HZL7148	SONALI PHOGAT	Jim Corbett National Park
32	20HZL7150	NISHA MEENA	Valley of Flowers National Park
33	20HZL7153	ANCHAL	Gir National Park
34	20HZL7154	BALWANT	Kumbhalgarh Wildlife Sanctuary

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Madhya Pradesh, India

PENCH NATIONAL PARK

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Pench National Park :-

*** History :-

Pench national park is located in the heart of India - Madhya Pradesh and covers a total area of 758 sq. Km. It is located on the southern part of Madhya Pradesh, to be specific, in the districts of Seoni and Chhindwara, which also shares a boundary with Maharashtra. An additional area of 257 sq. Km of this park lies in Maharashtra but is also accessible from Madhya Pradesh. A treasure of rich flora and fauna, this national park has its area segregated in two divisions - a) Peniyadarshini National Park and Mougli Pench sanctuary which covers an area of 299 sq. Km and b) 464 sq. Km which is considered as the buffer area. The national park is named after the river - Pench, which while flowing from north to south, divides the national park in almost equal halves, namely eastern and western halves. The park is just not home to wildlife but also to humans. There are 10 villages in and around the park out of which one is inside the park named Fulzari and other nine on the periphery.

Not always a national park, Pench was declared as a sanctuary in 1965 but in 1975, it rose to the status of a National park. And since it is home to a huge amount of tigers, it was established as a tiger reserve in 1992 and now is working under Project Tiger. Also the beauty of this place has been mentioned in the classic "The Jungle Book" by the great Rudyard Kipling.



Indira Priyadarshini
Pench National Park

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Top Reasons to visit Pench

1. Convenience:-

India is home to some of the most beautiful national parks and one of them is Pench National Park. Pench National Park is situated in the heart of India - Madhya Pradesh, hence, it is easily accessible from every part of the country.

2. Affordability:-

Planning a national park visit might act as a money saver for you. Visiting any other destination would have costed you a fortune with the hotel bookings, visiting other famous destinations, but a visit here will give a treat that your family would relish forever.

3. Conservation:-

The national park service had worked day and night and continue to do so to maintain and conserve the endangered species of plants and animals. With a visit here, you get to learn about them and that adds another chapter to your knowledge book.

4. Versatility:-

Every national park adorns a personality which can only be felt when you visit there. A visit to Pench National Park would open those doors which will help you to look at the place with another view.

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CREDITS 2

Unit 1: Foundations of Research

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Meaning, Objectives, Motivation: Research Methods vs Methodology, Types of Research: Analytical vs Descriptive, Quantitative vs Qualitative, Basic vs Applied

Unit 2: Research Design

8

Need for research design: Features of good design, Important concepts related to good design- Observation and Facts, Prediction and Explanation, Development of Models. Developing a research plan: Problem identification, Experimentation, Determining experimental and sample designs

Unit 3: Data Collection, Analysis and Report Writing

12

Observation and Collection of Data-Methods of data collection- Sampling Methods, Data Processing and Analysis Strategies, Technical Reports and Thesis writing, Preparation of Tables and Bibliography. Data Presentation using digital technology


Unit 4: Ethical Issues

5

Intellectual property Rights, Commercialization, Copy Right, Royalty, Patent law, Plagiarism, Citation, Acknowledgement

SUGGESTED READINGS

- Anthony, M, Graziano, A.M. and Raulin, M.L. 2009. Research Methods: A Process of Inquiry, Allyn and Bacon.
- Walliman, N. 2011. Research Methods- The Basics. Taylor and Francis, London, New York.
- Wadhera, B.L.: Law Relating to Patents, Trade Marks, Copyright Designs and Geographical Indications, 2002, Universal Law publishing
- C.R.Kothari: Research Methodology, New Age International, 2009
- Coley, S.M. and Scheinberg, C.A. 1990, "Proposal writing". Stage Publications.


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(University of Delhi)


Meghna









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Subject: Research Methodology

Faculty Name: Dr. Kamlesh Kumari

List of Students

The following students has done the assigned project of curriculum.

Sr. No.	Name
1	AKANKSHA NANDWANA
2	AMISHA SINGH
3	ANJALI CHAUHAN
4	Annapurna
5	ASHISH
6	Harshita Pant
7	HITESH SINGH
8	jyoti
9	KAJAL JOON
10	MANISH HARARIYA
11	Mehak Mattoo
12	PRIYA Jha RAHUL KUMAR BENIWAL
13	RAVEENA
14	RITIKA SAINI
15	Riya Jain
16	RIYA RAI
17	RUCHI YADAV
18	SAMPA BISWAS samidha kumari
19	SHUBHAM SAINI
20	SIMRAN CHAUHAN
21	SIMRAN PARVEEN
22	SUMIT

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23	SUNITA HAZRA
24	Vaidehi Jha
25	YASHIKA JINDAL
26	Utkarsh
27	AMAN AKASH
28	KOMAL

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CORE COURSE XIII
DEVELOPMENTAL BIOLOGY

2 B

THEORY**(CREDITS 2)****Unit 1: Introduction****4**

Historical perspective and basic concepts: Phases of development, Cell-Cell interaction, Pattern formation, Differentiation and growth, Differential gene expression, Cytoplasmic determinants and asymmetric cell division

Unit 2: Early Embryonic Development**28**

Gametogenesis, Spermatogenesis, Oogenesis; Types of eggs, Egg membranes; Fertilization (External and Internal); Changes in gametes, Blocks to polyspermy; Planes and patterns of cleavage; Types of Blastula; Fate maps (including Techniques); Early development of frog and chick up to gastrulation; Embryonic induction and organizers

Unit 3: Late Embryonic Development**8**

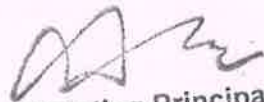
Fate of Germ Layers; Extra-embryonic membranes in birds; Implantation of embryo in humans, Placenta (Structure, types and functions of placenta)

Unit 4: Post Embryonic Development**12**

Metamorphosis: Changes, hormonal regulations in amphibians and insects; Regeneration: Modes of regeneration, epimorphosis, morphallaxis and compensatory regeneration (with one example each); Ageing: Concepts and Theories

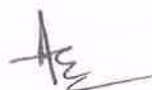
Unit 5: Implications of Developmental Biology**8**

Teratogenesis: Teratogenic agents and their effects on embryonic development; *In vitro* fertilization, Stem cell (ESC), Amniocentesis


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DEVELOPMENTAL BIOLOGY**PRACTICAL****(CREDITS 2)**

1. Study of whole mounts and sections of developmental stages of frog through permanent slides: Cleavage stages, blastula, gastrula, neurula, tail-bud stage, tadpole (external and internal gill stages)
2. Study of whole mounts of developmental stages of chick through permanent slides: Primitive streak (13 and 18 hours), 21, 24, 28, 33, 36, 48, 72, and 96 hours of incubation (Hamilton and Hamburger stages)
3. Study of the developmental stages and life cycle of *Drosophila* from stock culture
4. Study of different sections of placenta (photomicrograph/ slides)
5. Project report on *Drosophila* culture/chick embryo development

SUGGESTED READINGS

- Gilbert, S. F. (2010). Developmental Biology, IX Edition, Sinauer Associates, Inc., Publishers, Sunderland, Massachusetts, USA
- Balinsky B. I. and Fabian B. C. (1981). An Introduction to Embryology, V Edition, International Thompson Computer Press
- Carlson, R. F. Patten's Foundations of Embryology
- Kalthoff (2008). Analysis of Biological Development, II Edition, McGraw-Hill Publishers
- Lewis Wolpert (2002). Principles of Development, II Edition, Oxford University Press

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ZH Core Course-XIII: Developmental Biology

Course Learning Objective:

The main aim of the paper on Developmental Biology is to provide the undergraduate students an in-depth knowledge on the embryonic and post embryonic developmental processes. An important aspect of developmental biology is its implication in medicine which is also dealt with in this course. The approach of this paper is to make the students realize the most fascinating aspect of developmental biology that a single fertilized egg can give rise to a fully developed complex organism. The course explains the basic principles and concepts underlying the developmental processes at the cellular and molecular level. To understand morphogenesis, the students are introduced to model organisms like Sea urchin, *Drosophila*, Frog and Chick to study different types of eggs, cleavage patterns and various morphogenetic movements during gastrulation leading to formation of germ layers and their fate. By understanding the developmental processes, the students can relate to errors occurring during development leading to congenital disorders and human diseases. The paper also addresses the problems of infertility in humans. The students are familiarized with the technique of IVF and pre-diagnostic methods to identify any abnormality arising during development. The students are made aware of the areas of great interest including stem cell therapy, tissue engineering and regenerative medicine.

Course Learning Outcome:

Upon completion of the course, students should be able to:

- Understand the events that lead to formation of a multicellular organism from a single fertilized egg, the zygote.
- Acquire basic knowledge of the cellular processes of development and the molecular mechanisms underlying these.
- Describe the general patterns and sequential developmental stages during embryogenesis; and understand how the developmental processes lead to establishment of body plan of multicellular organisms.
- Discuss the general mechanisms involved in morphogenesis and to explain how different cells and tissues interact in a coordinated way to form various tissues and organs.
- Understand about the evolutionary development of various animals.
- Know the process of ageing leading to interventions that can improve the overall health and quality of life in aged people.
- Learn the importance of latest techniques like stem cell therapy, *in vitro* fertilization and amniocentesis etc. to be applied for human welfare.
- Develop the skill to raise and maintain culture of model system; *Drosophila* in the laboratory.

Course Content:

Theory [Credits: 4]

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60 hrs

Unit 1: Introduction

4 hrs

Historical perspective and basic concepts: Phases of development, cell-cell interaction, pattern formation, differentiation and growth, differential gene expression, cytoplasmic determinants and asymmetric cell division

(Chapter 1: Gilbert, S.F.; Chapter 1: Balinsky, B.I.; Chapter 1: Wolpert, L.)

Unit 2: Early Embryonic Development

26 hrs

Gametogenesis, Spermatogenesis, Oogenesis; Types of eggs, Egg membranes; Fertilization (External and Internal); Changes in gametes, Blocks to polyspermy; Planes and patterns of cleavage; Types of Blastula; Fate maps (including Techniques); Early development of frog and chick up to gastrulation; Embryonic induction and organizers

(Chapter 4, 5, 7 and 8: Gilbert, S.F.; Chapter 2 and 10: Balinsky, B.I.; Chapter 7 and 9: Slack, J.M.W.)

Unit 3: Late Embryonic Development

10 hrs

Fate of Germ Layers; Formation of neural tube, Extra-embryonic membranes in birds; Implantation of embryo in humans, Placenta (Structure, types and functions of placenta)

(Chapter 8 and 9: Gilbert, S.F.; Chapter 10: Balinsky, B.I.; Chapter 9 and 10: Slack, J.M.W.)

Unit 4: Post Embryonic Development

11 hrs

Metamorphosis: Changes, hormonal regulations in amphibians and insects; Regeneration: Modes of regeneration, epimorphosis, morphallaxis and compensatory regeneration (with one example each); Ageing: Concepts and Theories

(Chapter 15: Gilbert, S.F.; Chapter 18 and 19: Balinsky, B.I.)

Unit 5: Implications of Developmental Biology

9 hrs

Teratogenesis: Teratogenic agents and their effects on embryonic development; *in vitro* fertilization, Stem cell (ESC), Amniocentesis.

(Chapter 17: Gilbert, S.F.)

Practical [Credits: 2]

1. Study of whole mounts and sections of developmental stages of frog through permanent slides: Cleavage stages, blastula, gastrula, neurula, tail-bud stage, tadpole (external and internal gill stages)
2. Study of whole mounts of developmental stages of chick through permanent slides (Hamburger and Hamilton Stages): Stage 3 (Intermediate Streak)-13 hours, Stage 4 (Definitive Streak)-18 hours, Stage 5 (Head Process)-21 hours, Stage 7-24 hours, Stage 8-28 hours, Stage 10-33 hours, Stage 11-40 hours, Stage 13-48 hours, Stage 19-72 hours and Stage 24-96 hours of incubation
3. Demonstration of culture of chick embryo from fertilized eggs to study various developmental stages.
4. Study of the developmental stages and life cycle of *Drosophila* from stock culture.
5. Study of different sections of placenta (photomicrographs/ slides).
6. Project report on *Drosophila* culture/chick embryo development.
7. A visit to Poultry Farm/IVF Centre

Teaching and Learning Process:

Various teaching methodologies including: interactive lectures, classroom discussions and practical exercises based on the theory paper will be employed. Video digital format will be adopted to supplement theoretical lessons and lectures presented in the classroom to stimulate discussion and increase learning. Students will be encouraged to access the e-learning resources like Swayam, Coursera etc. so that the concepts are better understood of the topics of developmental biology. Permanent slides/ photomicrographs/animations will be used for better understanding of the development processes. Educational trips such as visit to a poultry farm and dairy research institute will be conducted to enhance their understanding of the

theoretical concepts. Embryological models will be employed to understand difficult concepts and relationships in development. Students can be encouraged to undertake project work on maintaining culture of *Drosophila* to observe its life cycle. Fertilized eggs of chick obtained from poultry farm can be incubated in the laboratory to study the developmental stages. Students can be motivated to engage themselves in informal discussions on various topics outside the classroom. Topics of developmental biology can be assigned for presentation so that the students improve their oral skills. The students should be encouraged for thorough self-study by encouraging them to refer to different books and on-line resources.

Assessment Methods:

- Series of tests consisting of short answer questions prepared throughout the semester related to the theory lectures.
- Group assessment of the students distributed in small groups (3-4 students) to carry out projects prepared throughout the semester.
- Continuous assessment of the students including marks for attendance, assignments and class tests.
- Level of understanding and ability to answer questions by taking *viva-voce* as a part of practical exam assessment.
- Evaluation of practical records, assignments and power point presentations.

Keywords:

Differentiation, Cytoplasmic determinants, Morphogens, Gametogenesis, Ovulation, Vitellogenesis, Graafian follicle, Embryo, Fertilization, Cleavage, Blastula, Gastrula, Epiboly, Emboly, Koller's Sickie, Organogenesis, Notogenesis, Somites, Neurula, Embryonic Induction, Placenta, Metamorphosis, Neoteny, Regeneration, Epimorphosis, Morphallaxis, Blastema, Ageing, Senescence, Teratology, Teratogens, Stem Cells, IVF

Recommended Books:

- Gilbert, S. F. (2010). Developmental Biology. IX Edition, Sinauer Associates, Inc. Publishers, Sunderland, Massachusetts, USA
- Balinsky B. I. and Fabian B. C. (2006). An Introduction to Embryology. VIII Edition, International Thompson Computer Press.
- Slack, J.M.W. (2013) Essential Developmental Biology. III Edition, Wiley- Blackwell.

Suggested Readings:

- Wolpert, L. (2002). Principles of Development. II Edition, Oxford University Press.
- Kalthoff, K. (2001). Analysis of Biological Development. II Edition, McGraw Hill Publishers.
- Carlson, B.M. (2007) Foundations of Embryology. VI Edition, Tata McGraw-Hill Publishers.
- Arora, R. and Grover, A. (2018) Developmental Biology: Principles and Concepts. I Edition, R. Chand & Company

Online Tools and Web Resources:

- <https://www.hhmi.org/biointeractive/human-embryonic-development>
- <https://www.khanacademy.org/science/biology/developmental-biology>
- <https://ocw.mit.edu/courses/biology/7-22-developmental-biology-fall-2005/index.htm>
- https://embryology.med.unsw.edu.au/embryology/index.php/Main_Page

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Practical Examination 03-May-2021 (2020-21 batch) Paper Code: 32231601 Paper Name: DEVELOPMENTAL BIOLOGY

S. No.	Univ. roll no	College roll no	Name	Q1	Q2	Q3	Q4	Q5	Q6-10	Q11 Project	Q12 File	TOTAL (50)
1	18015569001	18HZL7201	AASHI	4	4.5	4	4.5	5	5	9	9.5	45.5
2	18015569002	18HZL7202	AASTHA	5	5	5	5	5	5	10	9.5	49.5
3	18015569003	18HZL7203	ADRIJA MOHANTA	5	5	5	5	5	5	10	8	48
4	18015569004	18HZL7204	AKANKSHA SINGH	5	5	5	5	5	5	10	9.5	49.5
5	18015569005	18HZL7205	AKRITI KUMARI	4.5	5	5	5	5	5	10	9.5	49
6	18015569006	18HZL7207	BHAWNA SOLANKI	5	5	5	5	5	5	10	10	50
7	18015569007	18HZL7213	MANSI JANGRA	5	5	5	5	5	5	10	9.5	49.5
8	18015569009	18HZL7215	NILAMADHAB	5	5	5	5	5	5	10	9.5	49.5
9	18015569010	18HZL7216	NISHI PANT	5	5	5	5	5	5	10	9.5	49.5
10	18015569011	18HZL7217	POOJA VERMA	5	5	5	4.5	5	5	10	9.5	49
11	18015569012	18HZL7218	PRACHI	4.5	5	5	4.5	5	5	10	10	49
12	18015569014	18HZL7220	RAM SHANKAR R	5	5	5	5	5	5	10	10	50
13	18015569015	18HZL7223	SHALLU	5	5	5	5	5	5	10	9.5	49.5
14	18015569016	18HZL7224	SHILPI SINHA	5	5	5	5	5	5	10	9.5	49.5
15	18015569017	18HZL7225	SHRADHA DARIYAL	4.5	5	5	4.5	5	5	10	10	49
16	18015569018	18HZL7226	SHWETA DOHARE	5	5	5	4.5	5	5	10	10	49.5
17	18015569019	18HZL7227	SIMRAN RANA	5	5	5	5	5	5	10	9.5	49.5
18	18015569020	18HZL7228	SIMRAN KHAN	4	4	5	5	5	5	8	0	36
19	18015569021	18HZL7229	SIMRAN SINGH	5	5	5	5	5	5	10	10	50
20	18015569022	18HZL7230	SONIA	5	5	5	5	5	5	10	10	50
21	18015569023	18HZL7231	SOURABH	5	5	5	5	5	5	8	7.5	45.5
22	18015569024	18HZL7232	SRASHTI SAHU	4.5	5	5	4.5	5	5	10	9.5	48.5
23	18015569025	18HZL7233	TANUJA	5	5	5	5	5	5	10	7	47
24	18015569026	18HZL7234	VAIBHAV SAINI	5	5	5	5	5	5	10	9.5	49.5
25	18015569027	18HZL7235	VISHLESH KOTARYA	5	5	5	5	5	5	10	9.5	49.5
26	18015569028	18HZL7245	NIRMAL SINGH	5	5	5	5	5	5	10	9.5	49.5
27	18015569029	18HZL7242	SIMRAN YADAV	5	5	5	5	5	5	10	9.5	49.5
28	18015569030	18HZL7241	SIDRAH IQBAL	5	5	5	5	5	5	10	9.5	49.5
29	18015569031	18HZL7240	SAPNA YADAV	5	5	5	5	5	5	10	10	50
30	18015569032	18HZL7239	MUKUL ROHILLA	5	5	5	5	5	5	10	9.5	49.5
31	18015569033	18HZL7238	MONIKA	5	5	5	5	5	5	10	9.5	49.5
32	18015569034	18HZL7237	KISA	4.5	5	5	4.5	5	5	10	9.5	48.5
33	18015569035	18HZL7236	CHETAN CHOWDHARY	5	5	4	5	5	5	8	8	45
34	18015569036	18HZL7243	ARUNA NEHRA	4.5	5	5	4.5	5	5	10	9.5	48.5

FACULTY: DR. PRIYA GOEL (INTERNAL EXAMINER)

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A Project Report on
DROSOPHILA CULTURE

Submitted to	Dr. Priya Goel
Submitted by	Aastha
Roll number	18HZL7202
Course	B.Sc. (Hons.) Zoology
Semester	VI
Title of paper	Officiating Deen Dayal Upadhyaya College Sector-3, Dwarka Developmental Biology

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 - ❖ Preparation of Food Media
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- Ethical Constraints
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INTRODUCTION

Drosophila melanogaster, also known as fruit fly, is a small fly found near unripe and rotten fruit. It is used as a model organism to study disciplines like genetics and behavior.

Thomas Hunt Morgan was the first biologist to study *Drosophila*, early in the 1900s.

The name literally means **black-bodied fruit lover**.

Drosophila was first recorded in 1875 in New York city.

Under ideal conditions, their development time is 8.5 days.

CLASSIFICATION

Kingdom	Animalia
Phylum	Arthropoda
Class	Insecta
Order	Diptera
Family	Drosophilidae
Genus	<i>Drosophila</i>
Species	<i>melanogaster</i>

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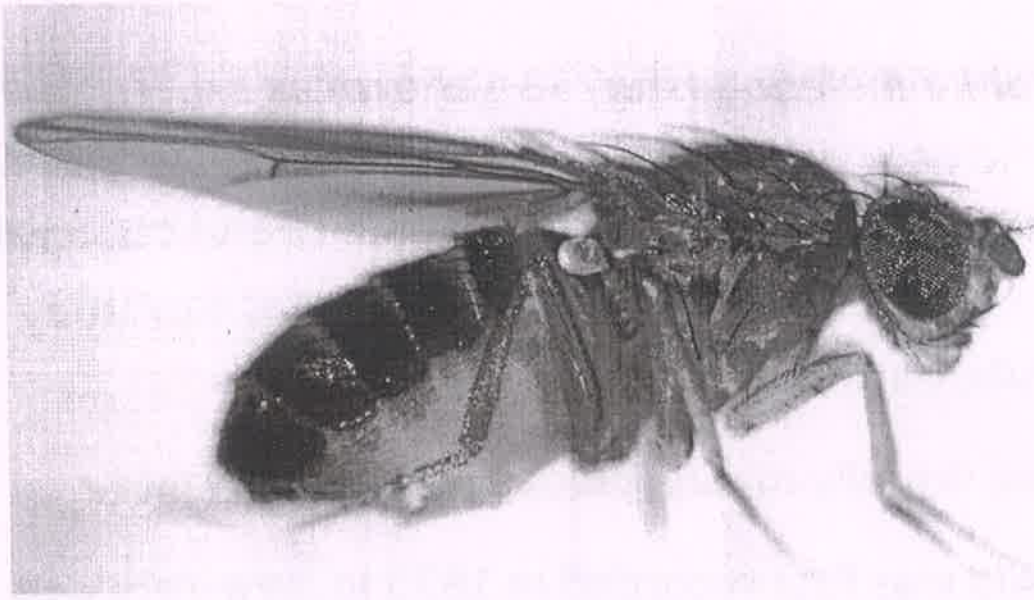
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MORPHOLOGY



- Yellow-brown colour
- Brick-red eyes
- Transverse black rings across the abdomen
- Sexual dimorphism present
- Females are 2.5 mm long, males are slightly smaller
- Males have darker backs

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WHY IS *DROSOPHILA* A GOOD ANIMAL MODEL?

Drosophila is a good animal model due to multiple characteristics:

Short lifespan

The average lifespan of a fruit fly is 10-14 days. This short lifespan allows for a large quantity of flies to be produced within a short period of time.

Minimal culturing requirements

Due to their small size and simple life cycle, fruit flies are very easy to maintain. Hence, they can be raised in even small laboratories with minimal requirements.

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Genome size and genetic manipulation

Several genetic factors also make *D. melanogaster* an ideal model organism. They have only four pairs of

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chromosomes and their genome has been sequenced and annotated entirely, making genetic studies easier.

Identifiable anatomical features

Easy characterisation of several anatomical features of fruit flies, like wings, eyes, etc, help in easy analysis of genetic manipulations.

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LIFE CYCLE

Development in *Drosophila* is holometabolous i.e. involves developing stages morphologically distinct from adults.

The life cycle is divided into 4 stages:

1. EMBRYO

- Embryo is formed 24 hours after fertilization.
- It is oval in shape, 0.5 mm in length and 0.2 mm in breadth.
- It has a honey comb-like appearance on its surface.

2. LARVAL STAGES

- Three larval stages (instars) are present.
- 1st instar larva (L1): segmented body; mouth hooks at anterior end.
- 2nd instar larva (L2): cylindrical body, larger in size, mouth hooks anterior, tracheal system develops.
- 3rd instar larva (L3): larger in size (4-5mm length), bear pupal horns off the anterior end, salivary glands, tracheal system and rudiments of gonads.

3. PUPA

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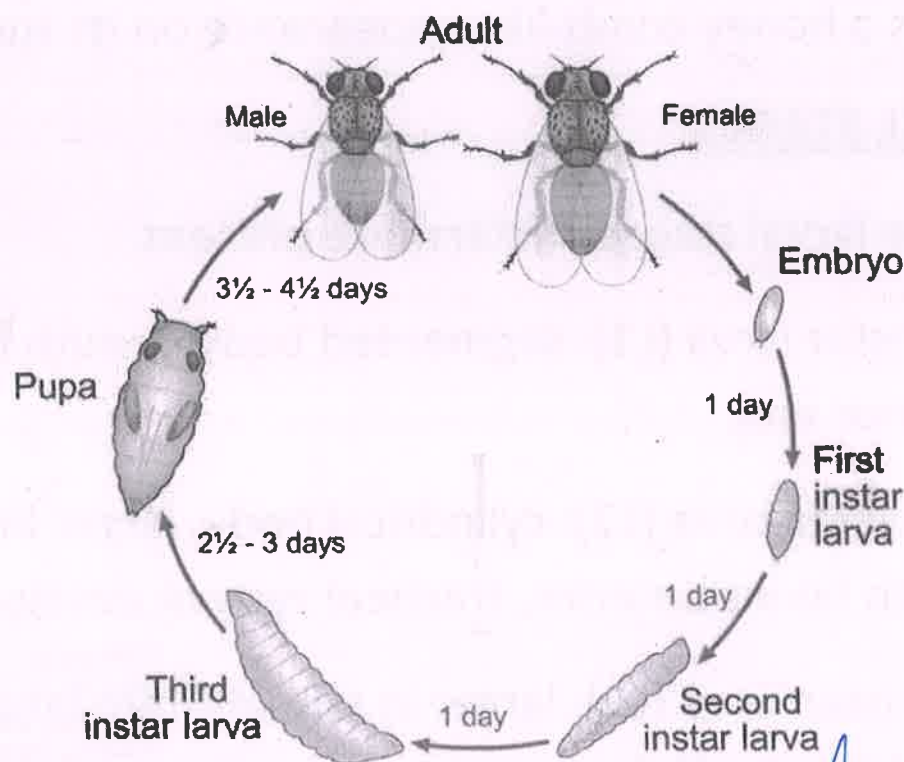
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- Pupa develops after encapsulation of 3rd instar larva.
- This stage lasts for around 4 days.
- Many larval structures are lysed and new structures are formed.

4. ADULT

- Adult fly emerges upon eclosion of the pupal case.
- Lifespan of adult fruitfly is 30 days, subject to temperature.



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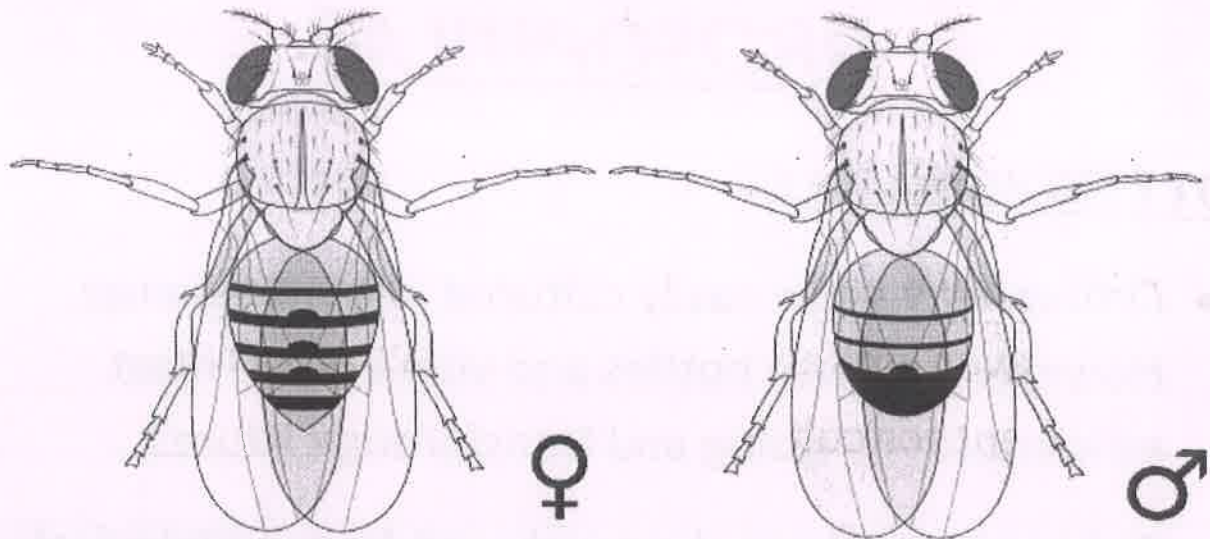
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SEXUAL DIMORPHISM



Characteristic	Male	Female
Eye color	Red	Red
Size	Smaller	2.5 mm long
Abdomen	5 segments Two dark stripes Rounded, heavily pigmented tip	7 segments Several dark transverse stripes Pointed tip
External genitalia	Dark Ventral Claspers present	Light colored Ventral No claspers
Secondary sexual characters	Sex comb present on the tarsus of first leg	Officiating Principal Deen Dayal Upadhyaya College (University of Delhi) Sector-3, Dwarka, New Delhi-78
Average life span	33 days	26 days

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HOW TO CULTURE

DROSOPHILA?

BOTTLES AND VIALS

- *Drosophila* can be easily cultured in any container. However, uniform bottles and vials are the most efficient for culturing and transferring cultures.
- Bottles and vials can be purchased from a biological supply store. Bottles are mainly used for maintaining large populations, whereas, vials are used for smaller populations.

METHODOLOGY OF CULTURE

1. Bottles and vials are sterilised by freezing. This kills any existing flies, pests or microbes. They are then autoclaved for 20 minutes.
2. Food media is added to sterilised culture bottles and vials. It must be completely rehydrated for best results.
3. Add flies to the container 1-2 minutes after hydrating the media.

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4. Optimum conditions for rearing of *Drosophila* should be maintained, i.e., 25°C and 60% humidity.

PREPARATION OF FOOD MEDIA

This is the first step in preparation of the culture. There are a variety of types of food available for the flies; some require cooking and others are bought already prepared and dehydrated. Dehydration is done by adding water to the media until it completely moistened. Flies may be added minutes after media has been hydrated.

HANDLING OF ADULT FLIES

- **Anesthetizing flies:** Adult flies are capable of flying. To prevent flies from flying, they are either anesthetized using chemicals like ether, commercial brands like *Flynap*, carbon dioxide or by cooling. Each method has its strengths and weaknesses, but cooling is the simplest method among these. In addition, it does not effect the neurology of the flies.
- **Transfer of flies from one vial to another:** Flies should be transferred every 10-14 days to maintain backup

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culture of the fly strain. This does not require anesthetizing but quick hands. A funnel is placed in the mouth of a fresh, media-containing culture vial. The old culture vial is then gently tapped over it so that flies fall into the new one.

- **Removal and collection of flies:** Flies are removed 8-10 hours before collection. All virgin females are collected and placed in a fresh culture vial. They are incubated for 2-3 days and then checked for larvae. This process is done in the morning because most females tend to enclose early in the morning.

DISPOSAL OF FLIES

Disposal of flies is done using mineral oil. Anesthetized flies are dumped into a container containing mineral oil, in which they drown. Certain chemicals like ethanol or isopropanol can also be used as a morgue.

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ETHICAL CONSTRAINTS

- The major benefit of using *Drosophila* is that there are no ethical issues surrounding their use, unlike several other animal models, like rabbits, rats, monkeys, etc.
- In general, animal welfare ethical boards do not have to approve experimental settings that make use of fruit flies.
- Hence, *Drosophila* offers an essential advantage since ethical obstacles severely limit the scope for experiments.

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REFERENCES

- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6501408/>
- For more information on methodology of *Drosophila* culture, visit: <https://youtu.be/0pAyHfc8-rA>
- <https://depts.washington.edu/cberglab/wordpress/outr each/an-introduction-to-fruit-flies/>
- Genetics on the Fly: A Primer on the Drosophila Model System by Karen G. Hales et al (2015)
- Taking Stock of the Drosophila Research Ecosystem by David Bilder and Kenneth D. Irvine (2017)

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ZH Core -VI: Physiology: Controlling and Coordinating Systems

Course Learning Objective:

Physiology is the study of life, specifically, how cells, tissues and organ function. It is a core and fundamental scientific discipline that underpins the health and well-being of living organisms. Besides satisfying a natural curiosity about how our body systems function, it gives us knowledge about the functions of all the parts and systems of the body. It is also of central importance in medicine and related health sciences. The course has been designed to extend the fundamental or coherent understanding of the subject to related disciplinary areas/subjects through understanding of normal body functions, assisting in more effective treatment of abnormal or diseased states. It will equip the students with skill-based knowledge, enabling them to undertake further studies in physiology and related areas as well as in multidisciplinary subjects.

Course Learning Outcome:

Upon completion of the course, students will be able to:

- Know the basic fundamentals and understand advanced concepts so as to develop a strong foundation that will help them to acquire skills and knowledge to pursue advanced degree courses.
- Comprehend and analyze problem-based questions
- Recognize and explain how all physiological systems work in unison to maintain homeostasis in the body and use of feedback loops to control the same
- Learn an integrative approach to understand the interactions of various organ systems resulting in the complex overall functioning of the body. Synthesize ideas to make connection between knowledge of physiology and real world situations, including healthy life style decisions and homeostatic imbalances
- Know the role of regulatory systems viz. endocrine and nervous systems and their amalgamation in maintaining various physiological processes.

Course Content:

Theory [Credits: 4]

60 hrs

Unit 1: Tissues

6 hrs

Structure, location, classification and functions of Epithelial tissue, Connective tissue, Muscular tissue and Nervous tissue

(Chapter 4: Tortora, G.J & Grabowski, S)

Unit2: Bone and Cartilage

4hrs

Histology of different types of bones and cartilages

(Chapter 6: Tortora, G.J & Grabowski, S)

Unit 3: Nervous System

12 hrs

Structure of neuron, Resting membrane potential, Origin of action potential and its propagation across the myelinated and unmyelinated nerve fibers, Types of synapse, Synaptic transmission, Neuromuscular junction, Physiology of hearing and vision.

(Chapter 12: Tortora, G.J & Grabowski, S)

Unit 4: Muscle

12 hrs

Histology of different types of muscle; Ultrastructure of skeletal muscle; Molecular and chemical basis of muscle contraction; Characteristics of muscle twitch; Motor unit, Summation and tetanus

(Chapter 10: Tortora, G.J & Grabowski, S)

Unit 5: Reproductive System

8 hrs

Histology of testis and ovary; Physiology of male and female reproduction

(Chapter 28: Tortora, G.J & Grabowski, S)

Unit 6: Endocrine System

18 hrs

Histology of endocrine glands- pineal, pituitary, thyroid, parathyroid, pancreas, adrenal; Hormones secreted by them and their physiological action; Classification of hormones; Regulation of their secretion; Mode of hormone action- Signal transduction pathways for steroidal and non-steroidal hormones

(Chapter 18: Tortora, G.J & Grabowski, S)

Practical [Credits: 2]

1. * Recording of simple muscle twitch with electrical stimulation (or Virtual)
 2. Demonstration of the unconditioned reflex action (Deep tendon reflex such as knee jerk reflex)
 3. Preparation of temporary mounts: Squamous epithelium, Striated muscle fibres, Nerve cells
 4. Study of permanent slides of Mammalian skin, Cartilage, Bone, Spinal cord, Nerve cell, Pituitary, Pancreas, Testis, Ovary, Adrenal, Thyroid and Parathyroid
 5. Demonstration of technique of microtomy to have hands-on experience and learning of the technique.
 6. Submission of a Project report on methods of contraception in male and female.
- (*Subject to UGC guidelines)

Teaching and Learning Process:

The Learning Outcomes-Based Approach to curriculum planning and execution requires that the teaching learning processes are oriented towards enabling students to attain the defined learning outcomes relating to the courses within a programme. This, particularly in the context of undergraduate studies, requires a significant shift from teacher centric to learner/student centric, pedagogies and from passive to active/participatory pedagogies. Practical skills, including an appreciation of the link between theory and experiment will constitute an important aspect of the teaching-learning process.

Teaching methods will include:

- Lectures supported by group tutorial work; invited lectures
- Practical and field-based learning;
- Use of prescribed textbooks and e-learning resources and other self-study materials;
- Project work
- Assignments, seminars, oral presentations
- Activities designed to promote the development of generic/transferable and subject specific skills;
- Internships and visits to field sites and hospitals or other research facilities
- Guidance by the mentors and specialists in the field etc.

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Session 2020-2021

Course Name- B.Sc. (H) Zoology Sem III
Paper: Physiology- Controlling and coordinating systems
Faculty: Dr. Anita Gulati, Dr. Nitish K. Mahato

Submission of Project Report on methods of contraception in male and female

List of students

Sl	Roll No	Student Name
1	19HZL7001	AKANKSHA
2	19HZL7002	AMISHA
3	19HZL7003	ANJALI
4	19HZL7004	ANNAPURNA
5	19HZL7005	ASHISH
6	19HZL7007	HARSHITA
7	19HZL7008	HITESH
8	19HZL7009	JYOTI
9	19HZL7010	KAJAL
10	19HZL7011	MANISH
11	19HZL7012	MEHAK
12	19HZL7013	PRIYA
13	19HZL7014	RAHUL
14	19HZL7016	RITIKA
15	19HZL7017	RIYA JAIN
16	19HZL7020	RUCHI
17	19HZL7023	SAMPA
18	19HZL7025	SHUBHAM
19	19HZL7026	SIMRAN CHAUHAN
20	19HZL7029	SUNITA
21	19HZL7030	VAIDEHI
22	19HZL7034	YASHIKA
23	19HZL7036	UTKARSH
24	19HZL7038	KOMAL

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Certificate

This is to certify that Yashika Jindal (19HZL7034) of B.Sc.. Hons. Zoology 2nd year has successfully completed her project of Animal Physiology on the topic 'Contraceptive Methods' given by Dr. Anita Gulati within the assigned time.

Teacher's signature

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Acknowledgement

I would like to express my special thanks of gratitude to my Animal Physiology teacher Dr. Anita Gulati who gave me this golden opportunity to do this wonderful project and also for the support provided which helped me completing my project.

YASHIKA JINDAL
19HZL7034
(BSC. HONS. ZOOLOGY)

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Objective

Background-Contraception is the intentional prevention of conception through the use of various devices, sexual practices, chemicals, drugs or surgical procedures. The aim is to achieve contraception in maximum comfort and privacy, with minimum cost and side effects. Some methods, like male and female condoms, also provide twin advantage of protection from sexually transmitted diseases

Need of contraception

- Protection Against Unwanted Pregnancy
- Need for Protection Against Sexually Transmitted Diseases
- Vulnerability of Adolescents

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ZH GE-VI Food, Nutrition and Health

Course Learning Objective:

The prime focus is to provide the students with a basic understanding of the relationship between food, nutrition and health. It is imperative that focus should be on realistic issues faced by people with respect to nourishment at all stages of life. Unhealthy eating habits particularly the shift from fresh food consumption to packaged foods with added salts and preservatives have contributed to the obesity epidemic in nearly all parts of the world. It is important to understand this link and change eating habits in accordance to one's age, pregnancy, lactation and physical activity. By taking steps to eat healthy, one can obtain the nutrients required by the body to stay healthy, active, and strong. Mental health is also affected largely by our lifestyle. Apart from physical activity, the intake of the required vitamins, minerals and antioxidants also nourish the brain. Malnutrition is the main cause of impairment of growth in young children and infants and leads to diseases like Marasmus. Moreover, food hygiene including food and water borne infections along with food spoilage has also been covered in this course.

Course Learning Outcome:

Upon the completion of the course, students will be able to:

- Have a better understanding of the association of food and nutrition in promoting healthy living.
- Think more holistically about the relationship between nutrition science, social and health issues.
- Move on to do post-graduation studies and can apply for jobs as food safety officers, food analysts, food inspectors, food safety commissioners or controllers for jobs in organizations like FSSAI.
- Specialize in various fields of nutrition.

Course Content:

Theory [Credits: 4]

60 hrs

Unit 1: Basic concept of food and nutrition

13hrs

Food Components and food-nutrients, Concept of a balanced diet, nutrient needs and dietary pattern for various groups- adults, pregnant and nursing mothers, infants, school children, adolescents and elderly. Food Pyramid, Nutritional anthropometry- BMI, waist-to-hip ratio, skin-fold test and bioelectrical impedance; interpretation of these measurements.

(Part 1, 5 and 6: Mann and Truswell; Chapter 1, 7 and 11: Gibney)

Unit 2: Nutritional Biochemistry

15hrs

Carbohydrates, Lipids, Proteins, their dietary source and role Vitamins- their dietary source and importance Minerals- their biological functions. Dietary Fibres - Definition, their dietary source and nutritional importance. Elementary idea of Probiotics, Prebiotics, Organic Food.

(Part 1 and 2: Mann and Truswell; Chapter 8 and 9: Gibney; Chapter 1, 2, 4, 5 and 7: Lee and Salminen)

Unit 3: Health

Definition and concept of health, Major nutritional Deficiency diseases- (marasmus), Deficiency disorders, their causes, symptoms, treatment, prevention and government programmes, if any. Life style related diseases- hypertension, diabetes mellitus, Atherosclerosis and obesity- their causes and prevention through dietary and lifestyle

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modifications, Social health problems- smoking, alcoholism, drug dependence and Common ailments- cold, cough, and fevers, their causes and treatment.

(Chapter 1 and 2: Robinson; Chapter 8: Gibney; Chapter 4, 6, 7, 13 and 18: Elia)

Unit 4: Food hygiene

15 hrs

Food and Water borne infections; Bacterial infection: Cholera, typhoid fever, dysentery; Viral infection: Hepatitis, Poliomyelitis; Protozoan infection: amoebiasis, giardiasis; Parasitic infection: taeniasis and ascariasis their transmission, causative agent, sources of infection, symptoms and prevention; Brief account of food spoilage: Causes of food spoilage and their preventive measures.

(Chapter 14 and 15: Gibney; Chapters 2, 3 and 5: Hawker; Part I and II: Clive de W Blackburn)

Practical [Credits: 2]

1. To detect adulteration in a) Ghee b) Sugars c) Tea leaves and d) Turmeric
2. Estimation of Lactose in milk and diagnosis of lactose intolerance by measuring hydrogen gas during expiration.
3. Ascorbic acid estimation in food by titrimetry
4. Estimation of Calcium in foods by titrimetry
5. Study of the stored grain pests from slides/photographs (*Sitophilus oryzae*, *Trogoderma granarium*, *Callosobruchus chinensis* and *Tribolium castaneum*): their identification, habitat and food sources, damage caused and control. Preparation of temporary mounts of the above stored grain pests.
6. Visit to food testing lab /or any agency of food standards
7. Project work
8. Undertake computer aided diet analysis and nutrition counselling for different age groups.
9. Identify nutrient rich sources of foods (fruits and vegetables), their seasonal availability and price.
10. Study of nutrition labelling on selected foods

Teaching and Learning Process:

Lectures using PowerPoint and chalk-blackboard method & RBPT will be used to impart knowledge. Use of IT-CT facility will be integrated in the learning. Survey based short projects as assignments will help students to gain insight in the subject. Visit to prominent food and nutrition laboratories to learn about basic techniques will arouse interest among students.

Assessment Methods:


- Quizzes, multiple choice questions, fill in the blanks and short answers
- Student presentation
- Take-home Assignments
- End of term theory and Practical examination

Keywords:

Food, Nutrition, Health, Food Pyramid, Diseases

Recommended Books:

- Shashi Goyal & Pooja Gupta. Food, Nutrition and Health (ISBN: 9788121940924)
- Linda Tapsell. Food, Nutrition and Health. I Edition, Oxford (ISBN: 978-0195518344)


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University of Delhi

Course Name : B.Sc.(H) Botany Sem. 3

Academic year : 2020-2021

Subject Name : [32235906] GE-Food Nutrition & Health (32235906) (Lab)

Faculty Name : KAMLESH KUMARI

Sr. No	Roll No	Student Name	Total (Class Test/Pres entation)	Class Test/Pres entation Marks	Lect. Att.	Tut. Att.	Total (L+T)	Eca Benefit Given (L+T)	Adj Att	Adj Att(%)	Att Marks	Ass	Total(Ass ign Marks)	Assign Marks	Class Test	Attendan ce	Total Marks
	19HBT6604	BENNY P THANGLALMUAN	0.00/0	0.00/10	52/52	0/0	52/52	0	92/96	95.83	5/5	0/0	0.00/10	0.00/10	0.00/10	5/5	5/25
2	19HBT6607	GAURAV PARCHA	0.00/0	0.00/10	48/52	0/0	48/52	0	84/96	87.50	5/5	0/0	0.00/10	0.00/10	0.00/10	5/5	5/25
3	19HBT6612	kiran kumari sah	0.00/0	0.00/10	52/52	0/0	52/52	0	96/96	100.00	5/5	0/0	0.00/10	0.00/10	0.00/10	5/5	5/25
4	19HBT6614	LAKSHAY PANDEY	0.00/0	0.00/10	45/52	0/0	45/52	0	85/96	88.54	5/5	0/0	0.00/10	0.00/10	0.00/10	5/5	5/25
5	19HBT6620	parmod kumar meena	0.00/0	0.00/10	37/52	0/0	37/52	0	69/96	71.88	2/5	0/0	0.00/10	0.00/10	0.00/10	2/5	2/25
6	19HBT6622	Pooja Kumari	0.00/0	0.00/10	46/52	0/0	46/52	0	86/96	89.58	5/5	0/0	0.00/10	0.00/10	0.00/10	5/5	5/25
7	19HBT6636	RITIKA SINHA	0.00/0	0.00/10	52/52	0/0	52/52	0	96/96	100.00	5/5	0/0	0.00/10	0.00/10	0.00/10	5/5	5/25
8	19HBT6627	ROHIT	0.00/0	0.00/10	50/52	0/0	50/52	0	94/96	97.92	5/5	0/0	0.00/10	0.00/10	0.00/10	5/5	5/25
9	19HBT6631	Shreyashi	0.00/0	0.00/10	52/52	0/0	52/52	0	96/96	100.00	5/5	0/0	0.00/10	0.00/10	0.00/10	5/5	5/25
10	19HBT6632	Suraj Pandey	0.00/0	0.00/10	50/52	0/0	50/52	0	94/96	97.92	5/5	0/0	0.00/10	0.00/10	0.00/10	5/5	5/25

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(Dr. Kamlesh Kumari)



Submitted in 2020-21

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Course : BSc. Botany (Hons.)

Semester : 3rd

Subject : Food , nutrition and health (FNH)

Generic Elective (GE)

offered by Zoology dept.

Topic -

Nutrition in cardiovascular diseases

Submitted to -

Dr. Kamlesh Kumari

Dr. Nitish Mahto

Submitted by -

Shreyashi

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ACKNOWLEDGEMENT

I would like to express my special thanks of gratitude to my teachers Dr. Kamlesh Kumari and Dr. Nitish Mahto who gave me the opportunity to do this project of Food, Nutrition and Health (FNH) on the topic "Nutrition in Cardiovascular Diseases".

Secondly, I would also like to thank my friends who helped me in finding and finalizing this project within the limited time frame.

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III- Semester

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- Cardiovascular diseases
- Risk factors for Cardiovascular diseases
- Basic nutrition plan
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CARDIOVASCULAR DISEASES

Cardiovascular diseases (CVDs) are the number one cause of death globally, taking an estimated 17.9 million lives each year. CVDs are a group of disorders of the heart and blood vessels and include coronary heart diseases, cerebrovascular disease, rheumatic heart disease and other conditions. Four out of 5 CVDs deaths are due to heart attacks & strokes, and one third of these deaths occur prematurely in people under 70 years of age.

Characteristics of Heart / Cardiovascular diseases :-

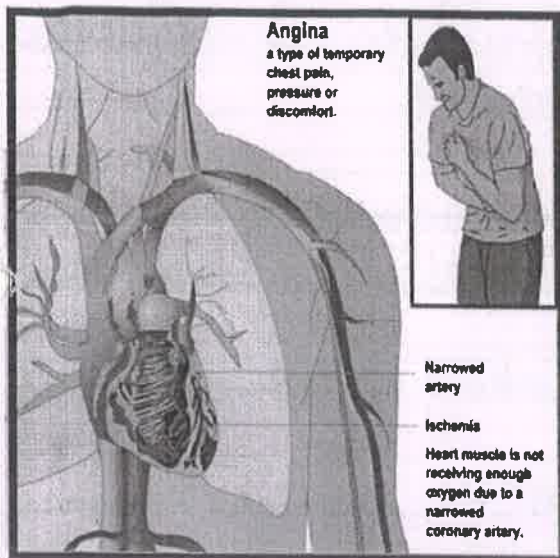
Cardiovascular disease results from the narrowing of the arteries that supply the heart with blood through a process known as atherosclerosis. Fatty deposits gradually build upon the inside of the artery walls, narrowing the space in which blood can flow to heart. If there is too much build-up of stable plaque, it narrows the arteries, causing pain and discomfort due to not enough blood reaching the heart. Such as hypertension, angina pectoris, infarctions, etc.

General warning signs and symptoms :-

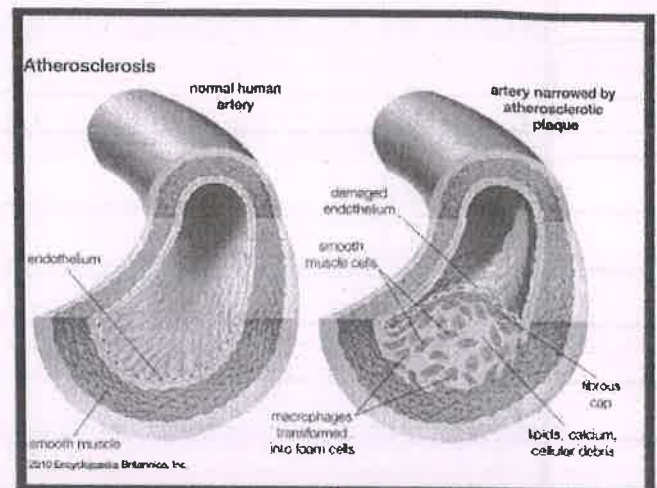
- Extreme fatigue
- Constant dizziness or lightheadedness
- A fast heart rate
- Chest pain or discomfort
- Difficulty breathing during regular activities and rest, etc.



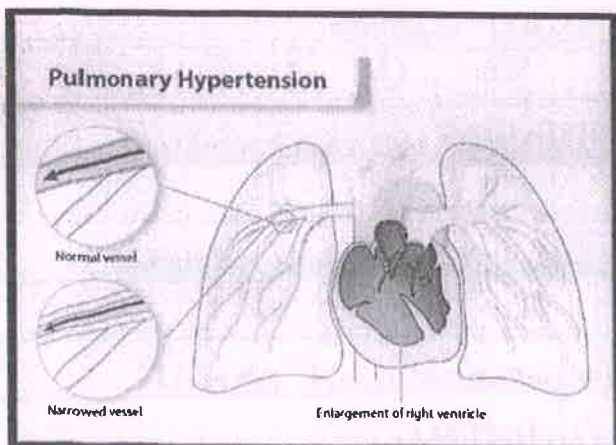
Cardiovascular Diseases



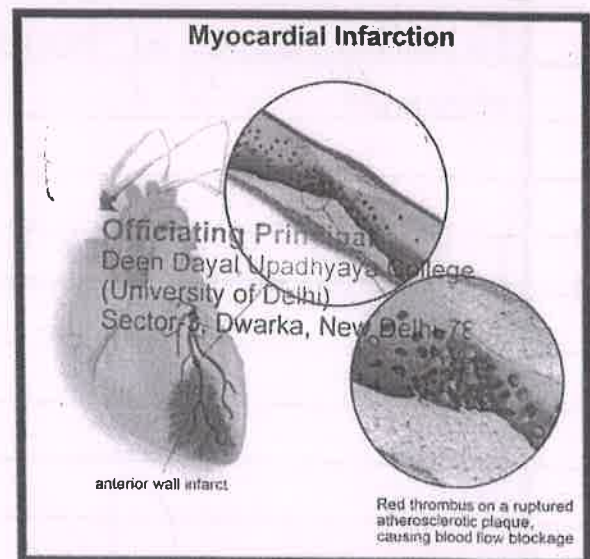
Angina pectoris



Atherosclerosis



Hypertension



Myocardial infarction

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Risk factors for Cardiovascular diseases:-

There are many factors that can increase your risk of cardiovascular diseases. Although some of these cannot be changed, but there are plenty of risk factors in our control. For example by being physically active ensuring good social support, these can reduce the risk of heart disease is reduced.

Risk factors that can't be changed

Age

Gender

Ethnicity

Family history of heart disease

Risk factors within our control

Smoking status

Diet

Cholesterol levels

Blood pressure

Body weight

Diabetes management

Physical activity levels

Depression and social isolation.

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Diabetes



Diet

Risk factors for Cardiovascular Diseases

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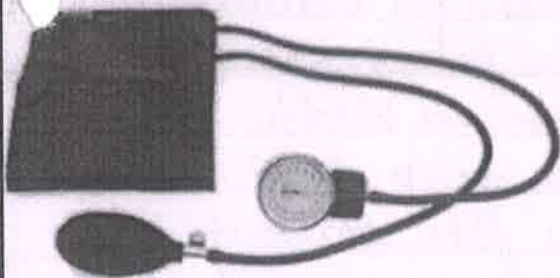
Smoking



Social activities



Blood pressure



Weight



Depression



Basic Nutritional plan to Monitor Serum Lipid levels:

The diet changes which have proved to be effective in preventing or reversing heart diseases have the following nutritional goals:

- Reduce the total amount of fat, mainly the saturated fat in the diet.
- Use polyunsaturated fat in place of saturated fat in the diet.
- Decrease the intake of the amount of dietary cholesterol.
- Increase the physical activity to alter cholesterol components in the blood.
- Attain ideal body weight and maintain it.

To accomplish these goals, the diet must have high carbohydrates (50-70% of total calories), adequate protein (12-20% of total calories) and reduced fat (20 to 30% of total calories).

In a 2000 calorie diet, the calories from fat would thus be 400 to 600, which amounts to about 45 to 65 grams of fat in the diet, a third of it is taken in hidden form. Hidden fat occurs in food such as milk, dahi, nuts, oilseeds, eggs and meat. Hidden fats content of diet varies, but is estimated to provide about a third or more of the total fat in the diet.

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Table 29.3 Food Selection Guide

<i>Foods – Include As per Prescription</i>	<i>Foods Include Liberally</i>	<i>Foods to Avoid</i>
Cereals – rice, wheat Jowar, bajra, nachni etc. Dals and legumes Milk without cream Lean meat Fish and egg white Vegetable oils Sugar, jaggery Salt	Green leafy vegetables Salad vegetables- All gourds, Fruit vegetables, Fruits – melons, amla * Thin buttermilk Coconut water Clear soups condiments-lime juice Tamarind, cocum, vinegar etc. Spices and spice mix to flavour food and garlic	A. Fatty sweets– mithais, laddus, chocolates, shreekhand, basundi, rabdi, cakes, pastries, cream biscuits, pies, doughnuts etc. B. Fatty fried foods– Shev, chivada, farsan, wafers, chaklis, Fried papad, kurdais, khari biscuits etc. bhajias, wadas, samosas, cutlets, etc. C. Nuts (esp. dried ones) cashews, groundnuts, coconut, almonds, walnuts etc. D. Salty sauces and oily dressings E. Sodium rich foods– pickles, papad, sandage, baked products made with baking powder F. Soft drinks and alcoholic drinks– beer, scotch etc.

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NUTRITION IN CARDIOVASCULAR DISEASES

1. Eat more fruits and vegetables:-

- Vegetables and fruits are good sources of vitamins and minerals. Vegetables and fruits are also low in calories and rich in dietary fiber. Vegetables and fruits, like other plants or plant-based foods, contain substances that may help prevent cardiovascular disease. Eating more fruits and vegetables may help you cut back on higher calorie foods, such as meat, cheese and snack foods. These can also be used as quick snacks. Such as vegetable stir fry or fresh fruit mixed into salads.

2. Control your portion size:-

- How much we eat is just as important as what we eat. Overloading our plate, taking seconds and eating until we feel stuffed can lead to eating more calories than we should.
- Use a small plate or bowl to help control how much we eat. The recommended number of serving per food group may vary depending on the specific diet or guidelines we're following. Eat large portions of low-calorie, nutrient rich foods, such as fruits and vegetables and smaller portions of high-calorie, etc.

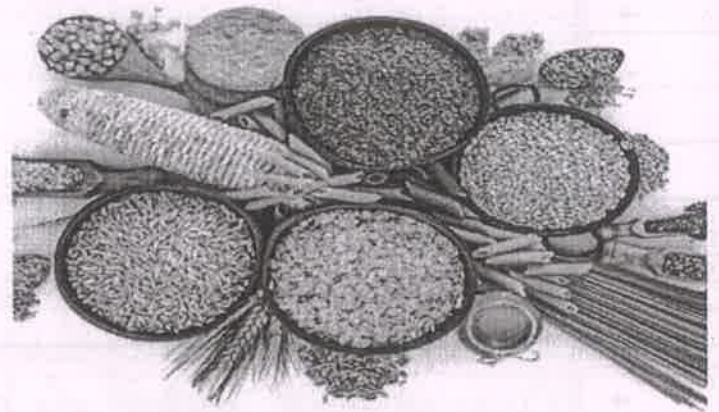
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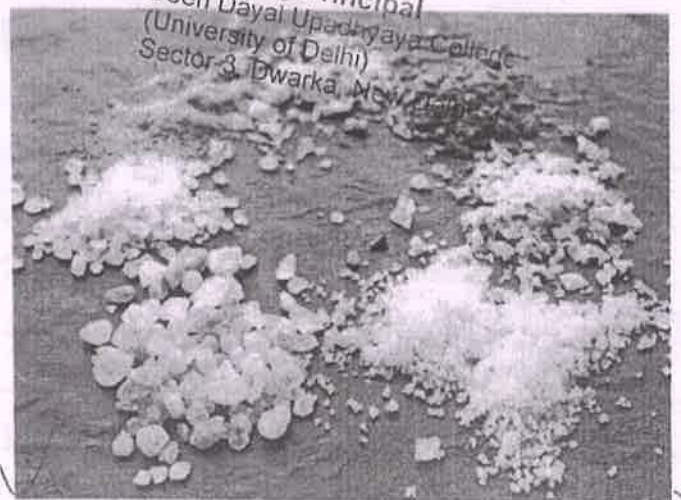
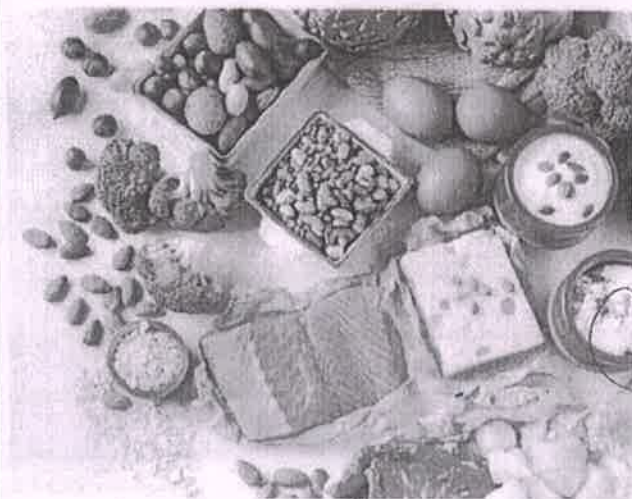


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Nutrition in Cardiovascular Diseases



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Fruits and vegetables to choose:-

- Fresh or frozen vegetables and fruits.
- Low sodium canned vegetables.
- Canned fruit packed in juice or water.

Fruits and vegetables to limit:-

- Coconut
- Vegetables with creamy sauces.
- Fried or breaded vegetables.
- Canned fruit packed in heavy syrup.
- Frozen fruit with sugar added.

3. Select whole grains:-

- Whole grains are good sources of fiber and other nutrients that play a role in regulating blood pressure and heart health.
- We can increase the amount of whole grains in a heart-healthy diet by making simple substitutions for refined grain products.
- Can also switch to other whole grains such as farro, quinoa or barley.

Grain products to choose:-

- Whole wheat flour
- Whole grain bread preferably 100% whole-wheat
- High fiber cereal with 5g or more fiber in a serving.
- Whole grains such as brown rice, barley and buckwheat.
- Whole-grain pasta
- Oatmeal (steel-cut or regular)

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Table 29.3 Food Selection Guide

<i>Foods – Include As per Prescription</i>	<i>Foods Include Liberally</i>	<i>Foods to Avoid</i>
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All gourds include ash, bitter-, snake-, ridge-, etc. Salad vegetables include cucumber, radish, tomato, onion.
Fruit vegetables include drumstick, pumpkin, bhendi, dudhi, brinjal, tinda, etc

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Fruits and vegetables to choose:-

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- Low sodium canned vegetables.
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- Whole grain bread preferably 100% whole-wheat
- High fiber cereal with 5g or more fiber in a serving.
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- Whole-grain pasta
- Oatmeal (steel-cut or regular)

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Grain products to limit or avoid:-

- White, refined flour.
- White bread
- Muffins
- Frozen waffles
- Corn bread
- Quick breads
- Egg noodles
- Buttered popcorn
- High-fat snack crackers

4. Limit unhealthy fats:-

- Limiting how much saturated and trans fat we eat is an important step to reduce your blood cholesterol and lower risk of coronary artery diseases.
- A high blood cholesterol level can lead to a buildup of plaques in the arteries, called atherosclerosis, which can increase risk of heart attack and stroke.
- Trans fats should be avoided.
- Saturated fat are recommended but not more than 5 to 6% of our daily calories or no more than 11 to 13g of saturated fat if we can follow a 2,000-calorie-a-day diet.

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- Reduce the amount of saturated fat in diet by trimming off meat or choosing lean meats less than 10% fat. Can also add less butter, margarine and shortening when cooking and sewing.
- Use low-fat substitutions and when possible for a healthy-heart diet.

Fats to choose:-

- Olive oil
- Canola oil
- Vegetable and nut oils
- Cholesterol-lowering margarine, such as Benesol, etc.
- Nuts, seeds
- Avocados

Fats to limit:-

- Butter
- Bacon fat
- Gravy
- Cream sauce
- Hydrogenated margarine and shortening
- Cocoa butter found in chocolate
- Coconut, palm, cottonseed and palm-kernel oils
- Lard

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5. Choose low-fat protein sources :-

- Lean meat, poultry and fish, low-fat dairy products, and eggs are some of the best sources of protein. Choose low fat options, such as skim milk rather than whole milk and skinless chicken breasts rather than fried chicken patties.
- Fish is another good alternative to high-fat meats. And certain types of fish are rich in omega-3 fatty acids, which can lower blood fats called triglycerides. The highest amounts of omega-3 fatty acids in cold water fish, such as salmon, mackerel and herring.
- Legumes - beans, peas and lentils also are good sources of protein and contain less fat and no cholesterol, making them good substitutes for meat.

Proteins to choose:

- Low-fat dairy products, such as skim or low-fat (1%) milk, yogurt and cheese
- Eggs
- Fish, especially fatty, cold-water fish, such as salmon.
- Skinless poultry
- Legumes
- Soybeans and soy products, such as soy burgers and tofu
- Lean ground meats.

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Table 29.2 Saturated and Unsaturated Fatty Acid Composition of Food Fat

<i>Foods</i>	<i>Fatty Acids (%)</i>		
	<i>Saturated (%)</i>	<i>Unsaturated</i>	
		<i>Monounsaturated (% Oleic Acid)</i>	<i>Polyunsaturated (% Linoleic Acid)</i>
A. Vegetable Oils/Fats			
Groundnut	16-19	47-60	20-30
Mustard	5	32	18
Sesame	13-14	38-49	38-42
Olive	11-15	75	7-10
Corn	13-15	26-29	55
Soybean	14-15	25	50-60
Cottonseed	23-30	17-25	50-54
Sunflower	8-11	14-18	65-70
Safflower	6-10	13-25	67-74
Coconut	80-90	5-6	1-2
Vanaspati	25	73	2
B. Animal Fats			
Butter	45-65	27-32	1-4
Ghee	64	33	Nil
Whole milk cow's	64	29	4
Human milk	46	38	8
Cheddar cheese	65	28	3
Egg	10	13	2
Poultry	30-40	40-44	14-20
Fish (low fat)	2-5	2-3	4
Lamb, pork, beef	45-50	44	2-6
C. Nuts			
Groundnuts	9	25	14
Walnuts	4	10	40

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Proteins to limit or avoid:-

- Full-fat milk and other dairy products
- Organ meats, such as liver
- Fatty and marbled meats.
- Bacon
- Fried or breaded meats

6. Reduce the sodium in the food:-

- Eating a lot of sodium can contribute to high blood pressure, a risk factor for cardiovascular diseases. Reducing sodium is an important part of a heart-healthy diet.
- Healthy adults have no more than 2,300 (mg) of sodium a day.
- Most adults ideally have no more than 1,500 mg of sodium a day.
- Although reducing the amount of salt added to food at the table or while cooking is a good first step.
- Much of the salt one eats comes from canned or processed foods, such as soups, baked goods and frozen dinners.
- Eating fresh fruits and vegetables can reduce the amount of salt one eats.
- If you like the convenience of canned soups and prepared meals, look for ones without sodium. Be wary of foods that claim to be lower in sodium because they are seasoned with sea salt instead of regular table salt, sea salt has the same nutritional value as regular salt.

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Table 29.5 Low Fat Diet – Vegetarian (1200 Calories)

<i>Food</i>	<i>Exchanges</i>	<i>Calories</i>	<i>Protein</i>	<i>Fat</i>	<i>Cholesterol</i>
Cereals	7	595	18	—	—
Dal	2	170	11	—	—
Milk (toned)	2	200	10	9	30
Egg/Flesh foods	—	—	—	—	—
Vegetable A	2	—	2	—	—
Vegetable B	2	70	4–6	—	—
Fruits	2	40	—	—	—
Fat (half ghee)	2	90	—	10	16
Sugar	2	40	—	—	—
Total		1205	45 – 47	19	46

Total Calories: 1205, Protein: 45g, Fat: 19g

Calories from Protein = 15%

Calories from fat = 14%

Calories from carbohydrate = 71%

Cholesterol = 46 mg/day

Menu Plan

Morning – Tea 1C (+ 1 tsp sugar)

Breakfast Milk 1C
Bread 2 slices
Banana ½ big or 1 small

Lunch Chapati 1
Rice ½ C
Dal 1C
Palak Bhaji ½ C
Tomato Salad
Dahi ½ C

Tea + Snacks

Tea 1C (+ 1 tsp sugar)
Dhokla – 4 pieces (no oil)

Supper

Bhakari ½
Rice ½ C
Dal 1 C
French beans ½ C
Cucumber Salad
Dahi ½ C

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Plan ahead: Create daily menus:

- Create daily menus using the six strategies listed above. When selecting foods for each meal and snack, emphasize vegetables, fruits and whole grains. Choose lean protein sources and healthy fats and limit salty foods.
- For example, if you have grilled salmon one evening, try a black-bean soup the next night. This ensures that you'll get all of the nutrients your body needs. Variety also makes your meals and snacks more interesting.

Allow yourself an occasional treat:

- Allow yourself an indulgence every now and then. A handful of potato chips won't derail your heart-healthy diet.
- Incorporate these tips into your life, and you'll find that heart-healthy eating is both doable and enjoyable. With planning and a few simple substitutions, you can eat with your heart in mind.

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Table 29.8 Food List for a 1000 mg Sodium Diet

<i>Food List</i>	<i>1200 Calorie Exchanges</i>	<i>1600 Calorie Exchanges</i>	<i>Na (mg)</i>
Cereals	5	7	530
Dals	3	4	120
Eggs/Mutton	3	3	75
Vegetables	3	3	135
Fruits	3	3	110
Milk, toned	2	2	50
Fat	2	3	
Sugar	2	4	
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Another way to reduce the amount of salt one eats is to choose ones condiments carefully.

Low Salt Items to choose:

- Herbs and spices
- Salt-free seasoning blends
- Reduced-salt canned soups or prepared meals
- Reduced-salt versions of condiments, such as reduced-salt soy sauce and reduced-salt ketchup.

High-Salt items to limit or avoid:

- Table salt
- Canned soups and prepared foods, such as frozen dinners
- Tomato juice.
- Condiments such as ketchup, mayonnaise and soy sauce
- Restaurant meals.

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Table 29.7 Low Sodium Sources of Vegetables and Fruits

<i>Sodium Content</i>	<i>Vegetables</i>
Less than 5 mg/100 g EP	Bitter gourd (green), bottle gourd, brinjal, french beans, onion stalks, parwar, ridge gourd, onions
5 to 11 mg/100 g EP	Pumpkin, ladies finger (bhendi), peas, cucumber, colocasia, potato, sweet potato, tapioca (dried chips), yam, brussel sprouts
12 – 15 mg/100 g EP	Cabbage, green plantain.
<i>Fruits</i>	
Less than 6 mg/100 g EP	Amla, guava, orange, papaya, peaches, plums, chiku, pomegranates, tree tomato, phalsa.
7 to 13 mg/100 g EP	Pears, ripe tomato.

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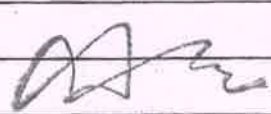
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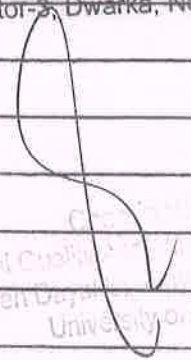
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Ritika Sinha [19HBT6636]

Course: Botany [Hrs] 2nd year
Sub: Food, Nutrition & Health
Topic: Nutrition in Infection
Fever & Lung diseases

offered by
Zoology
dept

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Submitted to: Dr. Kamlesh Kumari

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Acknowledgements

In the accomplishment of this project successfully, many people have bestowed upon me this blessings and the heart pledged support, this time. I am utilizing to thank all the people who have been concerned with this Assignment.

Primarily I would thank god for being able to complete this Assignment with success. Then I would like to thank my Zoology teacher (GE) Dr. Kamlesh kumari and Dr. Nitish Mahato whose valuable guidance has been the once they helped me patch this assignment and make it full proof success. Their suggestion and their instruction have served as the major contribution towards the completion of this Project.

Then I would like to thank my parents and friends who have helped me with their valuable suggestion and guidance has been very helpful in various phases of the completion of the Project.

Last but not the least I would like to thank my batchmates who have helped me a lot.

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Introduction

The invasion of the body by a pathogen results in infection, fever, lungs and other disease. The nutritional needs of the body are increased to resist the pathogen, to recoup the losses incurred metabolically and rebuild the cell damaged by the invader. Hence a protein diet is indicated.

Nutrition is a fundamental aspect of life, and it is linked to multiple components, systems and processes, including those occurring during disease, such as infection. For example, malnutrition is considered to be an important cause of immunodeficiency world wide, predisposing the malnourished to multiple infection. In other words, malnutrition alters the host's response to infection, and infection increases malnutrition.

These nutrients include fruits and vegetables, antioxidants vitamins such as vitamin C, vitamin E, betacarotene and other carotenoids, vitamin A, fatty acids and some minerals such as sodium, magnesium and selenium.

Diet and nutrition may be important modifiable risk factor for the development, progression and management of obstructive lung disease (such as asthma and chronic obstructive pulmonary disease (COPD)).

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Infections

Infections occurs when a pathogen gains entry into the body in sufficient numbers or multiplies in the body and cause injury at a particular site. Depending on where the pathogen attacks, different types of illness develops. If a pathogen enters through the nose or mouth, and multiplies in that region, ailments of throat or bronchi occur.

If pathogen enters the lungs, it can injure them. If pathogens are swallowed with water, milk or food, gastrointestinal symptoms such as nausea, vomiting, cramps and diarrhea frequently result. If the pathogen enters through cut skin infections such as boils, skin ulcers or other inflammation occurs.

The severity of the infection depends on the number of pathogens in the body and the body's ability to fight the infection. The ability of the body to resist infection is called 'immunity'. Natural immunity is the sum-total of the defences in the body which enables the body to resist infection under normal conditions. These are called defences in nature.

- Intact skin and mucous membranes, which bar entrance of microorganisms.
- Tissue fluids and blood, which contains cells and other substances which engulf and destroy foreign objects and

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→ The normally harmless population of bacteria and viruses found in the body, which prevents the growth of harmful bacteria and viruses.

All these process of normal immunity depends on proper nutrition, physical fitness and environmental conditions. When this natural immunity is depressed by poor nutritional status and other conditions a person may develop infections.

If the person is in poor nutritional status, an attack of common infectious diseases can endanger life itself.

A person who is in poor nutritional status needs the nutrients supplements.

In some infections, nutritional status is affected in an adverse manner. Thus the food intake and absorption are reduced, while nutrients excretion is increased, metabolic rate also increases. Nutrients are diverted to minimise effect of infection and resist damage to tissue.

Higher nutrient intake must be planned to ensure tissue repair and to make up for excretory losses.

Infection involves protein breakdown and hence there is an increased need for dietary proteins. The first goal is to identify and destroy the pathogen causing infection. The antibiotics, which are given to control the infection, may cause gastrointestinal disturbances which need to be taken into accounts in the diet management.

FEVER

Fever often accompanies infection. The patient may have chills due to fever and may complain of feeling cold.

But all fevers are not a result of infection. All elevation in body temperature are not fever. For example, there is elevation of body temperature in heart stroke, as the body is unable to eliminate heat.

Infection affects protein catabolism (breakdown), often decrease food intake and increase nutrient loss through vomiting and/or diarrhea. Enteric (intestinal) infection, as in typhoid, interfere with absorption and reduce nutrient utilization. Fever, which often accompanies infection, increases energy needs of the body [about 7% per degree Fahrenheit] above normal temperature.

Fever may be acute and of short duration as in colds, intermittent as in malaria or chronic as in tuberculosis.

Fever. CDC considers a person to have a fever when he or she has a measured temperature of 100.4°F (38°C) or greater, or feels warm to touch, or given a history of feeling feverish.

High fever may bring on seizures or convulsion in children.

It's not how high the temperature is, but how fast the temperature goes up that causes a seizure.

A fever has other symptoms besides a higher-than-normal temperature.

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Diet :-

The dietary treatment varies with the kind of fever and its duration. When fever is acute and of short duration, the most important aspect is to feed sufficient fluids and electrolytes to make up for the loss from the body. As appetite is usually poor, frequently small feeds of liquid and soft food needs to be given to ensure adequate intake. As the condition improves, the size of the feed is increased to meet nutritional needs.

The critical problem is protein breakdown, which occurs in infection. A high protein, high calorie diet is prescribed. Liquid and soft food needs to be fed often to ensure sufficient food intake as appetite is poor. Food allowances for such a diet are indicated.

The drugs given [antipyretics] helps to bring the temperature to normal. Most of the drugs contains ingredients to relieve pain also. The medication is taken with food to minimise gastric irritation.

Due to increased BMR, energy requirements get increased specifically if the temperature is high and prolonged. So easy to digest cereals and pulses should be included with moderate amount of fat sugar, honey etc as they help to enhance the energy contents of the food.

High protein diet should be given including milk and milk products, when protein, egg, chicken and fish.

Fried foods should be avoided as they are not better tolerated and may cause nausea.

TUBERCULOSIS:-

In India, tuberculosis is a major cause of illness and death. According to one estimate, one in four Indians is infected tuberculosis.

Tuberculosis is caused by the bacteria *Mycobacterium tuberculosis*. It is transmitted through the cough or sneeze of an infected person, when it gets sprayed into the air. Most people who breathe in the bacteria do not get infected. In those who do not get infected even after inhaling the bacteria, the microorganisms may remain dormant as their immune system triggers activation of macrophages, which engulf the bacteria. About 10 per cent of those infected develop tuberculosis some time in their life, when the natural immunity is lowered.

In tuberculosis, lungs are the most frequently affected part, but other organs may be attacked sometimes. Tuberculosis (T.B.) is accompanied by cough, sneezing, fever and time wastage. In acute form, the fever is high and the symptoms are similar to pneumonia. Low grade fever is typical of the

Body's Metabolic Response:-

Ability to utilise fat is reduced, hence muscle protein losses are increases. As available nitrogen is used to synthesize immune bodies, considerable protein wasting occurs with loss of body weight.

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High Protein High calorie Diet

Protein 75g ; Kcal 2,500				Protein 110 g ; Kcal 3,000			
Food	Amt/ serving	Protein	Kcal	Food	Amt/ serving	Protein	Kcal
Milk, toned	800 ml	26	535	Milk, toned	100 ml	32	670
Egg	1 no	6	75	Egg	1 no	6	75
cheese/ paneer/meat	2S	9	133	cheese/ paneer/meat	4S	18	265
Dal	2S	11	170	Dal	3S	17	255
Cereals, Breads	6S	15	510	Cereals, Breads	12S	30	10,020
Vegetables	3-4 S	5	100	Vegetable	3-4S	5	100
Fruits	3S	1	180	Fruits	3S	1	100
Ghee Butter/oil	9S	0	405	Ghee Butter/oil	5S	0	225
Sugar	10S	0	200	Sugar Jam etc	5S	0	100
Total		75	2,508	Total		110	2,990

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Diet:-

A high protein, high calorie diet is prescribed. It must provide sufficient energy that is about 2500-3000 calories and 75-100g protein. A sample menu and foods included are given. In addition, if there has been lung haemorrhage, iron supplement with large intake of vitamin C is needed. As carotene are not utilised well, performed A must be included in the diet. In additions, vitamins A and vitamin B₆ supplements must also be given.

Isoniazid, a drug which is prescribed for Tuberculosis, is a vitamin B₆ antagonist. Hence vitamin B₆ supplements must be given to avoid its deficiency.

The drugs used in treatment may have adverse reaction, which needs to be treated promptly. One of the problem in the control of tuberculosis is the fact that patients tend to neglect medication, as soon as they feel a little better. This leads to its recurrence. Education of patients about the need for prolonged treatment and monitoring until complete recovery is an important part of the control of tuberculosis.

It is very important to take the drug and treatment consistently until the patient is fully back to normal health. Failure to do so results in recurrence of the disease; the resistant bacteria, which cause the second attack, are hardy and hardy to treat.

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Food Allowances for High Calorie, High Protein Diet
protein - 75 to 110g and kcal 2,500 to 3,100

Group	Foods	No. of servings, amount
I	Cereals, Breads	6-12 S (150-300g)
II	Milk, toned/cow's Egg SMP/cheese/Paneer/Meat Dal	800-1000 ml 1 no 50-100g 2-3 S (70-75g)
III and IV	vegetables Fruits	3-4 S 1 S leafy vegetables 1 S raw (salad) 2 S other + root vegetables 3- one of these citrus
V	Ghee, Butter, oil sugar, jam, murrabbas, Desserts such as kheer, pudding, custard, shreekhand etc.	5-10 S 10 S

A Sample Menu - Food included in 80-100g Protein Diet

Breakfast	Lunch
Orange	Rice
Eggs, scrambled	chappati
Milk toned - 1C	Dal
Bread / toast	Usal
Butter	Vegetable, bean
Murrabba	"potato"
Tea with milk sugar	Salad - tomato
	Dahi 1/2 C
Mild Morning	Dinner
1C lassi & banana	Bhakarai
	Rice
Afternoon pm Snack	Dal
Milk 1 C	L. vegetables
Egg sandwich	papad
Tea	Fruit salad

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Lungs Diseases

Lung disease refers to several types of diseases & disorder that prevent the lung from functioning properly.

Lung disease can affect respiratory function, or the ability to breathe, and pulmonary functions, or the which is how well lungs work.

There are many different lung diseases, some of which are caused by bacterial, viral or fungal infections. Other lung diseases are associated with environmental factors, including asthma, mesothelioma, and lung cancer.

Chronic lower respiratory disease is a set of conditions that includes chronic obstructive pulmonary disease (COPD), emphysema, and chronic bronchitis. Together chronic lower respiratory disease are a leading causing of death in the United States.

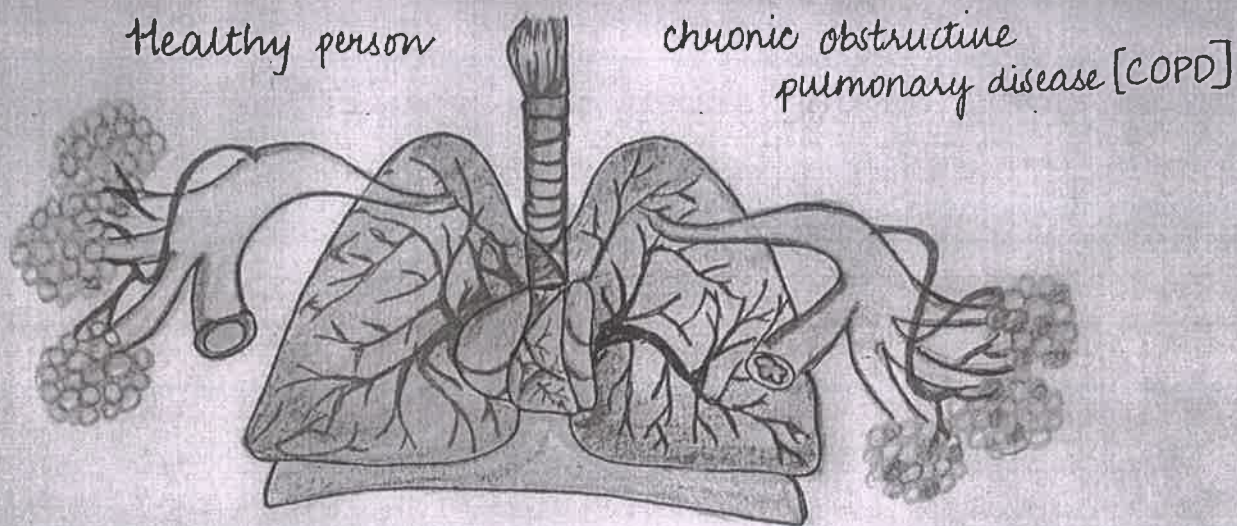
Respiratory diseases such as asthma and COPD involve a narrowing or blockage of airways that reduce air flow.

In other lung conditions - such as pulmonary fibrosis, a lung tissue scarring that can be caused by different factors, and pneumonia, a bacterial or viral infection in which air sacs fill with fluid, the lungs have reduced ability to hold air.

Lung cancer is a disease caused by the abnormal growth of cell. Though most lung cancer starts in the lungs. Some cases start in other parts of the body and spread to the lungs.

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Common Lungs disease

characteristics of COPD

Disease	Symptoms
Asthma	Increased responses of trachea and bronchi to stimuli, airways reduced, swelling of airway walls, excess mucus, wheezing, coughing, difficulty in breathing.
Chronic Bronchitis	excess mucus, inflamed airways, hyperactive bronchi, difficulty in breathing out.
Emphysema <i>more</i>	reduced lungs surface area, destruction of air sacs and air spaces in lungs, wheezing, chronic cough, chest shape distorted to barrel shape due to overwork and over-inflation of muscle.

Asthma Chronic Bronchitis & Emphysema

Asthma chronic bronchitis and emphysema are grouped together as chronic obstructive pulmonary disease (COPD). The group has a common characteristics, which is air-flow reduction or obstruction. A lot of attention is given to its pathophysiology, but the nutrition aspect of treatment does not receive adequate attention.

There are about 300 millions air-sac (alveoli) in the lungs. The symptoms of injury are noticed only after 60% of these air sacs are affected. The symptoms and possible causes of COPD are given.

A very large number of Indians suffers from these ailments. A large percentage of annual deaths from chronic bronchitis and emphysema are due to excessive smoking cigarettes or bidis.

Chronic obstructive pulmonary disease (COPD) is a type of obstructive lung disease characterized by long-term breathing problem and poor airflow. The main symptoms include shortness of breath and cough with sputum production. COPD is a progressive disease, mainly it typically worsen over time.

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Nutritional Status:-

Nutritional status is poor and weight loss is noted. Breathing difficulties do not permit normal eating. The sputum formed affects tastes adversely. Due to insufficient oxygen supply, peristalsis is reduced, resulting in poor appetite. In addition drugs given to improve breathing causes gastric irritation. In some cases, the low oxygen supply and side effects of drugs may lead to ulcer formation in the stomach in about 20-25% of the patients.

Treatment:

Avoidance of predisposing factors is an important part of cure. Dust allergy is one of the most common cause of asthma. The mites present in dust which have been found to be the cause, have to be removed by frequent washing of bed sheets and pillow, wet wiping of floors and fans and vacuum cleaning the books, papers and other articles, which the patients has to handle in daily life.

Medication that slow the progression of idiopathic pulmonary fibrosis. The medications pirfenidone and nintedanib may slow the rate of disease progression. Treatment related side effects may be significant. Talk through the pros and cons of these medications with your doctor.

Diet Therapy

The first aim in diet therapy is to prevent malnutrition or correct it if it has occurred, the energy needs increase many fold in comparison to normal needs of a person of comparable age and size. In extreme COPD cases, the energy used for breathing can be 10 times that of that of the normal rate.

Energy:-

Energy needs need to be met; but intake must be monitored to match the oxygen available. Thus one can avoid production of excess carbon dioxide which may cause acidosis. These patients have limited ability to excrete carbon dioxide, so diet must contain food with low respiratory quotient [RQ]. RQ of fat is 0.7, proteins 0.8 and carbohydrates 1.0. So non-protein calories can be provided by high fat to carbohydrate ratio, which will decrease carbon-dioxide production. Such formulas are available to treat severe cases.

A diet rich in protein is beneficial for people suffering from pneumonia. Foods like nuts, seeds, bean, white meat and cold water fishes like salmon and sardines have anti-inflammatory properties. They also in repairing the damaged tissue and building the new tissues in the body.

Plan of Meal Times

Rest before meal helps to improve intake of food. slow, deep breathing and relaxation practice helps eating. It also helps to avoid swallowing air, which can disrupt flow of food. Eating small meals slowly, wearing loose garments, not lying down, bending over or exercising soon after meals are helpful. Small frequent meals helps to reduce anorexia and decrease pressure on stomach due to fullness. It permits free movements of diaphragm and decreases fatigue.

Some drugs used to dilate bronchi have caffeine-like side effects, so caffeine should be avoided by patients on such drugs. To avoid undesirable side effects, it is advisable to take medicine with food.

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Topic

Date

Reference:-

- (i) - Book - Fundamentals of Foods, Nutrition and Diet Therapy
[by → S.R. Mudambi
M.V. Rajagopal]
- (ii) www.medlineplus.gov.in
- (iii) www.healthline.com
- (iv) www.wikipedia.org
- (v) www.google.com

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LS Core IV: Genetics and Evolutionary Biology

Course Learning Objective:

The focus of first half of this course is to familiarize students with basic principles of genetics and its application in understanding of real-life hereditary conditions. The second half of the course aims at imparting fundamental understanding of evolutionary processes and how it works in context of populations.

Learning Outcome:

Students would be able to understand the fundamentals of Mendelian inheritance and its exceptions. They would be able to appreciate various other gene interactions like co-dominance, incomplete dominance, lethal alleles and pleiotropy. Further, students would be able to describe the concepts of linkage and crossing over and their usage in constructing gene maps.

- Help students understand the basic principles of pedigree analysis and will be able to construct and analyse pedigree related problems for inherited traits.
- Students would gain knowledge on chromosomal and genetic mutation.
- Students would be able to describe the chromosomal sex-determination mechanisms and dosage compensation.
- Students would be able to understand the major events in history of life and major theories of evolution.
- Students would be able to appreciate the contribution of fossil studies in evolution and the phylogeny of horse.
- Students would be able to calculate the gene and allele frequency using Hardy-Weinberg law and analyse population genetics problems. T
- Students would understand the fundamental concepts of natural selection, speciation, mass extinction and macro-evolution.

Course Content:

Theory (Credit 4)

60 hrs

Unit 1: Mendelian Genetics and its Extension

10hrs

Mendel's work on transmission of traits, principles of inheritance, chromosome theory of inheritance, incomplete dominance and co-dominance, multiple alleles, lethal alleles, epistasis, pleiotropy, polygenic inheritance, sex linked inheritance, extra-chromosomal inheritance

Chapter-3, 4, 9, 23: *Klug & Cummings*

Unit 2: Linkage, Crossing Over and Chromosomal Mapping

6hrs

Linkage and crossing over, recombination frequency as a measure of linkage intensity, two factor and three factor crosses, interference and coincidence, somatic cell genetics - an alternative approach to gene mapping

Chapter-5: *Klug & Cummings*; Chapter-7: *Pierce*

Unit 3: Mutations

5hrs

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Chromosomal mutations (classification, types and examples), gene mutations (types and classification)

Chapter-8, 1: 5 Klug & Cummings

Unit 4: Sex Determination

2hrs

Chromosomal mechanisms, dosage compensation

Chapter-7: Klug & Cummings

Unit 5: History of Life and Introduction to Evolutionary Theories

5hrs

Major events in history of life, Lamarckism, Darwinism, Neo-Darwinism

Chapter-22: Campbell

Unit 6: Direct Evidences of Evolution

4hrs

Types of fossils, incompleteness of fossil record, dating of fossils, phylogeny of horse

Chapter-4: Futuyama

Unit 7: Population Genetics and Processes of Evolutionary Change

12hrs

Hardy-Weinberg law (statement, derivation and applications), evolutionary forces upsetting H-W equilibrium (concepts only), organic variations, isolating mechanisms, natural selection and its types, artificial selection

Chapter-25: Klug & Cummings

Unit 8: Species Concept

6hrs

Biological species concept (advantages and limitations), modes of speciation

Chapter-24: Campbell; Chapter-24: Strickberger

Unit 9: Macro-evolution

5hrs

Macro-evolutionary principles (example: Darwin's Finches)

Chapter-21: Futuyama

Unit 10: Extinction

5hrs

Mass extinction (causes, names of five major extinctions, K-T extinction in detail), role of extinction in evolution

Chapter-23: Ridley

Practical [Credits: 2]

1. Study of Mendelian inheritance and gene interactions (non-Mendelian inheritance) using suitable examples (chi-square analysis).
2. Study of linkage, recombination, gene mapping using data.
3. Study of human karyotypes (normal and abnormal).
4. Study of homology and analogy from suitable specimens/pictures.
5. Pedigree analysis of some human inherited traits.
6. Study and verification of Hardy-Weinberg Law by Chi-square analysis.
7. Visit to natural history museum and submission of report.

Teaching-Learning Process:

The whole course envisages a lot of student-teacher interactions. The real-life relevance of both genetics and evolution makes it necessary that the teaching-learning strategies should involve discussions among students, guided by the teacher. There is ample opportunity for students to analyse genetic and evolutionary data, and develop skills in various simulation exercises. Visit to a natural history museum could be suitably integrated with the course content.

Assessment Methods:

Following assessment methods are suggested:

- Summative assessment comprising of written tests and *viva-voce*.
- Formative assessment with exercises involving genetic data analyses, evolutionary processes' simulations, and linkage mapping.
- Written report on the learning of museum visit.

Keywords:

Mendelian inheritance, Multiple alleles, Penetrance, Epistasis, Pleiotropy, Gene, Chromosomal mapping, Recombination, Interference, Mutations, Mutagens, chromosomal aberrations, Sex determination, Dosage compensation, Nuclear inheritance, Mitochondrial inheritance, Polygenic inheritance, Complementation, Transposons, Ty elements, Ac-Ds elements.

Recommended Books:

- Snustad, D.P., Simmons, M.J. (2009). *Principles of Genetics*. V Edition. John Wiley and Sons In.
- Klug, W.S., Cummings, M.R., Spencer, C.A. (2012). *Concepts of Genetics*. X Edition. Benjamin Cumming
- Pierce B. A. (2012). *Genetics-A Conceptual Approach*. IV Edition. W. H. Freeman and Company

Suggested Readings:

- Russell, P. J. (2009). *Genetics- A Molecular Approach*. III Edition. Benjamin Cummings
- Griffiths, A.J.F., Wessler, S.R., Lewontin, R.C. and Carroll, S.B. *Introduction to Genetic Analysis*. IX Edition. W. H. Freeman and Co.
- Gardner, E.J., Simmons, M.J., Snustad, D.P. (2008). *Principles of Genetics*. VIII Edition. Wiley India

Online Tools and Web Resources:

- <https://swayam.gov.in/courses/4922-genetics-and-genomics>
- <https://swayam.gov.in/course/96-genetics>
- <https://www.coursera.org/learn/genetics-evolution>
- <https://onlinelearning.hms.harvard.edu/hmx/courses/hmx-genetics/>
- <https://learn.genetics.utah.edu/>

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Session 2020-2021

Course Name- B.Sc. (Prog.) Life Science Sem IV

Paper: CBCS- Genetics and Evolutionary Biology

Faculty: Dr. Sudhir Verma & Dr. Nitish Kumar Mahato

Project Report on virtual visit to any natural history museum

List of students

Sl. No.	Roll No	Student Name
1	19LFS7602	ANKIT SRIVASTAVA
2	19LFS7603	ANKITA KAPIL
3	19LFS7604	ANOOP YADAV
4	19LFS7605	ARPIT
5	19LFS7606	ARVIND
6	19LFS7607	ASHISH
7	19LFS7608	ASHUTOSH
8	19LFS7609	AYUSHI SINGH
9	19LFS7610	BARBIE NAGPAL
10	19LFS7611	DIVYA SHARMA
11	19LFS7612	GEETA RANI
12	19LFS7613	HARITA
13	19LFS7615	HIMANSHI DALAL
14	19LFS7617	KM SWETA SINGH
15	19LFS7619	MANDAVI SHUKLA
16	19LFS7621	NEHA YADAV
17	19LFS7622	NISHITA BHARDWAJ
18	19LFS7623	PORISHMITA KUTUM
19	19LFS7624	PRASHANT SAKIT
20	19LFS7625	SAKSHI
21	19LFS7626	SAMEEKSHA JHA
22	19LFS7627	SHAILJA SINGH
23	19LFS7628	SHASHI KANT SHEKHAR
24	19LFS7629	SONAKSHI SAXENA
25	19LFS7631	VERSHA PANDEY
26	19LFS7632	VIKKY SINGH
27	19LFS7634	YOGITA GAUR
28	19LFS7636	MANPREET LOCHAB
29	19LFS7637	ANJALI TYAGI
30	19LFS7639	SUMAN

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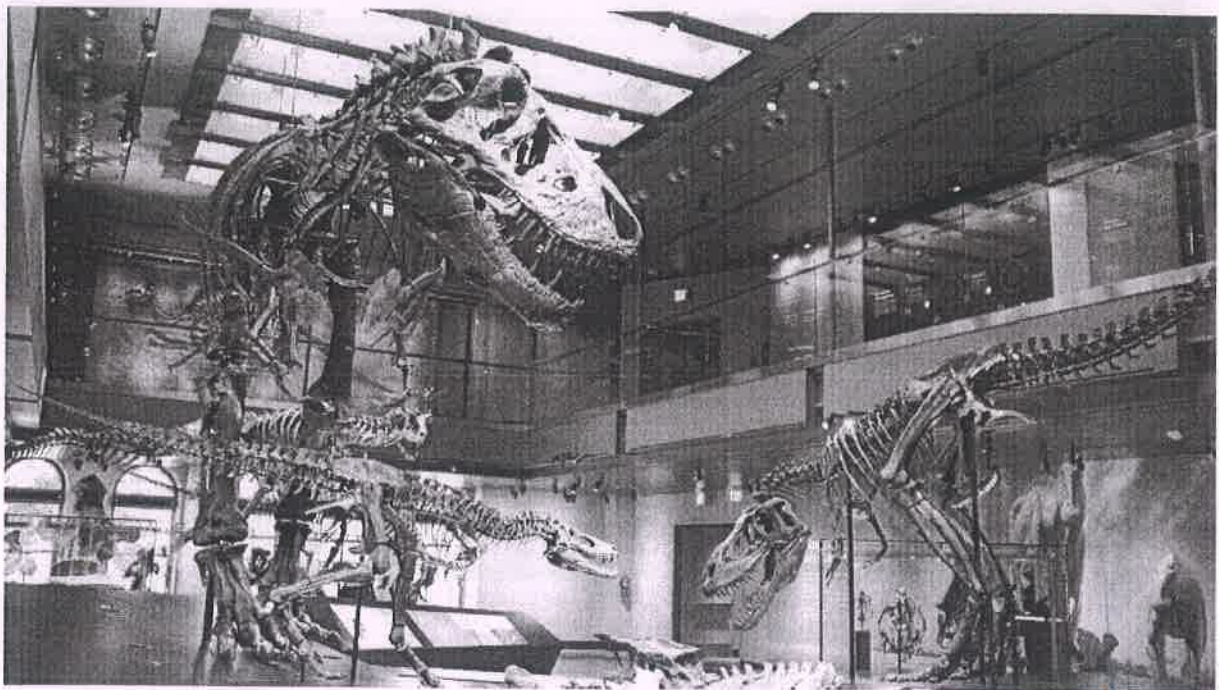
31	19LFS7641	SAHIL KHURANA
32	19LFS7642	YOGITA TOMER

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**SUBMITTED TO: DR. SUDHIR VERMA
&
DR. NITISH MAHATO**

**SUBMITTED BY: ANKITA KAPIL
19LFS7603
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IMPORTANCE OF NATIONAL HISTORY

MUSEUMS IN RESEARCH

- It maintains a record of the zoological and botanical species and paleontological specimens.
- It safeguards different species.
- Specimens of the species provide clues to the pattern of the past and present changes in environment and also to predict the future changes.
- It helps in establishing baseline for the comparison of different species.
- Museum specimens form the base for research on evolution, speciation and distribution.

BENEFITS OF NATURAL HISTORY

MUSEUM

- A primary role of museums is to engage and educate the community. Museum exhibits inspire interest in an area of study items, time period or any idea- but there's more going on in museums in regard to education than one might think.
- Museums are examples of informal learning environments, which means they are devoted primarily to informal education- a lifelong process whereby individuals acquire attitudes, values, skills and knowledge from daily experience and the education in influence and resources in his or her environment.
- Museums provide inspiration through personal connections with visitors and are not only on-site and through physical community outreach efforts. Some even manage to connect through their social networks.
- Museums offer opportunities for children to compare and contrast what is important for them which leads to higher critical thinking skills.

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Natural History Museum of Los Angeles

The Natural History Museum of Los Angeles County is the largest natural and historical museum in the western United States. Its collections include nearly 35 million specimens and artifacts and cover 4.5 billion years of history. This large collection is comprised not only of specimens for exhibition, but also of vast research collections housed on and offsite.

The museum is associated with **two** other museums in Greater Los Angeles: the Page Museum at the La Brea Tar Pits in Hancock Park and the William S. Hart Ranch and Museum in Newhall. The three museums work together to achieve their common mission: "to inspire wonder, discovery, and responsibility for our natural and cultural worlds."

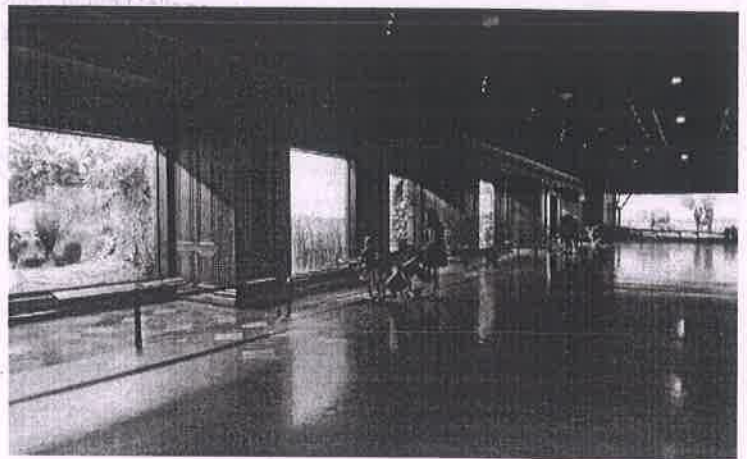
ABOUT THE MUSEUM

NHM opened in Exposition Park, Los Angeles, California, United States in 1913 as The Museum of History, Science, and Art. The moving force behind it was a museum association founded in 1910. Its distinctive main building with fitted marble walls and domed and colonnaded rotunda, is on The National Register of Historic Places. Additional wings opened in 1925, 1930, 1960, and 1976.

The museum was divided in 1961 into The Los Angeles County Museum of History and Science and the Los Angeles County Museum of Art (LACMA). LACMA moved to new quarters on Wilshire Boulevard in 1965, and the Museum of History and Science was renamed The Los Angeles County Museum of Natural History. Eventually, the museum renamed itself again, becoming The Natural History Museum of Los Angeles County.

ARCHITECTURE

Over the years, the museum has built additions onto its original building. Originally dedicated when The Natural History Museum opened its doors in 1913, the rotunda is one of the museum's most elegant and popular spaces. Lined with marble columns and crowned by a stained glass dome, the room is also the home of the very first piece of public art funded by Los



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Angeles County, a Beaux-Arts statue by Julia Bracken Wendt entitled *Three Muses*, or *History, Science and Art*. This hall is among the most distinctive locales in Los Angeles and has often been used as a filming location.

COLLECTIONS

Anthropology

The Anthropology Department of the Natural History Museum of Los Angeles County curates archaeological and ethnographic collections collected by and donated to the Museum.

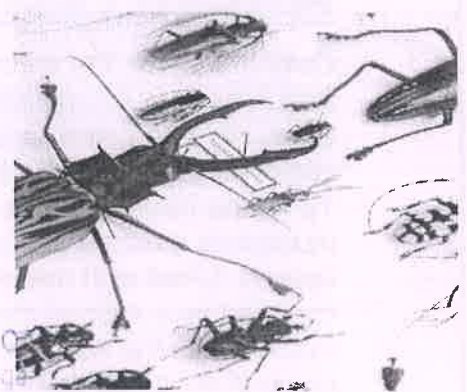
The Archaeology Collection includes approximately 100,000 ancient artifacts. The majority of the collection is from the Americas, with an emphasis on the western United States and Latin America. Tools, decorative and utilitarian objects are included in the vast assemblage of materials in addition to samples of shell, animal bone, soil, and plant remains that can be used to study past human adaptations.



The Archaeology Collection includes approximately 100,000 ancient artifacts. The majority of the collection is from the Americas, with an emphasis on the western United States and Latin America. Tools, decorative and utilitarian objects are included in the vast assemblage of materials in addition to samples of shell, animal bone, soil, and plant remains that can be used to study past human adaptations.

Entomology

With over 800,000 described species—more than half of all known living organisms—Insects are the most diverse group of animals on Earth. NHMLAC's entomology collection, one of the largest at the museums, has approximately 6 million specimens of insects, spiders, and other terrestrial arthropods. It also have a large and growing collection of insects in amber, about 3,000 pieces.



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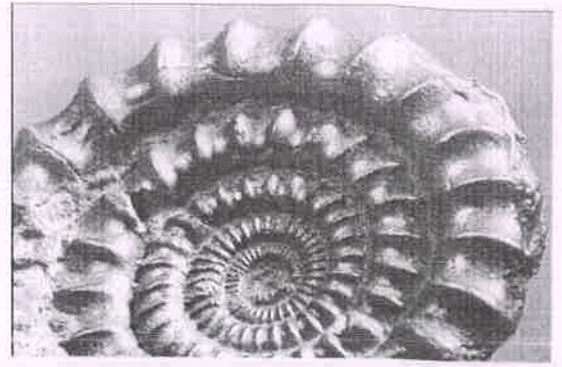
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Invertebrate Paleontology

The Invertebrate Paleontology Department of the Natural History Museum of Los Angeles County houses fossils of animals that lack a backbone (non-vertebrates), such as arthropods (e.g., crabs and shrimps), mollusks (e.g., clams and snails), echinoderms (e.g., sand dollars and sea urchins), and corals. The Invertebrate Paleontology

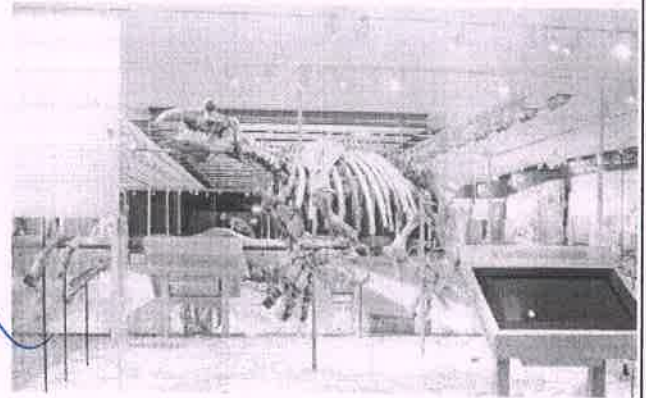
Department also houses collections of ichnofossils (traces of previously living organisms), which include track ways, burrows, borings, and coprolites (fecal pellets).

The Invertebrate Paleontology collections are the third largest in the country, with an estimated 6-10 million specimens. These collections span the Phanerozoic, but represent the world's largest collection of Cretaceous-Cenozoic mollusks from the Pacific Rim.



Vertebrate Paleontology

NHMLAC exhibits over 150,000 fossil vertebrate specimens of all shapes and sizes including representatives of every major group of vertebrates from around the world and spanning in age from the Ordovician to the late Pleistocene.



Marine collection

The Marine Biodiversity Center is the Natural History Museum of Los Angeles County's (NHMLAC) consists of the stunning variety of worms to crabs, jellyfish to sponges, sea stars to squid. Collections come to the museum from a variety of research projects and government agencies.



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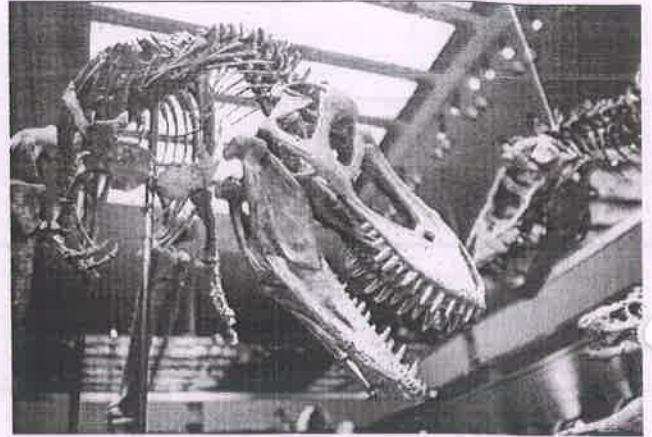
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These collections document and archive the particular diversity of the invertebrate fauna both regionally and worldwide. Preserving the specimens and the data associated with them is a challenging and ongoing responsibility of the museums.

Dinosaur's collection

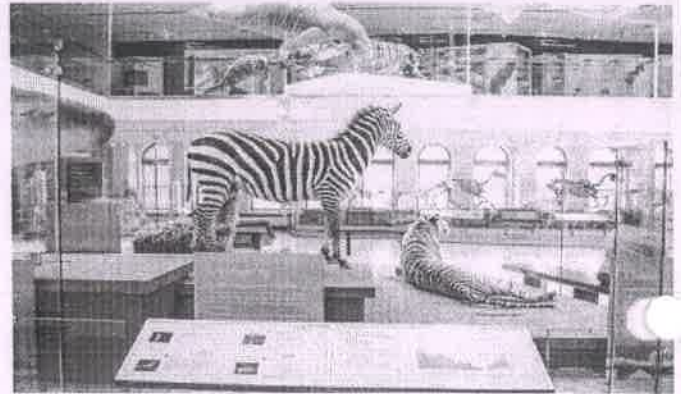
The Dinosaur Institute (DI) houses the museum's collection of Mesozoic tetrapods (four-limbed vertebrates), dating from 250 million years ago to 65.5 million years ago.

This collection includes fossils of dinosaurs spanning the Mesozoic Era, as well as fossils of other tetrapods that lived alongside the dinosaurs, such as flying and marine reptiles, crocodiles, turtles, amphibians, and early mammals.



Mammalogy

This area consist of 98,000 specimens—skins, skulls, skeletons, tanned hides, and fluid-preserved specimens of terrestrial and marine mammals. Our strengths include: bats, cetaceans, African ungulates, and local (Southern California) mammal species.



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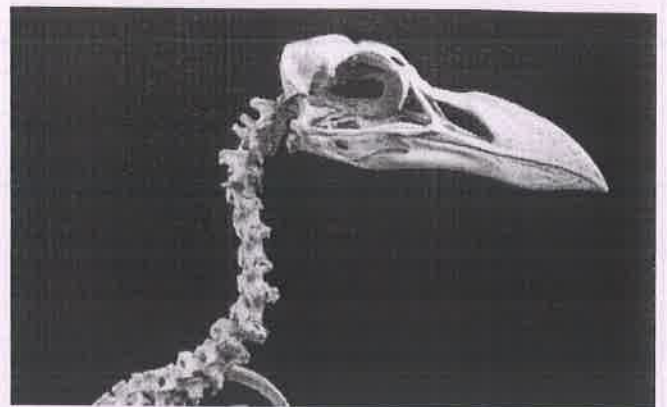
Echinoderms

The museum became an internationally recognized center of echinoderm studies with the appointment of the first Echinoderms Curator, and with the accrual of major collections that elevated the museum's holdings to the third largest in the United States. The species include sea stars, sea urchins, sea cucumbers, brittle stars, feather stars.



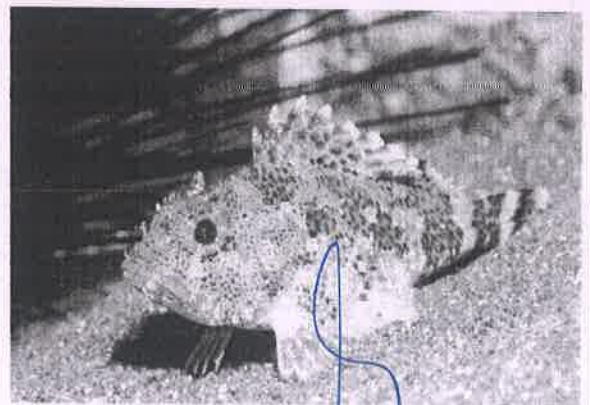
Ornithology

Ornithology, the study of birds, is one of the founding disciplines of the Natural History Museum. At the core of the program is a research collection of 121,000 bird specimens, representing over 5,400 species. Our collections are particularly strong for North America, Africa, South America, and the Pacific Ocean. The bird skeleton collection, representing over 17,000 individuals, is among the three largest in western North America and is an important resource for the museum's well-known studies of fossil birds.



Ichthyology

The Natural History Museum's fish collection is one of ten internationally recognized ichthyological collections in the United States. The collection contains nearly three million catalogued specimens, including representatives of most fish families. It also holds special collections of fish eggs and larvae, otoliths, frozen tissues, skeletons, cleared and stained specimens, and radiographs, in addition to an extensive book and reprint library.

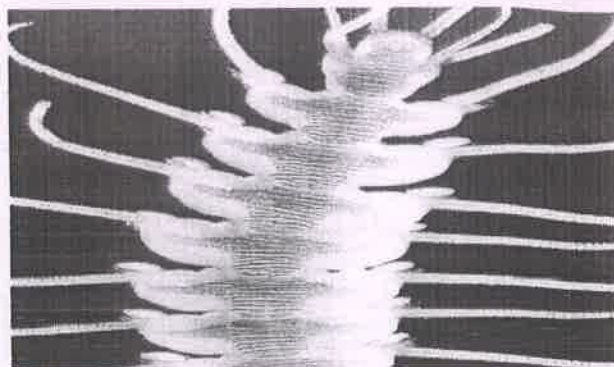


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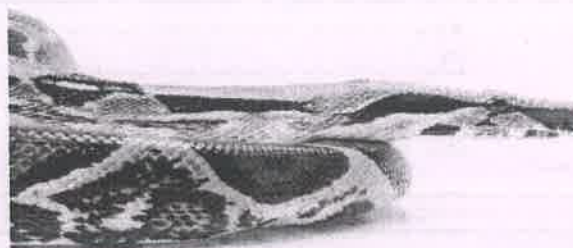
Polychaetous Annelids

Among these over 80 plus polychaete families and more than 10,000 described species there is an amazing array of body forms and sizes.



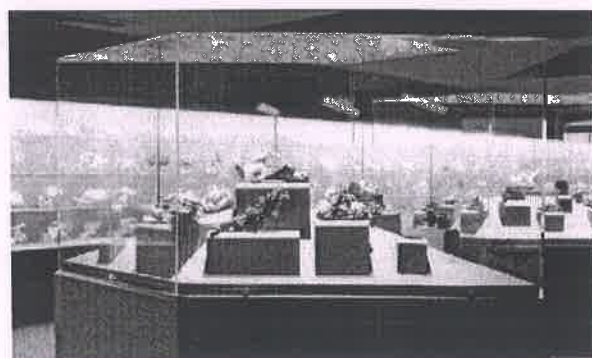
Herpetology

NHMLAC's collection of amphibians and reptiles contains approximately 190,000 catalogued specimens from around the globe. This includes approximately 3,600 skeletal preparations and 545 cleared and stained specimens.



Mineral Sciences

There are approximately 150,000 specimens, including more than 140,000 minerals, nearly 100,000 of which are micromounts, 3,000 rocks, 3,000 gems, and 50 meteorites.



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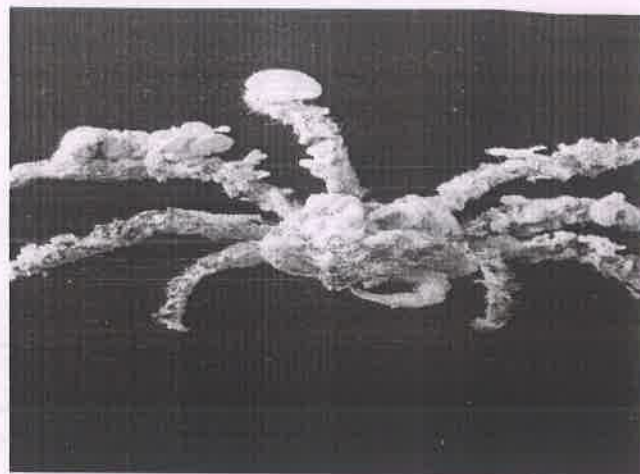
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Crustacea

NHMLAC's collections have an estimated 140,000 of crustaceans.



RELEVANT INFORMATION RELATED TO OUR SYLLABUS

Fossils of animals or plants to study species that have been extinct for thousands or millions of years (including dinosaurs!). Others use information from species that exist today to study the present and the past together, often using tools like genomics.

With fossils, with modern specimens, or with both, we can learn more about the history of life on Earth, how species past and present lived or went extinct, and how they're related to each other.

BIBLIOGRAPHY

- NHMLAC.ORG

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LS DSE 3: Animal Biotechnology

Course Learning Objective:

Biotechnology is the advanced branch of biological sciences which mostly deals with technologies that use living organisms or their components to produce products for specific use. The present paper attempts to give a wholesome idea of biotechnology at a basic level. It provides a tool kit in the form of a number of various techniques and processes developed over time to solve problems involving primarily human welfare with focus on health and medicine. It makes one aware of the scope of this field which encompasses almost every field of science like engineering, research, commercialization and academics. It equips students with basic techniques of biotechnology which are a must for everyone interested in pursuing a career in biotechnology. This paper also attempts to illustrate the role of biotechnology by giving very common examples as to how to use these tools to solve a specific problem in either of medicine, agriculture or food technology.

Course Learning Outcome:

Upon completion of the course, students will be able to:

- Use or demonstrate the basic techniques of biotechnology; like DNA isolation, PCR, transformation, restriction, digestion etc.
- Devise a strategy to manipulate genetic structure of an organism for the improvement in any trait or its well-being based on the techniques.
- Understand the ethical and social issues raised regarding GMOs.
- Apply the knowledge for designing a proposal for research project.

Course Content:

Theory [Credits: 4]

60 hrs

Unit1: Concept and Scope of Biotechnology
(Chapter 1: Glick & Pasternak)

4 hrs

Unit2: Molecular Techniques in Gene manipulation

28 hrs

Cloning vectors: Plasmids, Cosmids, Phagemids, Lambda Bacteriophage, M13, BAC, YAC, MAC and Expression vectors (characteristics); Restriction enzymes: Overview., Nomenclature, detailed study of Type II; DNA modification enzymes: Alkaline phosphatase, Terminal transferase, Reverse transcriptase, T4 DNA kinase, ligases CRISPR Cas-9 (as genome editing tool); Transformation techniques; Calcium chloride and electroporation method; Construction of genomic and cDNA libraries and screening by colony and plaque hybridization; cDNA library screening by immunological methods; Southern, Northern and Western blotting; DNA sequencing: Sanger and NGS (illumine) methods; Polymerase Chain Reaction (RT-PCR, real time PCR), and DNA microarray
(Chapter 3 and 4: Glick & Pasternak)

Unit3: Genetically Modified Organisms

18 hrs

Production of cloned and transgenic animals: Nuclear Transplantation (cloning of dolly as an example), Retroviral Method, DNA microinjection. Applications of transgenic animals: Production of pharmaceuticals, Production of transgenic plants: *Agrobacterium* mediated transformation. Applications of transgenic plants: insect resistant plants, and edible vaccines and golden rice as examples.

(Chapter 21: Glick & Pasternak; Chapter 24: Watson)

Unit4: Applications of Biotechnology

10 hrs

Meta-genomics: an introduction, Molecular diagnosis of genetic diseases (Cystic fibrosis, Sickle cell anaemia) Recombinant DNA in medicines: Recombinant insulin and human growth hormone, Gene therapy.

(Chapter 9: Glick & Pasternak; Chapter 23: Watson; Chapter 26: Primrose and Twyman)

Practical [Credits: 2]

1. Genomic DNA isolation from *E. coli*
2. Plasmid DNA isolation (pUC 18/19) from *E. coli*
3. Restriction digestion of lambda DNA with *EcoRI* and *HindIII* (Demonstration).
4. Construction of circular and linear restriction map from the data provided.
5. Preparation of competent cells and their transformation by CaCl_2 method. Calculation of transformation efficiency from the data/plate provided.
6. To study following techniques through photographs:
7. Southern Blotting (Demonstration)
8. Western Blotting
9. DNA Sequencing (Sanger's Method).
10. PCR (demonstrations).
11. DNA fingerprinting and case studies (photographs only to study crime, or paternity cases).
12. Project report on Animal Cell Culture/visit to a biotechnology laboratory or industry.

Teaching and Learning Process:

Students will be taught using traditional chalk and talk method blended with e-learning tools. Paper presentations and reports by students on recent Biotechnology developments will enhance their learning. Quizzes on Biotechnology, Projects-based discussions, Hands-on experiments, Practical demonstrations and Visit to nearby Biotechnology laboratories, pharmaceutical industries and companies will help them learn about modern advancements.

Assessment Methods:

- **Theory component** would be assessed by written examination, and internal assessment based on performance in tests, class presentations and Group discussion and attendance,
- **Practical Component** would be assessed by Practical examination at the end of term which would include continuous evaluation of student, project report, viva-voce and Practical records.

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Keywords:

Biotechnology, rDNA technology, Genetically Modified Organisms (GMOs), Transformation, Cloning vectors, Restriction endonucleases, PCR, DNA microarrays, DNA Sequencing, Gene Therapy

Recommended Books:

- Glick, B.R. and Pasternak, J.J. (2009) *Molecular Biotechnology - Principles and Applications of Recombinant DNA*. IV Edition, ASM press, Washington, USA.
- Primrose S. B. and Twyman R.M. (2006) *Principles of Gene Manipulation and Genomics*. VII Edition. Blackwell publishing
- Watson, J.D., Myers, R.M., Caudy, A. and Witkowski, J.K. (2007) *Recombinant DNA- Genes and Genomes- A Short Course*. III Edition, Freeman and Co., N.Y., USA.

Suggested Readings:

- Brown, T.A. (1998) *Molecular Biology Labfax II: Gene Cloning and DNA Analysis*. II Edition, Academic Press, California, USA.
- Griffiths, A.J.F., J.H. Miller, Suzuki, D.T., Lewontin, R.C. and Gelbart, W.M. (2009) *An Introduction to Genetic Analysis*. IX Edition. Freeman and Co., N.Y., USA.
- Snustad, D.P. and Simmons, M.J. (2009) *Principles of Genetics*. V Edition, John Wiley and Sons Inc.

Online Tools and Web Resources:

- <http://illl.du.ac.in/>
- <https://www.coursera.org/learn/genes>
- Swayam (MHRD) Portal

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DEEN DAYAL UPADHYAYA COLLEGE

University of Delhi

Course Name : B.Sc. Life Science Sem. 5

Academic year : 2020-2021

Subject Name : [42237903] CBCS-Animal Biotechnology(Lab)

Faculty Name : KAMLESH KUMARI, KAMLESH KUMARI-a, SHAILLY ANAND

Sr. No	Roll No	Student Name	Total (Class Test/Pres entation)	Class Test/Pres entation Marks	Lect. Att.	Tut. Att.	Total (L+T)	Eca Benefit Given (L+T)	Adj Att	Adj Att(%)	Att Marks	Ass	Total(Ass ign Marks)	Assign Marks	Class Test	Attendan ce	Total Marks
1	18LFS7801	AAKASH KUMAR	0.00/0	0.00/10	28/54	0/0	28/54	0	70/109	64.22	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
2	18LFS7802	AAYUSHI KASHYAP	0.00/0	0.00/10	28/54	0/0	28/54	0	62/109	56.88	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
3	18LFS7843	AMAN CHALIA	0.00/0	0.00/10	50/54	0/0	50/54	0	105/109	96.33	5/5	0/0	0.00/10	0.00/10	0.00/10	5/5	5/25
4	18LFS7835	ANISHA SHARMA	0.00/0	0.00/10	47/54	0/0	47/54	0	100/109	91.74	5/5	0/0	0.00/10	0.00/10	0.00/10	5/5	5/25
5	18LFS7803	ANJALI	0.00/0	0.00/10	52/54	0/0	52/54	0	107/109	98.17	5/5	0/0	0.00/10	0.00/10	0.00/10	5/5	5/25
6	18LFS7836	DARSHNA PANDEY	0.00/0	0.00/10	54/54	0/0	54/54	0	109/109	100.00	5/5	0/0	0.00/10	0.00/10	0.00/10	5/5	5/25
7	18LFS7804	DEEPAK ARORA	0.00/0	0.00/10	52/54	0/0	52/54	0	106/109	97.25	5/5	0/0	0.00/10	0.00/10	0.00/10	5/5	5/25
8	18LFS7837	DILIP KUMAR MEENA	0.00/0	0.00/10	45/54	0/0	45/54	0	88/109	80.73	4/5	0/0	0.00/10	0.00/10	0.00/10	4/5	4/25
9	18LFS7805	DISHA SHARMA	0.00/0	0.00/10	50/54	0/0	50/54	0	105/109	96.33	5/5	0/0	0.00/10	0.00/10	0.00/10	5/5	5/25
10	18LFS7806	GARIMA	0.00/0	0.00/10	52/54	0/0	52/54	0	107/109	98.17	5/5	0/0	0.00/10	0.00/10	0.00/10	5/5	5/25
11	18LFS7807	HUKAM SINGH MEENA	0.00/0	0.00/10	42/54	0/0	42/54	0	96/109	88.07	5/5	0/0	0.00/10	0.00/10	0.00/10	5/5	5/25
12	18LFS7847	KHUSHI BARSIWAL	0.00/0	0.00/10	38/54	0/0	38/54	0	79/109	72.48	2/5	0/0	0.00/10	0.00/10	0.00/10	2/5	2/25
13	18LFS7848	LAKSHAY JEET	0.00/0	0.00/10	54/54	0/0	54/54	0	107/109	98.17	5/5	0/0	0.00/10	0.00/10	0.00/10	5/5	5/25
14	18LFS7849	LALIT BHATIA	0.00/0	0.00/10	38/54	0/0	38/54	0	83/109	76.15	3/5	0/0	0.00/10	0.00/10	0.00/10	3/5	3/25
15	18LFS7810	MANNAT NEHRA	0.00/0	0.00/10	45/54	0/0	45/54	0	96/109	88.07	5/5	0/0	0.00/10	0.00/10	0.00/10	5/5	5/25
16	18LFS7811	MAYANK VASHISHTHA	0.00/0	0.00/10	45/54	0/0	45/54	0	100/109	91.74	5/5	0/0	0.00/10	0.00/10	0.00/10	5/5	5/25
17	18LFS7814	NAINCY	0.00/0	0.00/10	51/54	0/0	51/54	0	106/109	97.25	5/5	0/0	0.00/10	0.00/10	0.00/10	5/5	5/25
18	18LFS7850	NIKITA	0.00/0	0.00/10	50/54	0/0	50/54	0	105/109	96.33	5/5	0/0	0.00/10	0.00/10	0.00/10	5/5	5/25
19	18LFS7816	POONAM	0.00/0	0.00/10	54/54	0/0	54/54	0	105/109	96.33	5/5	0/0	0.00/10	0.00/10	0.00/10	5/5	5/25
20	18LFS7818	PRATIBHA YADAV	0.00/0	0.00/10	51/54	0/0	51/54	0	106/109	97.25	5/5	0/0	0.00/10	0.00/10	0.00/10	5/5	5/25
21	18LFS7819	PRIYANKA YADAV	0.00/0	0.00/10	52/54	0/0	52/54	0	107/109	98.17	5/5	0/0	0.00/10	0.00/10	0.00/10	5/5	5/25

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(Dr. Kamlesh Kumari)

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22	18LFS7820	PRIYANSHI	0.00/0	0.00/10	37/54	0/0	37/54	0	83/109	76.15	3/5	0/0	0.00/10	0.00/10	0.00/10	3/5	3/25
23	18LFS7821	RAHUL	0.00/0	0.00/10	45/54	0/0	45/54	0	95/109	87.16	5/5	0/0	0.00/10	0.00/10	0.00/10	5/5	5/25
24	18LFS7822	RENU MAANZU	0.00/0	0.00/10	49/54	0/0	49/54	0	100/109	91.74	5/5	0/0	0.00/10	0.00/10	0.00/10	5/5	5/25
25	18LFS7823	RICHA PAL	0.00/0	0.00/10	50/54	0/0	50/54	0	104/109	95.41	5/5	0/0	0.00/10	0.00/10	0.00/10	5/5	5/25
26	18LFS7825	RITIKA	0.00/0	0.00/10	47/54	0/0	47/54	0	95/109	87.16	5/5	0/0	0.00/10	0.00/10	0.00/10	5/5	5/25
27	18LFS7851	RITIKA	0.00/0	0.00/10	49/54	0/0	49/54	0	102/109	93.58	5/5	0/0	0.00/10	0.00/10	0.00/10	5/5	5/25
28	18LFS7839	SAKSHI PATHAK	0.00/0	0.00/10	51/54	0/0	51/54	0	106/109	97.25	5/5	0/0	0.00/10	0.00/10	0.00/10	5/5	5/25
29	18LFS7828	SEEMA KUMARI	0.00/0	0.00/10	48/54	0/0	48/54	0	99/109	90.83	5/5	0/0	0.00/10	0.00/10	0.00/10	5/5	5/25
30	18LFS7829	SHILPI	0.00/0	0.00/10	52/54	0/0	52/54	0	107/109	98.17	5/5	0/0	0.00/10	0.00/10	0.00/10	5/5	5/25
31	18LFS7852	SNEHA KUMARI	0.00/0	0.00/10	54/54	0/0	54/54	0	105/109	96.33	5/5	0/0	0.00/10	0.00/10	0.00/10	5/5	5/25
32	18LFS7841	SRISHTI	0.00/0	0.00/10	48/54	0/0	48/54	0	94/109	86.24	5/5	0/0	0.00/10	0.00/10	0.00/10	5/5	5/25
33	18LFS7830	SUSMITA	0.00/0	0.00/10	47/54	0/0	47/54	0	96/109	88.07	5/5	0/0	0.00/10	0.00/10	0.00/10	5/5	5/25
34	18LFS7831	VANSHIKA SAINI	0.00/0	0.00/10	49/54	0/0	49/54	0	100/109	91.74	5/5	0/0	0.00/10	0.00/10	0.00/10	5/5	5/25
35	18LFS7832	VIDHI RAJ	0.00/0	0.00/10	48/54	0/0	48/54	0	99/109	90.83	5/5	0/0	0.00/10	0.00/10	0.00/10	5/5	5/25

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Name – Deepak Arora

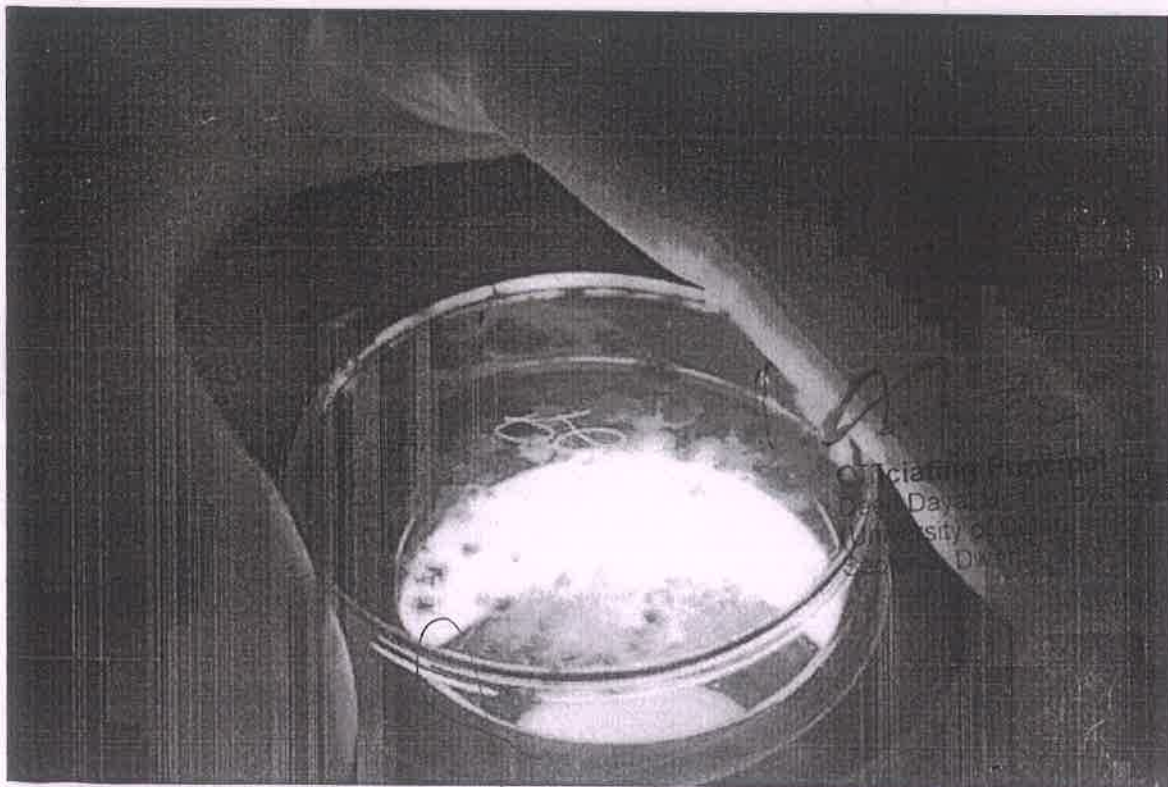
Course – Bsc. Life sciences

Roll no – 18LS7804

University Roll no. – 18015583004

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**PROJECT REPORT ON ANIMAL CELL
CULTURE BIOTECHNOLOGY**



THE ANIMAL CELL CULTURE : MIRACLE FOR THE BIOTECHNOLOGY

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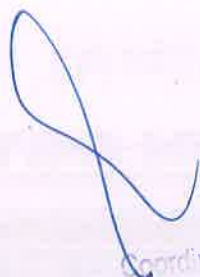
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Acknowledgment

I would like to express my special thanks of gratitude to my teacher Dr. Kamlesh Kumari (ASP, Zoology Department, University of Delhi) who gave me the golden opportunity to do this wonderful project on the mentioned topic, which also helped me in doing a lot of Research and i came to know about so many new things I am really thankful to them.

Secondly i would also like to thank my parents and friends who helped me a lot in finalizing this assignment within the limited time frame.



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ANIMAL CELL CULTURE

At the present time animal cell culture is more significant and multifarious application tool for current research streams. A lot of field assorted from animal cell culture such: stem cell biology, IVF technology, cancer cell biology, monoclonal antibody production, recombinant protein production, gene therapy, vaccine manufacturing, novel drug selection and improvement.

HISTORY

Tissue Culture is a general idiom used for the removal of cells, tissues, or organs from an animal and their next placement into an artificial environment conducive to growth. Tissue culture is capable of clear as the growth of tissue or cell separate from the organism. It is also known as techniques of keeping tissues alive and growing in an appropriate culture medium. Growing tissues of living organism outside the body is made possible in an appropriate culture medium, containing mixture of nutrient either in solid or liquid form. At present remarkable association in the field of animal cell culture done by researchers: Human insulin became the earliest recombinant protein to be approved as a therapeutic agent, Human growth hormone produced from recombinant bacteria was established in favor of beneficial use, plasminogen activator (tPA) early recombinant animal cells became commercially accessible.









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Sector-3, Dwarka, New Delhi-78

YEAR	SIGNIFICANT WORK	SCIENTIST
1885	Maintained embryonic chick cells in a saline culture	ROUX
1897	Demonstrated the survival of cells isolated from blood and connective tissue in serum and plasma	LOEB
1907	Cultivated frog nerve cells in a lymph clot held by the "hanging drop" method and observed the growth of nerve fibers in vitro for several weeks	HARRISON
1911	First liquid media consisted of sea water, serum, embryo extract, salts and peptones	LEWIS AND LEWWIS
1916	Proteolytic enzyme trypsin for the subculture of adherent cells	ROUSAND JONES
1923	T-flask as the first specifically designed cell culture vessel	CARREL AND BAKER
1948	Isolated mouse I fibroblasts which formed clones from single cells	EARLE
1949	Polio virus could be grown on human embryonic cells in culture	ENDERS
1952	Continuous cell line from a human cervical carcinoma known as hela (helen lane) cells	GEY
1955	Nutrient requirements	EAGLE
1964	Hat medium for cell selection	LITTLEFIELD
1975	First hybridoma capable of secreting a monoclonal antibody	KOHLAR AND MILSTEIN

The above table shows the data of work of scientist regarding animal cell culture.

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Laminar Flow Hoods









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 Principal

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Sector-3, Dwarka, New Delhi-78

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A Laminar flow hood used for culturing the cells under nourishment.

CO2 INCUBATORS

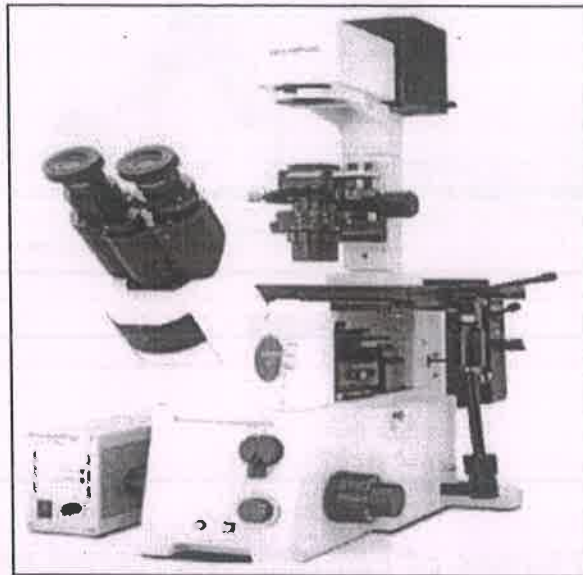
Cells are grown-up in an atmosphere of 5% - 10% CO₂ because the medium used is buffered with sodium bicarbonate/carbonic acid and the pH must be firmly maintained. Cells are thought to left out of the incubator for as undersized time as possible and the incubator doors should not be opened for very long. The humidity must also be maintained for individuals cells' growing in tissue culture dishes so a pot of water is kept filled at the entire times.



Figure : CO2 Incubators

MICROSCOPES

Inverted phase contrast microscopes used for visualizing the cells. Microscopes must be kept enclosed and the lights



turned down at the same time as not in use. Because the cells are found on bottom of the tissue culture flask that is by Use of an inverted microscope is important to absorb cell culture *in vitro*. The culture media remains above the growing cells plats. If such plates are put over the stage of an ordinary microscope, the growing cells, at bottom cannot be observed. Therefore, the inverted microscope is used for the intention.

VESSELS

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Anchorage dependent cells have compulsory of a non- toxic, biologically inert, and optically visible surface that will allow cells to attach and allow improvement for the duration of growth. These consist of petri dishes, multi- well plates, microtiter plates, roller bottles, and screwcap flasks—T-25, T-75, T-150 (cm² of surface area).

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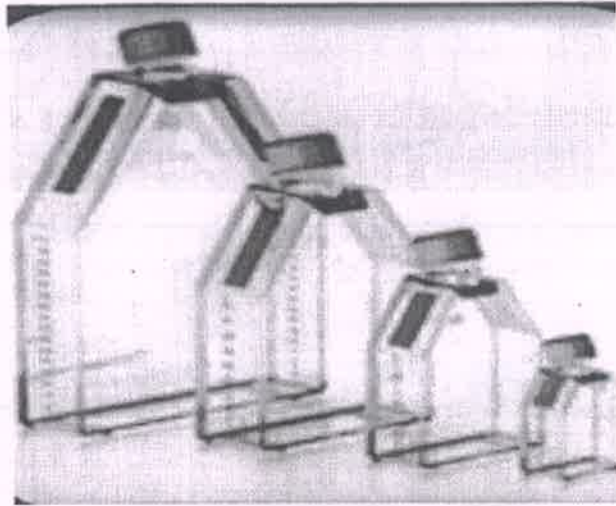


Figure : Vessels

CENTRIFUGES

There are different types of centrifuges based on speed. A low speed centrifuge is needed for most of the cell culture. The separated beads of cells are disrupted simply by a gentle breaking action. Frequently cells are centrifuged at 20°C because of motor evolves heat which rises the temperature; therefore make use of low temperature centrifugation is preferred so that the cells should not be exposed to elevated temperature.



Figure : Centrifuger

FREEZER

Freezing or solidification is a phase change in which a liquid turns into a solid when its temperature is lowered under its freezing point. The reverse null and void procedure is melting. Human gametes and embryos can survive freezing and are viable for up to 10 years, a process known as cryopreservation. Investigational attempts to freeze human beings for later revitalization are known as cryonics.

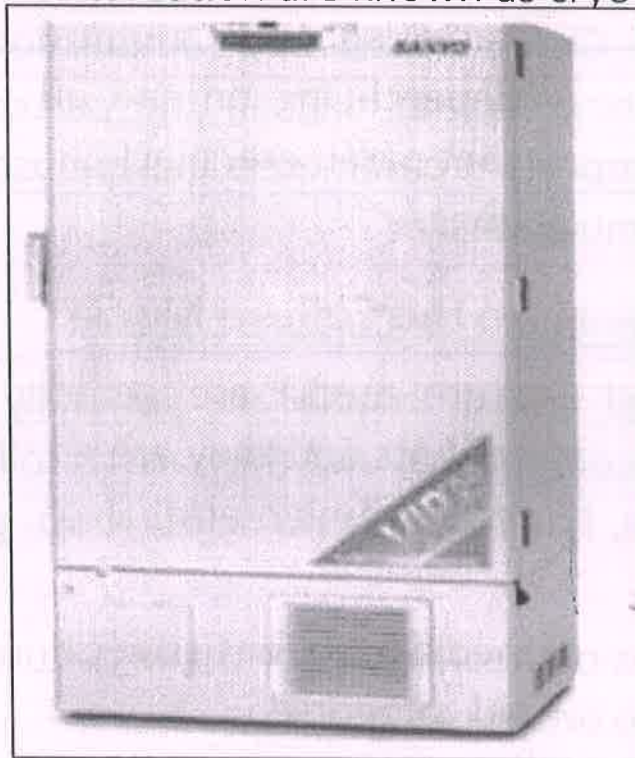


Figure : Freezer

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SUBSTRATE FOR THE DEVELOPMENT OF CELLS

There are numerous types of vertebrate cell that have need of support for their development in vitro otherwise they will not grow appropriately. Such cell are called anchorage dependent cell. Used for that reason a large number of substrate which possibly will necessitate for their enlargement (e.g. glass, palladium, metallic surfaces), non-adhesive (e.g. agar-agarose, etc.).

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MEDIA REQUIREMENT FOR CELL CULTURE

When artificial environment formed in the laboratory is in generally known at the same time as media. A media comprises an appropriate source of energy for the cells which they can easily utilize and compounds which regulate the cell cycle. The choice of media is cell type specific and often empirical and there is no "all purpose" medium. It should provide many nutrients, buffering capacity, isotonic, and should be sterile. Characteristics and compositions of the cell culture media vary depending on the particular cellular Requirements. Important parameters include osmolarity, pH, and nutrient formulations.

Basic Components in the Culture Media

Most animal cell culture media are generally having following 10 basic components and they are as follows: Energy sources: Glucose, Fructose, Amino acids, Nitrogen sources: Amino acids.

The various types of media used for tissue culture may be grouped into two broad categories:

- 1) Natural media;
- 2) Artificial media.

Natural Media

These media consist solely of naturally occurring biological fluids and are of the following three types:

- 1) Clots;
- 2) Biological fluids;
- 3) Tissue extracts.

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Artificial Media

Different artificial media have been devised to serve one of the following purposes:

- 4) Immediate survival (a balanced salt solution, with specified pH and osmotic pressure is adequate);
- 5) Prolonged survival (a balanced salt solution supplemented with serum, or with suitable formulation of organic compounds);
- 6) Indefinite growth;
- 7) Specialized functions.

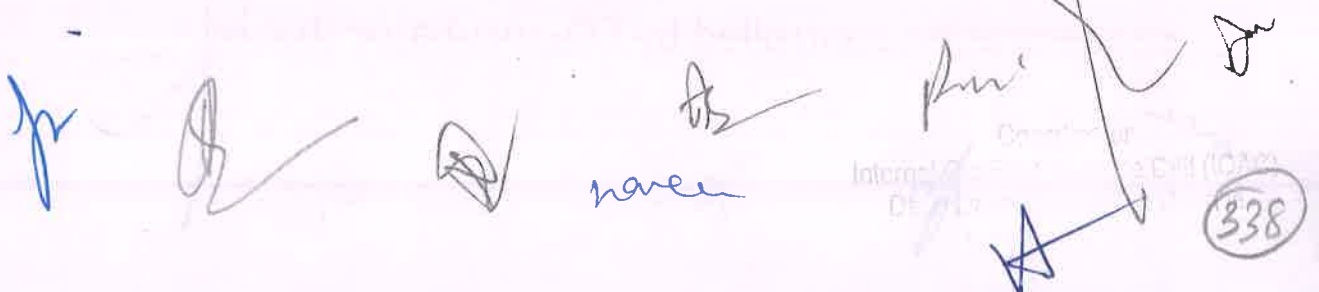
A Variety of Artificial Media Developed for Cell Cultures May Be Grouped into the Subsequent Four Classes

- 1) Serum containing media;
- 2) Serum free media;
- 3) Chemically defined media;
- 4) Protein free media.


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CULTURE ENVIRONMENTS

One of the major advantages of cell culture is the capability to manipulate the physicochemical (*i.e.*, temperature, pH, osmotic pressure, O_2 and CO_2 tension) and the physiological environment (*i.e.*, hormone and nutrient concentrations) in which the cells proliferate. Culture environment is a very responsible for cell growth and their maintenance. (**In Vitro Cell Culture Basics**). Some specific part discussed below:


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1.2. pH

Most normal mammalian cell lines grow well at pH 7.4, and there is very little variability among different cell strains. However, some transformed cell lines have been shown to grow better at slightly more acidic environments (pH 7.0 - 7.4), and some normal fibroblast cell lines prefer slightly more basic environments (pH 7.4 - 7.7). In laboratory pH control by pH meter.

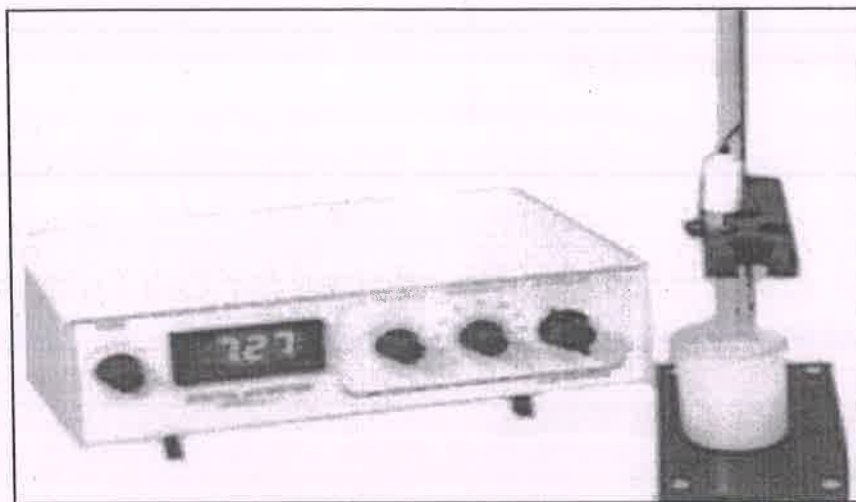


Figure : pH Meter

1.3. CO₂

CO₂-bicarbonate based buffer. For the reason that the pH of the medium is dependent on the delicate balance of dissolved carbon dioxide (CO₂) and bicarbonate (HCO₃), changes in the atmospheric CO₂ can alter the pH of the medium. Most researchers usually use 5% - 7% CO₂ in air; 4% - 10% CO₂ is common for most cell culture experiments. However, each medium has a recommended CO₂ tension and bicarbonate concentration to achieve the correct pH and osmolality; refer to the media manufacturer's instructions for more information. Inside laboratory condition CO₂ concentration controlled by CO₂ incubator shaker.

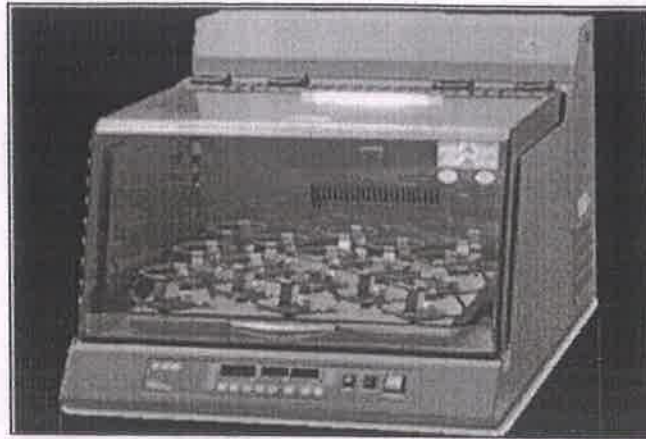


Figure : Incubator Shaker

1.4. Temperature

The majority human and mammalian cell lines are maintained at 36°C to 37°C for optimal growth while Avian cell lines need 38.5°C in favor of maximum growth. Even though these cells can also be maintained at 37°C, they will grow further slowly but Cell lines derived from cold-blooded animals (e.g., amphibians, cold-water fish) bear an extensive temperature vary between 15°C and 26°C.

TYPES OF CELLS

On the basis of morphology or functional characteristics three type cell considered for cell culture.

1.5. Epithelial Cell

Attached to a substrate and appears flattened and polygonal in shape.

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1.6. Lymphoblast Cell

Cells do not attach; remain in suspension with a spherical shape.

1.7. Fibroblast Cell

Cells attached to a substrate; appears elongated and bipolar:



PROCEDURE OF CELL CULTURE

1.8. Primary Cell Culture

Primary cell culture is first cultivation of cell in synthetic condition [2].

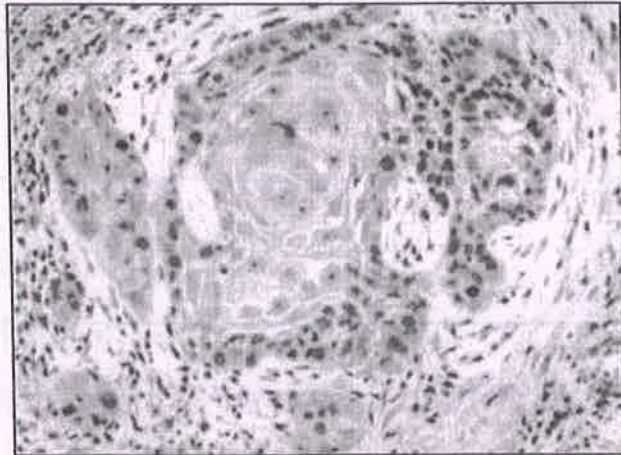


Figure : Epithelial cells

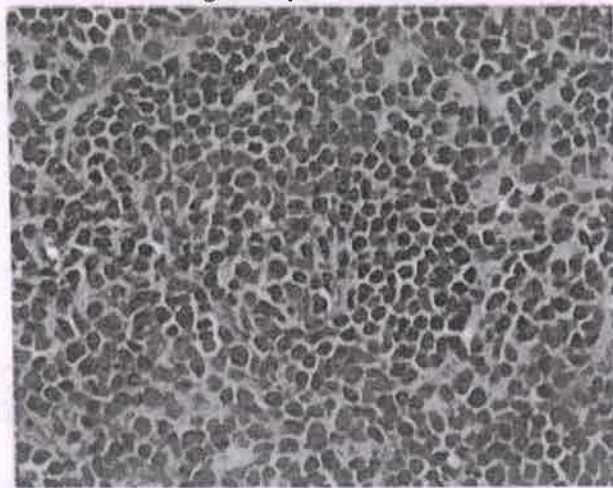


Figure : Lymphoblast Cells

Primary cultures, which be obtained straight forwardly from an animal furthermore be capable of maintain the Differentiated state for an undersized period (2). Three Basic Steps of primary tissue culture.

- Isolation of tissue.

Disaggregation of cells—[1] Chemical disaggregation
(2) Mechanical disaggregation.

- Incubation in addition to growth.

1.9. Subculture (Passaging)

In animal cell culture a subculture is a new cell culture made by transferring some or all cells from a previous culture to fresh growth medium. This action is called subculturing or passaging the cells [3].

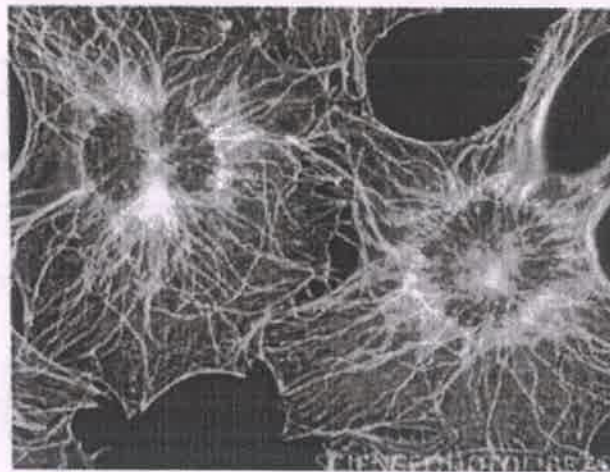


Figure : fibroblast cells

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1.10. Monolayer Culture

At what time the bottom of the culture vessel is covered by means of a continuous layer of cells, frequently one cell in thickness, they are referred to as monolayer cultures [4].

1.11. Suspension Cultures

A few of the cells which are non-adhesive e.g. cells of leukemia or convined cells which can be mechanically kept within suspension, can exist propagated in suspension. There are certain applications in propagation of cells by suspension culture process.

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1.12. Type of Cell Culture

Anchorage Dependent Cell Culture

Cells shown to necessitate attachment for growth are set to be Anchorage Dependent cells. The Adherent cells are typically derived from tissues of organs such as kidney where they are immobile in addition to embedded in connective tissue. They cultivate adhering to the cell culture.

Anchorage Independent Cell Culture

Cells which make not required attachment for growth or do not attach to the surface of the culture vessels are anchorage independent cells/suspension cells [5]. Each and every one suspension cultures are derived from cells of the blood system for the reason that these cells are furthermore suspended in plasma in vitro e.g. lymphocytes [6].

2. CELL LINE

A cell line arises from a primary culture at the time of the first successful subculture. The term cell line implies that cultures from it consist of lineages of cells originally present in the primary culture [3].

On the basis of the life span of culture, the cell lines are categorized into two types.

2.1. Finite Cell Lines

Cell lines which encompass a restricted life span and exit from beginning to end a restricted number of cell generations (frequently 20 - 80 population doublings) be well-known as finite cell lines.

2.2. Continuous Cell Lines

Cell lines transformed under laboratory surroundings or in vitro culture environment give rise in the direction of continuous cell lines. The cell lines demonstrate the property of ploidy (aneuploidy or heteroploidy), lack of contact inhibition and anchorage dependence. They produce in monolayer or suspension type. The growth rate is fast and doubling-up time is 12 - 24 hours.

3. PRESERVATION AND STORAGE

Cryopreservation

Liquid N_2 is used to preserve tissue culture cells, either in the liquid phase ($-196^\circ C$) or in the vapor phase ($-156^\circ C$).

Toward minimize the effects of freezing, several precautions are taken. First, a cryoprotective agent which lowers the freezing point, such as glycerol or DMSO, is added. A typical freezing medium is 90% serum, 10% DMSO. In addition, it is best to use healthy cells that are growing in log phase and to replace the medium 24 hours before freezing. Also, the cells are slowly cooled from room temperature to $-80^\circ C$ to allow the water to move out of the cells before it freezes.

The effect of the isopropanol is to allow the tubes to come to the temperature of the freezer slowly, at about $1^\circ C$ per minute. Cells are stored at liquid nitrogen temperatures because the growth of ice crystals is retarded below.

4. CELL CULTURE POSSIBLE PROBLEMS

Protection of aseptic condition is one of the most complex challenges in tissue culture there are quite a lot of routes to contamination which includes malfunction in the

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sterilization procedures used for glassware & pipettes, particulates cross contamination of air inside the room, weakly maintained incubation, inappropriate handling.

4.1. Cell Culture and Cross-Contamination

Cell line cross-contamination can be a trouble for scientists working through cultured cells. Studies propose anywhere starting 15% - 20% of the instance; cells used in experiments have been misidentified or contaminated with another cell line [9,10] troubles with cell line cross- contamination have even been detected in lines from the NCI-60 panel, which are used regularly for drug screening studies [11,12]. Number of contaminants, from microbiological, most of the fungal and bacterial contamination quickly overwhelms a culture and is usually visible to the naked eye within a short period of time.

4.2. Bacteria and Fungi Contamination

Microorganisms are the most frequent cell culture contaminators for the reason that they thrive in all environments and are effortlessly moveable from any exterior source such as laboratory instruments, gloves or clothing toward the cells. They grow fast and can be easily seen beneath the microscope. Illustration indicators of contamination include media color change because of a shift in pH, turbidity, presence of non-cellular material, cell vacuolization, or constant cell lysis and death [13].

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4.3. Mycoplasma Contamination

Mycoplasma is extremely small bacteria-like organisms that are difficult contaminants of cell cultures. Mycoplasma has the capability to alter the host cell culture's morphology, function, metabolism, growth and attachment to the culture vessel. For that reason, the integrity of any experiments performed with mycoplasma-contaminated cells is doubtful because the host cells are not performing normally [14,15].

4.4. Chemical Contamination

Chemical contamination is the occurrence of any lifeless substance in the cell culture that causes unfavorable effects to the cells. This may comprise impure media, serum or even water which may contain unwanted endotoxins or organic compounds if not purified. In addition, toxic levels of even vital nutrients can be harmful, and chemical contaminants may possibly also come from unclean storage vessel.

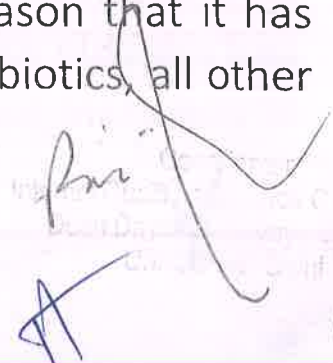
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4.5. Antibiotics

Accurate working perform, antibiotics should not be used for the routine maintenance of cell lines. In the existence of antibiotics, contamination may be suppressed, but could alter the phenotype or genotype of the cells. Antibiotics are toxic and can alter the biochemistry of the cells. If an infection is not understandable, for the reason that it has been suppressed but not eliminated by antibiotics, all other cultures in the laboratory are at hazard [16].



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5. CONCLUSIONS

At present make use of animal cell culture has undergone a significant spreading out from being a purely investigational procedure to become a conventional technological module of a lot of aspects of biological research. This review summarizes conceptual background and basic techniques of culturing animal cells in a format that is readily easy to get

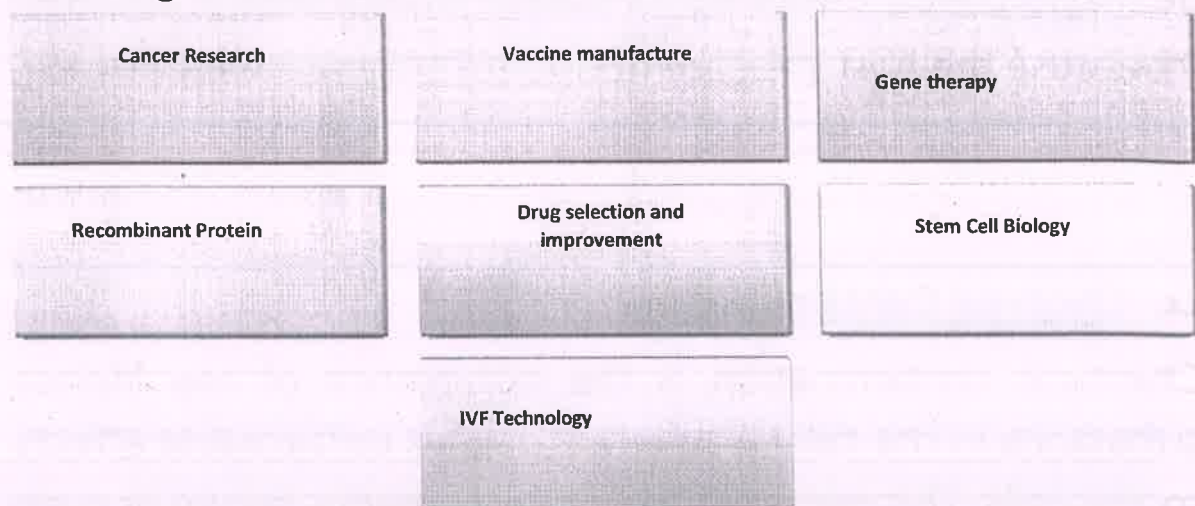


Figure : Animal Cell Culture Applications

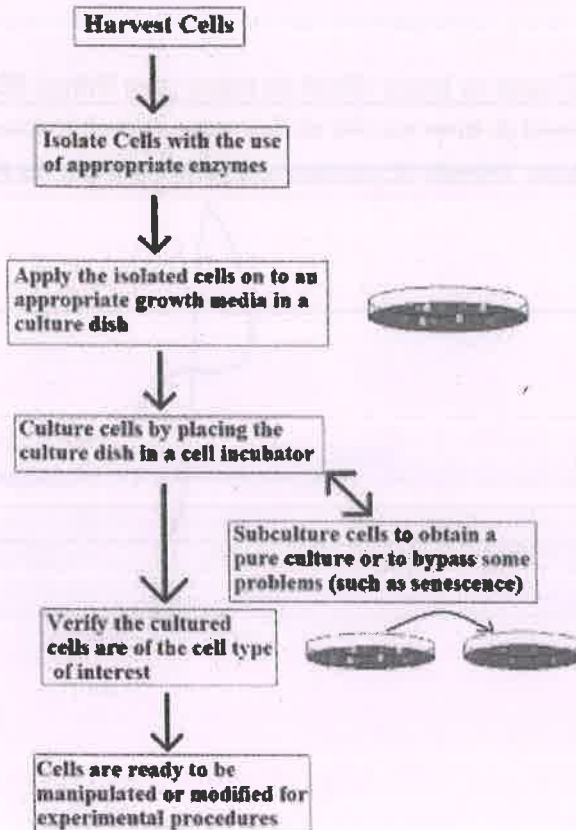
to all researchers in the field. Animal tissue culture functions in therapeutic field are vast. The evaluation of the cell's response to chemicals, or as a tool to produce cellular-derived protein products that really helps in medical improvement. An animal tissue culture provides an approach to manufacture monoclonal antibody that makes it potential to produce antibody that have specificity controlled toward pathogen. In the field of animal cell culture discovery leads to the opportunity of curing various diseases such as AIDS and cancer. Additional application of animal tissue culture gives a conventional, quick and approachable method for manufacture of well-tolerated and valuable vaccines. Cell culture seems to come with a lot of important towards medical progression.

ANIMAL BIOTECHNOLOGY

PROJECT ON

ANIMAL CELL CULTURE

The Process To Culture Cells



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ACKNOWLEDGEMENT

I would like to express my sincere gratitude to Dr. Shailly Anand ma'am and Dr. Kamlesh Ma'am for providing me the opportunity to learn & being able to successfully make a project on **Animal Cell Culture**.

While making this project I came to know about so many new things like fields in which animal cell experiments are performed & how we are utilising it to combat diseases. I am really thankful to the technology, my teachers, friends & parents who helped me a lot throughout this project.

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CONTENTS

- Introduction of Animal Cell Culture
- Definition of Animal Cell Culture
- History of Animal Cell Culture
- Characteristics of Cultured Animal Cell
- Types of Animal Cell Culture
- Requirements for Cell Culturing
- Process of Animal Cell Culture
- Applications
- Advantages
- Disadvantages



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INTRODUCTION:- Cell Culture is the process where cells are derived from an organism, such as a plant or animal and is placed within an artificially controlled environment to stimulate growth. The most common methods of cell culture are tissue and organ culture. The availability of appropriate nutrients and conditions will allow cells that are removed from various tissues and organs to continue to develop in vitro, where the cell acts as an independent unit. Cells developed in vitro will continue to divide, increase in size and grow until affected by an external condition, such as nutrient depletion. Cells within culture can either be genetically identical or may show genetic variation. It consists of primary cultures, semi continuous cell cultures and continuous cell cultures.

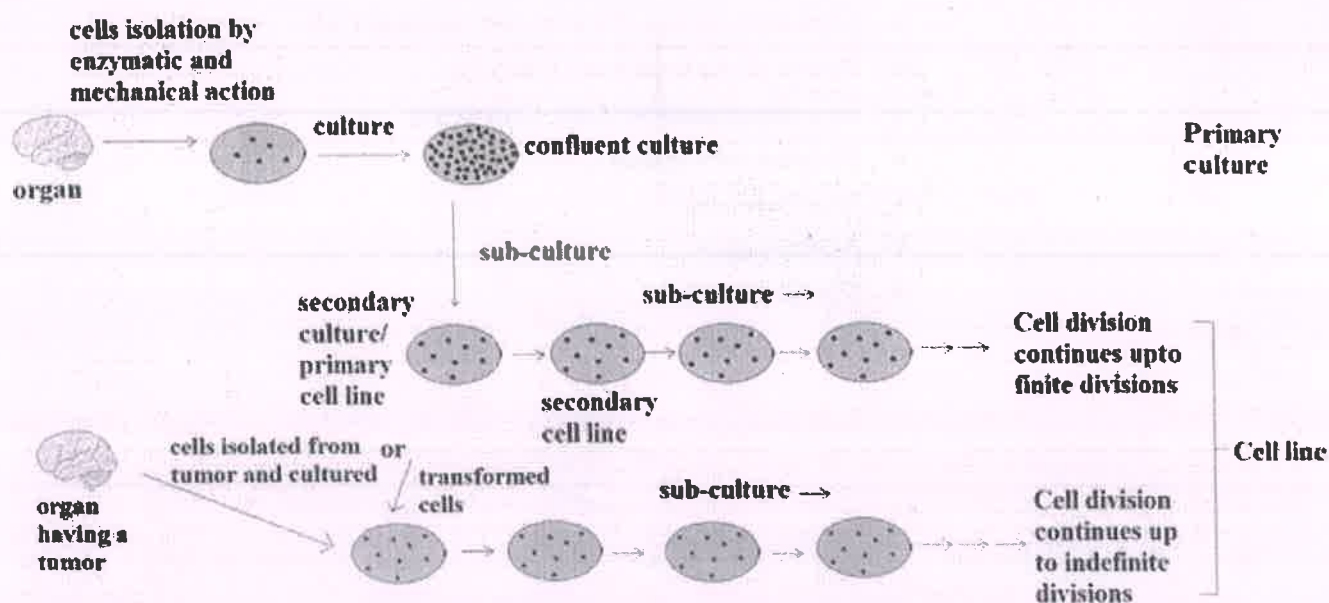


fig: animal cell culture

The process of cell culture consists of the isolation of cells, the maintaining of cells within culture, the cross contamination of a cell line, the manipulation of cultured cells, establishing human cell lines and the development of a generation of hybridomas. The technique of cell culture allows for numerous applications, such as **the investigation of the biochemistry of cells, the generation of artificial tissues** and has made significant impact in the research of virology through the testing of chemical compounds and drugs on specific cell types. Cell culture research has assisted in **manufacturing antibodies, vaccines and cell-produced drugs**.

DEFINITION: Animal cell culture involves the in vitro (in the laboratory) maintenance and propagation of animal cells in a suitable nutrient media. Thus, animal cell culturing is a process of growing cells artificially.

History of Animal Cell Culture:-

1665 – Hooke's *Micrographia* is published and the term „cell“ is used for the first time

1838-1839 – Schleiden and Schwann formulated the „cell theory“

1885 – Roux's first method of cell culture

1910 – Carrel, Burrows and Montrose explants of tissue fragments for 2-3 months

1916 – Rous and Jones work out trypsinization and subculture methods

1925 – The ATCC is established for cell culture technique evaluation

1930's – Carrel & Lindbergh's new cell cultures devices

1940s – Keilova, Cruikshank & Lowbury introduce antibiotics in tissue culture

1943 – Establishment of the first continuous mouse fibroblast cell line (L-cells)

1949 – Enders uses cell cultures for growth of virus

1955 – Eagle develops defined cell culture media

1970s – Kruse develops of laminar-flow cabinets

1983 – Genentech produces the first therapeutic protein in cell culture and conducts the human clinical trial

1998 – Thomson & Gearhart isolate and culture human embryonic stem cells

2006 – Yamanaka obtains induced pluripotent stem cells (iPS)

1676 – A. van Leeuwenhoek presents results of his microscopic observations in a letter to the Royal Society

1855 – Virchow's theory of tissue formation – '*omnis cellula e cellula*'

1907 – Harrison establishes method of cell culture in hanging drop and maintains frog embryo nerve fibers *in vitro*

1912 – Carrel establishes aseptic techniques for cell cultures

1920 – The ECACC is established for cell culture preservation

1925 – 1926 – Strangeways & Fell describe differentiation *in vitro* in organ culture

1920 – 1930 – Carrel and Ebeling subculture of fibroblastic cell line

1940 – 1950 – Development of techniques for cell culture, cultures of antibodies and vaccines

1948 – Sanford derives clone 929 from the L cell line

1952 – 1955 – Gey establishes the first human cell line

1965 – Hayflick defined finite life span of human cells

1975 – Kohler & Milstein develop first hybridoma cell lines

1992 – SkinEthic produces human tissue and neural stem cells cultured *in vitro*

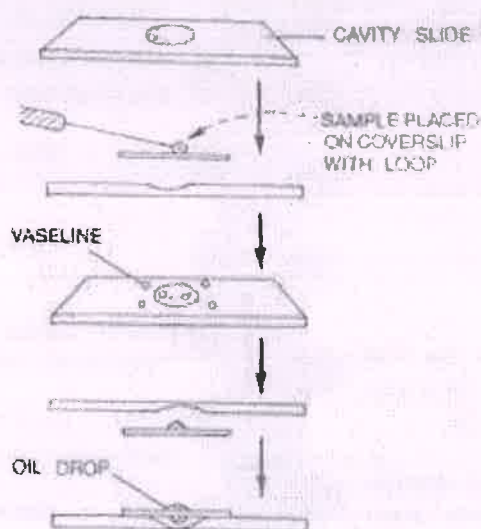
2002 – Atala & Lanza exploit tissue engineering

2010+ – Atala demonstrates 3D tissues and organs bioprinting techniques

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Year 1907; Ross Harrison cultivated the nerve cells of frog by the hanging drop method. On these bases, some consider him as the Father of cell culture technique. The hanging drop method is a type of wet-mount technique in which the cells of organism to be cultured are suspended in a liquid droplet. Later, this droplet is placed on microscopic slide to observe their motility and cell division. The cover slip of microscope contains some sticky substance like petroleum jelly that prevents evaporation of liquid material.



Hanging drop method in cell culture technique.

- From late 1940's to early 1950's several developments occurred that made cell culture widely available as a tool for scientists.

- First, there was the development of antibiotics that made it easier to avoid many of the contamination problems that plagued earlier cell culture attempts.
- Second was the development of the techniques, such as the use of trypsin to remove cells from culture vessels, necessary to obtain continuously growing cell lines (such as HeLa cells).
- Third, using these cell lines, scientists were able to develop standardized, chemically defined culture media that made it far easier to grow cells.

Characteristics of Cultured Animal Cell:- The characteristics of cultured cells result from both their origin (liver, heart, etc.) and how well they adapt to the culture conditions.

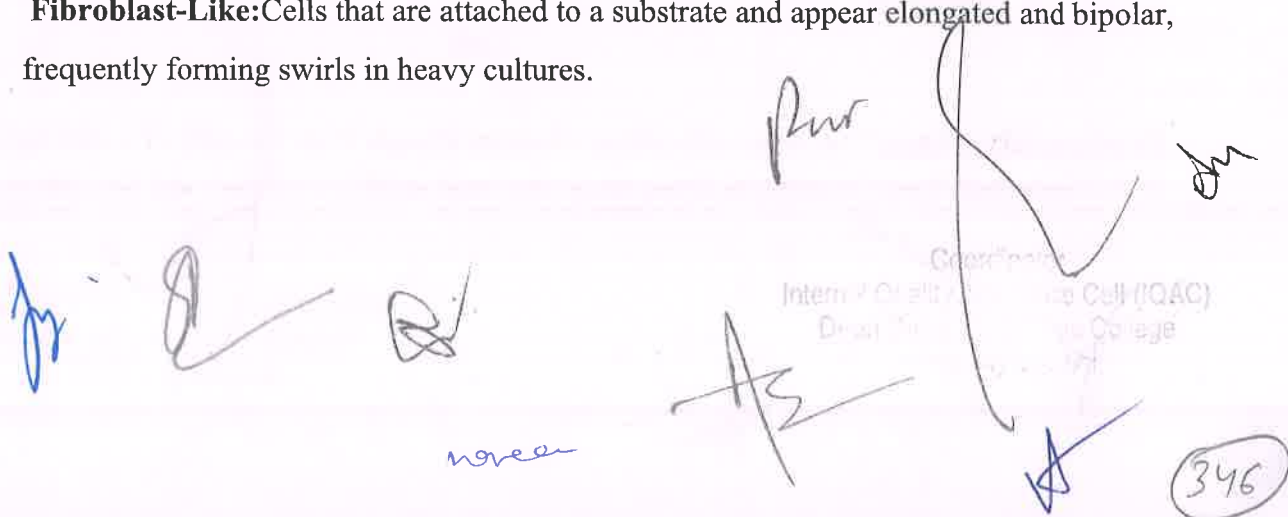
Biochemical markers can be used to determine if cells are still carrying on specialized functions that they performed in vivo (e.g., liver cells secreting albumin).

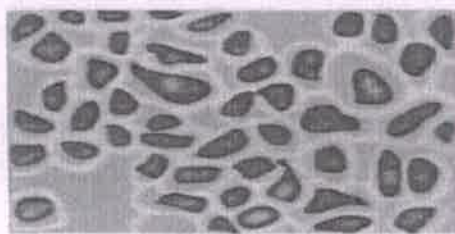
1. Morphological or ultra-structural markers can also be examined (e.g., beating heart cells). Frequently, these characteristics are either lost or changed as a result of being placed in an artificial environment. Some cell lines will eventually stop dividing and show signs of aging.
2. Cultured cells are usually described based on their morphology (shape and appearance) or their functional characteristics.

There are three basic morphologies:

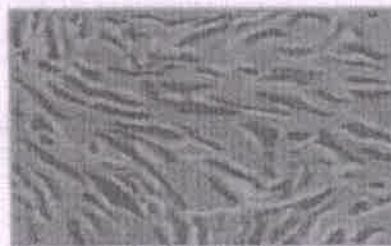
1. **Epithelial-Like:** cells that are attached to a substrate and appear flattened and polygonal in shape.
2. **Lymphoblast-Like:** Cells that do not attach normally to a substrate but remain in suspension with a spherical shape.
3. **Fibroblast-Like:** Cells that are attached to a substrate and appear elongated and bipolar, frequently forming swirls in heavy cultures.

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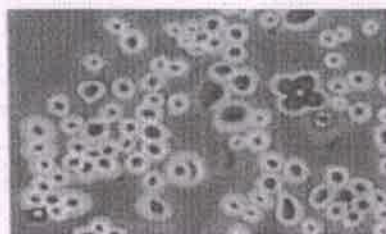




Epithelial-like



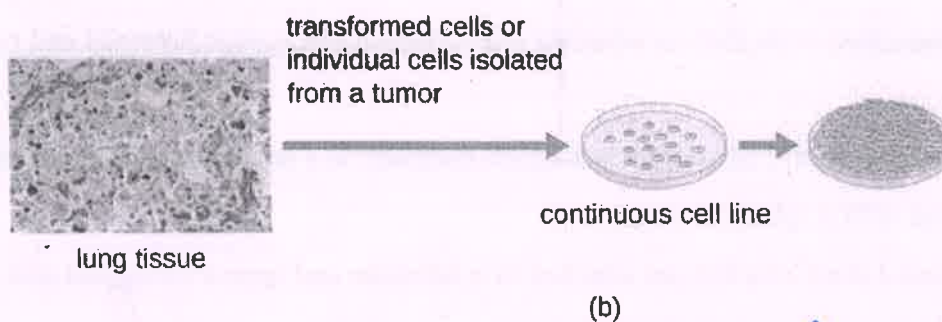
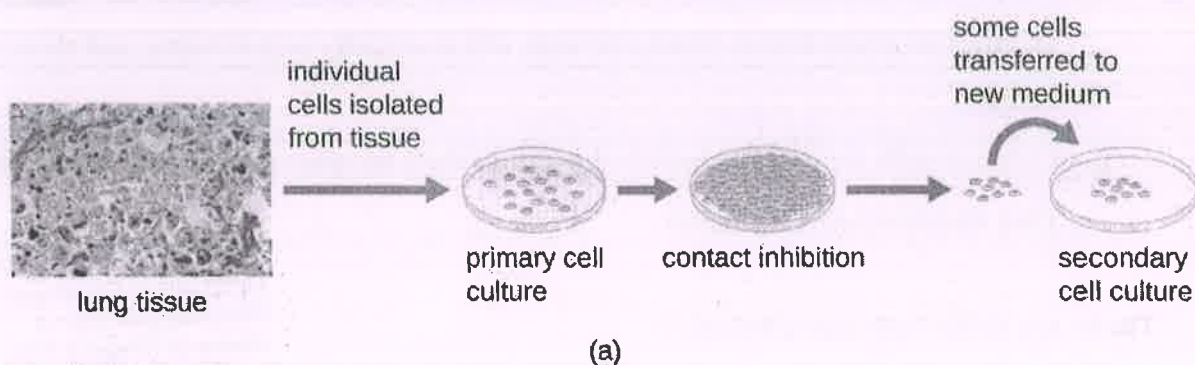
Fibroblast-like



Lymphoblast-like

Types of Animal Cell Culture:-

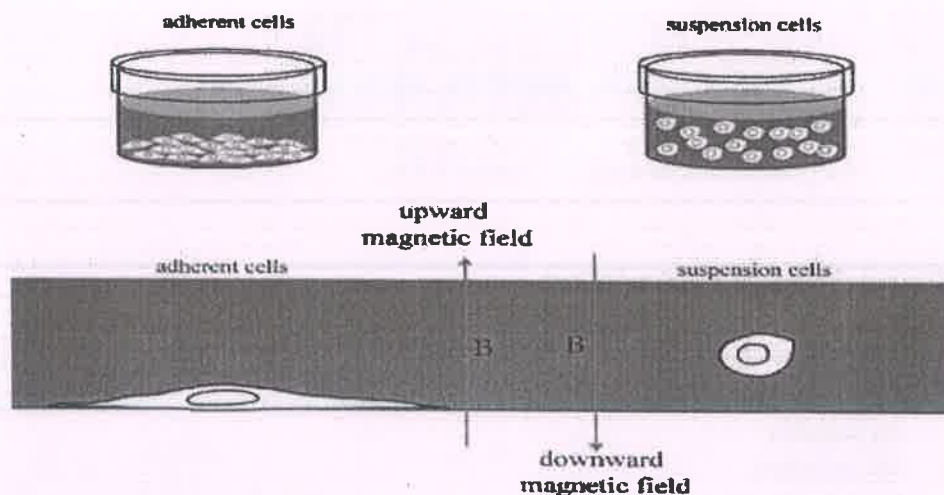
- Based on the number of cell division: Cell culture can be classified as primary cell culture and cell lines.



Primary cell culture: This is the cell culture obtained straight from the cells of a host tissue. The cells dissociated from the parental tissue are grown on a suitable container and the culture thus

obtained is called primary cell culture. Such culture comprises mostly heterogeneous cells and most of the cells divide only for a limited time. However, these cells are much similar to their parents.

Depending on their origin, primary cells grow either as an **adherent monolayer** or in a **suspension**.



Secondary cell culture and cell line: When a primary culture is sub-cultured, it is known as secondary culture or cell line or sub-clone. The process involves removing the growth media and disassociating the adhered cells (usually enzymatically).

Sub-culturing of primary cells to different divisions leads to the generation of cell lines.

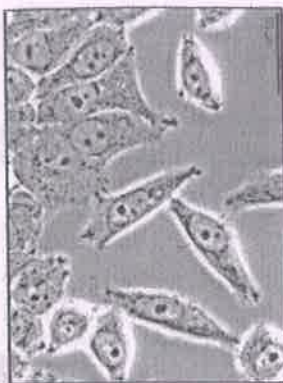
During the passage, cells with the highest growth capacity predominate, resulting in a degree of genotypic and phenotypic uniformity in the population. However, as they are sub-cultured serially, they become different from the original cell.

On the basis of the life span of the cell, the cell lines categorize into two types: Principal
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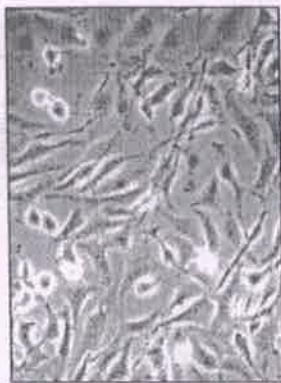
Finite cell lines: In finite cell lines, there is limited cell division and limited life span. Passaging value is less as after some time the cells lose the ability to grow or proliferate and enters into the phase of senescence or ageing. *Example:* Normal cells produce finite cell lines.

Continuous cell lines: In continuous cell lines, the number of cell division and passaging value is indefinite. The passaging value is more for the continuous cells which do not lose the ability to divide i.e. these can grow and divide by an infinite number of times. *Example:* Cancerous cells produce Infinite or continuous cell lines.

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HeLa cell line from human cervical carcinoma



CHO continuous cell line from Chinese hamster ovary



Cos-1 cell line from monkey kidney

Requirements For Animal Cell Culture:-

Equipment and facilities

Laminar-flow hoods
Dry incubators
CO₂ incubators
Humidified incubators
Wooden furniture, benches
Other instruments

Glassware and reagents

Pipettes
Screw caps
Culture glasses
Media bottles
Media and various solutions

Biological materials

Infected tissue samples
Cell lines

Operating techniques

Operator hands, hair, clothing, breathing
Work spaces
Pipetting, dispensing
Operating manipulations

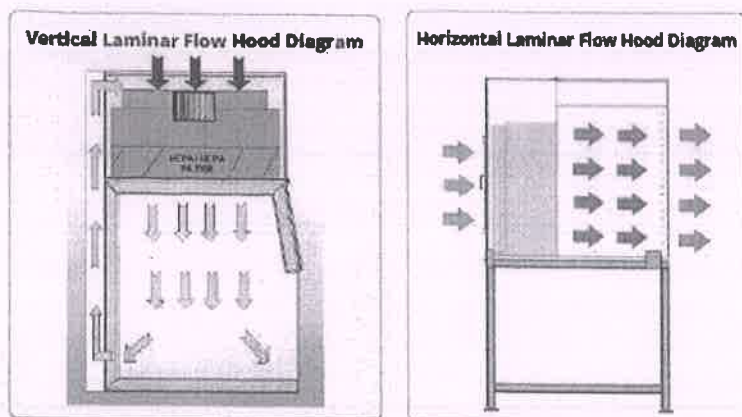
1. Sterile Work Area: A separate room should be made available for clean cell culture work. A HEPA (High Efficiency Particle Air Filter) filtered air supply is desirable but not always affordable. Example; Laminar flow hood (vertical & horizontal).

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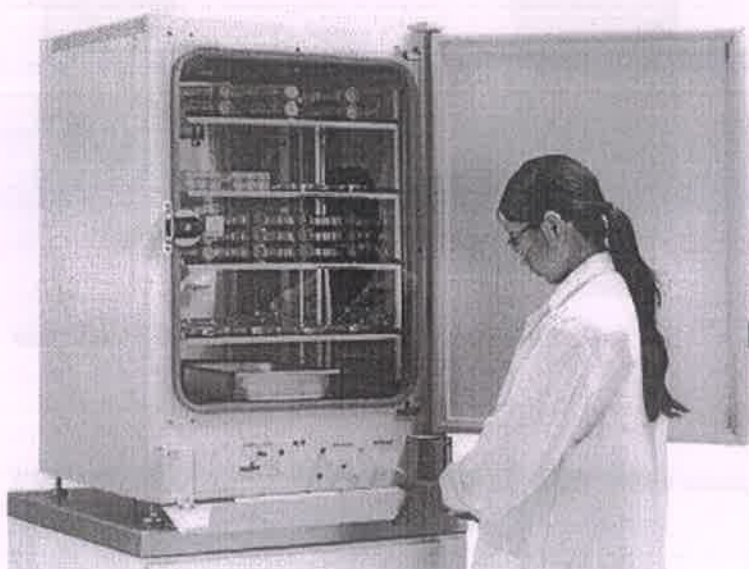
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2. Incubation Facilities: In addition to an airflow cabinet and benching which can be easily cleaned, the cell culture laboratory will need to be furnished with an incubator or hot room to maintain the cells at 30-40°C. The incubation temperature will depend on the type of cells being cultivated. Example; Insect cells will grow best at around 30°C while mammalian cells require a temperature of 37°C.



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3. Refrigerators and Freezer:

Both items are very important for storage of liquid media at 4°C and for enzymes (e.g., trypsin) and some media components (e.g., glutamine and serum) at -20°C.

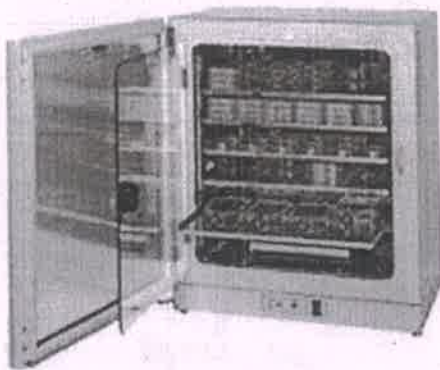
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4. Microscopes: A simple inverted microscope is essential so that cultures can be examined in flasks and dishes. It is vital to be able to recognize morphological changes in cultures since these may be the first indication of deterioration of a culture.



A. CO₂ Incubator



B. Centrifuge



C. Inverted Microscope

5. Tissue Culture Ware: A variety of tissue culture plastic-ware is available, the most common being specially treated polystyrene.

6. Washing Up and Sterilizing Facilities: Availability of a wide range of plastic tissue culture reduces the amount of necessary washing up. However, glassware such as pipettes should be soaked in a suitable detergent, then passed through a stringent washing procedure with thorough soaking in distilled water prior to drying and sterilizing.

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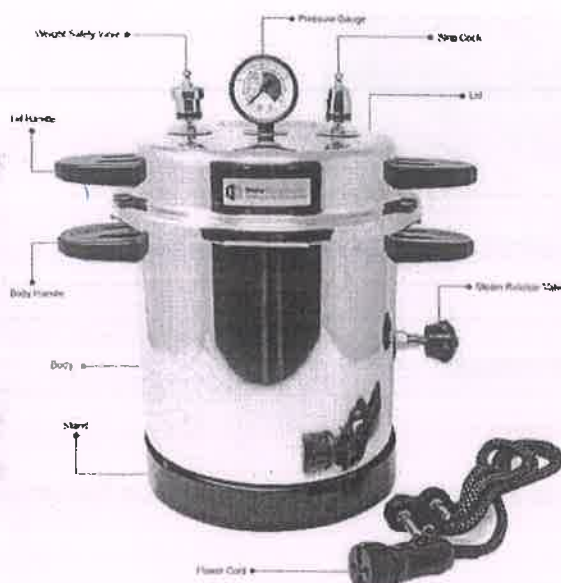
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7. Liquid Nitrogen Deep Freezer: It is important to maintain continuity in cells to prevent genetic drift and to guard against loss of the cell line through contamination and other disasters. They should be frozen in exponential phase of growth with a suitable preservative, usually dimethylsulfoxide (DMSO). The cells are frozen slowly at $1^{\circ}\text{C}/\text{min}$ to -50°C and then kept either at -196°C immersed in liquid N_2 or above the liquid surface in the gas phase.

8. Water Still or Reverse Osmosis Apparatus: A double distilled or reverse osmosis water supply is essential for preparation of media, and rinsing glassware. The pH of the double distilled water should be regularly checked as in some cases this can vary. Variations in the quality of water used may account for variation in results.



An Autoclave, used for sterilizing the culture wares & glassware.

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Vessels and Equipments required for Animal Cell Culture:

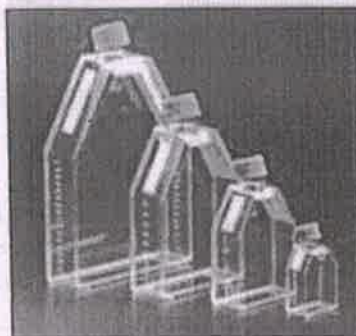
Cultures should be examined daily for their morphology, colour of the medium and density of cells. The animal cells are usually grown and maintained in Petri dishes, Culture flasks or Multi-well plates of various shapes and sizes at an appropriate temperature and gas mixture (typically, 37°C , 5% CO_2 for mammalian cells) in an incubator. Culture conditions vary widely

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for each cell type, and variation of conditions for a particular cell type can result in different phenotypes being expressed. Following vessels are required for cell culture.



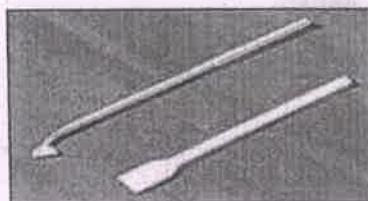
Petri dishes



Culture flasks



Multi-well plates



Cell scrapers

Fig. Vessels and accessories for animal cell culture.

Process of Animal cell culture: The process of animal cell culture includes the following steps:

- Tissue explant
- Cell extraction
- Culturing in a nutrient medium
- Subculturing

Therefore, the process of animal cell culture can be summarized in the following way:

- **Tissue explant:** The removal of tissue from the organ refers to as "Tissue explant".
- **Cell extraction:** The cell can extract from the tissue either mechanically or enzymatically. The extraction is mostly carried out by the enzyme action or by the process of "Trypsinization".

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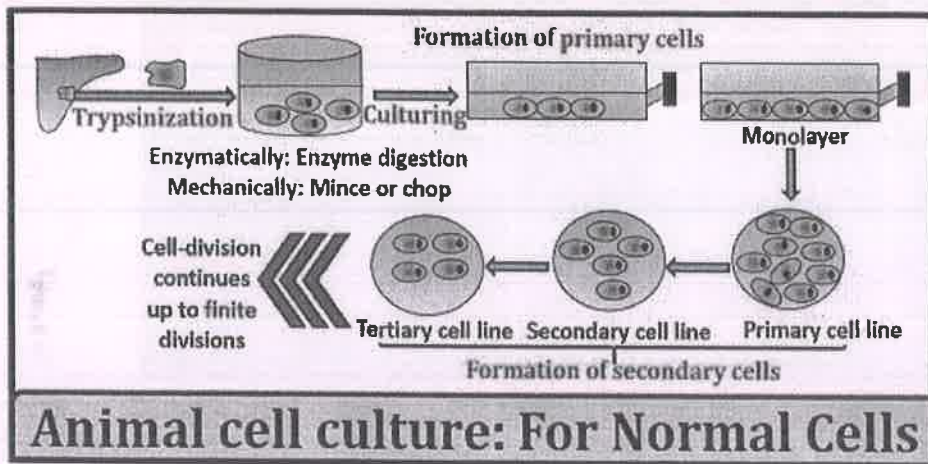
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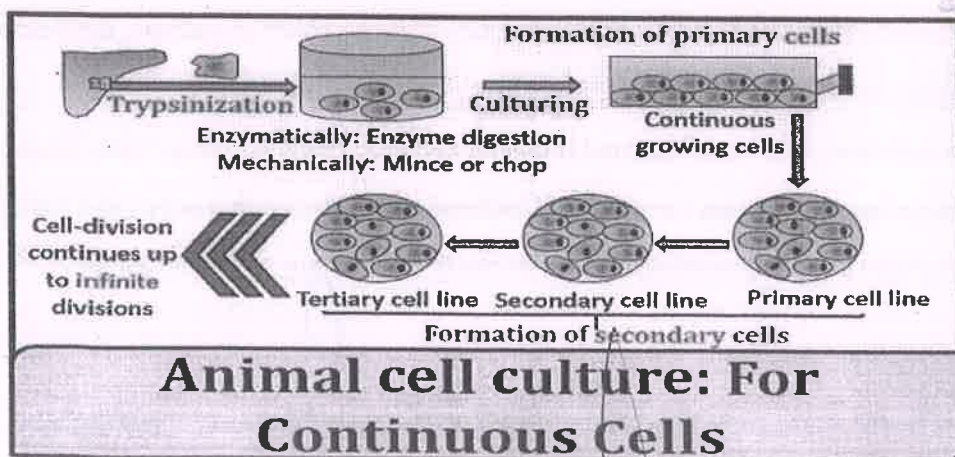
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- **Culturing in a nutrient medium:** After that, the cell is cultured either on solid nutrient medium or liquid nutrient medium. In a **solid nutrient medium**, the primary cells form a **monolayer** whereas in **liquid medium** primary cells appear as a **cell suspension**.
- **Subculturing:** It also refers to as “**Passaging**” of the cell. After the formation of primary cells, the subculturing is carried out that is important to continuously study or to grow the cells. This is the most important step in cell culture, which helps us to understand the cell type.

Normal cell: It has low passing value because these lose their ability to divide after some time due to cell ageing. Therefore, the cell divides to produce definite cell lines.



Continuous cell: It has high passing value because as from the name it is clear that these kind of cells are having an ability to continuously divide. Therefore, the cell divides to produce indefinite cell lines.



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Application Of Animal Cell Culture:-

1. Model Systems: Cell cultures provide a good model system for studying; Basic cell biology and biochemistry, the interactions between disease-causing agents and cells, the effects of drugs on cells, the process and triggers for aging, and Nutritional studies.

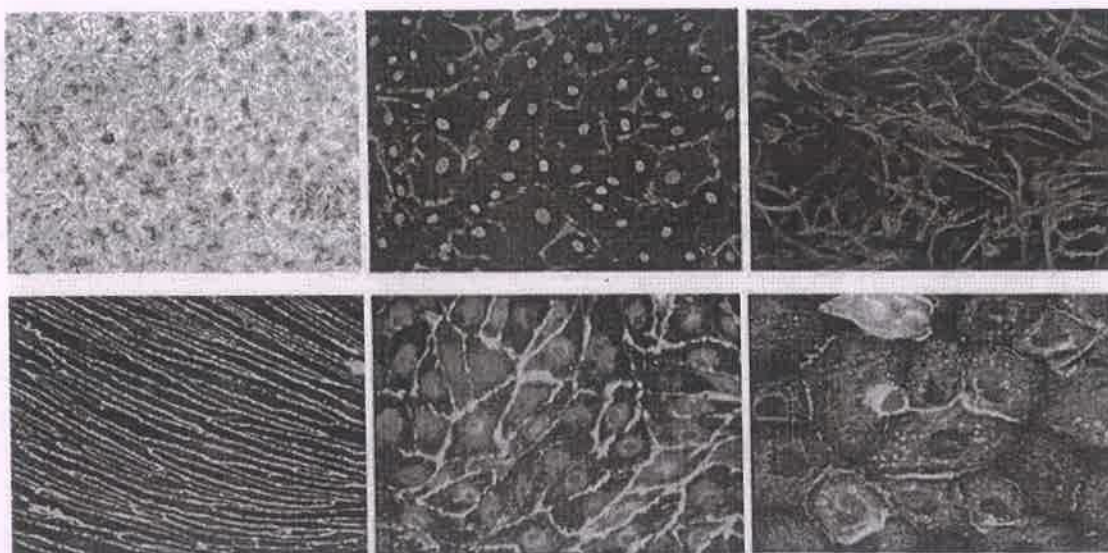
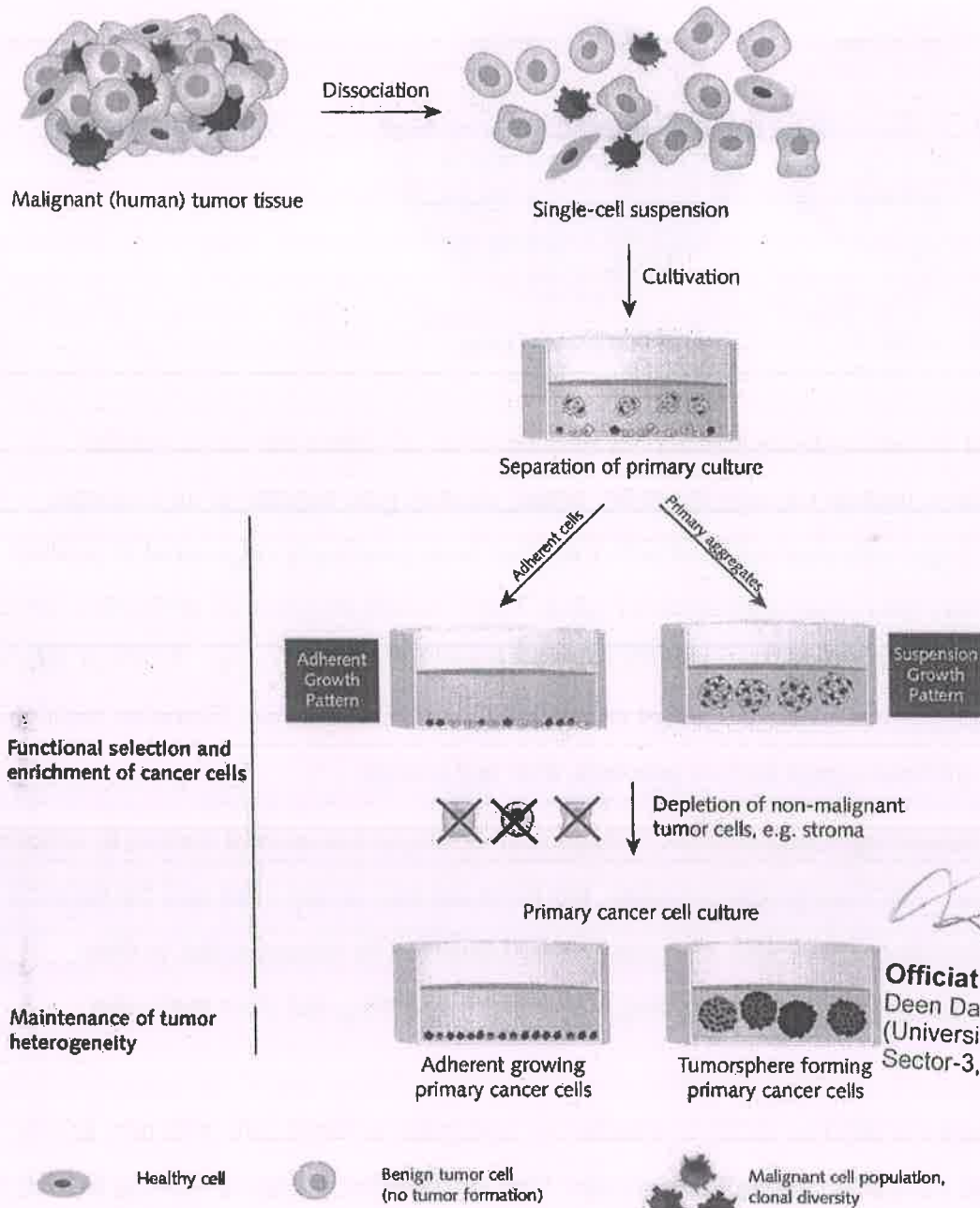


Figure 1. Examples of commonly used primary cells used in biomedical research.

2. Toxicity Testing: Cultured cells are widely used alone or in conjunction with animal tests to study the effects of new drugs, cosmetics and chemicals on survival and growth in a wide variety of cell types. Especially important are liver- and kidney-derived cell cultures.

3. Cancer Research: Since both normal cells and cancer cells can be grown in culture, the basic differences between them can be closely studied. In addition, it is possible, by the use of chemicals, viruses and radiation, to convert normal cultured cells to cancer causing cells. Thus, the mechanisms that cause the change can be studied. Cultured cancer cells also serve as a test system to determine suitable drugs and methods for selectively destroying types of cancer.

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4. Virology: One of the earliest and major uses of cell culture is the replication of viruses in cell cultures (in place of animals) for use in vaccine production. Cell cultures are also widely used in the clinical detection and isolation of viruses, as well as basic research into how they grow and infect organisms.

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Fig. 2. CMV centrifugation culture fixed and stained 16 hrs after inoculation showing viral proteins in nuclei of infected human fibroblast cells



Fig. 3. HSV-infected epithelial cell from skin lesion (DFA)

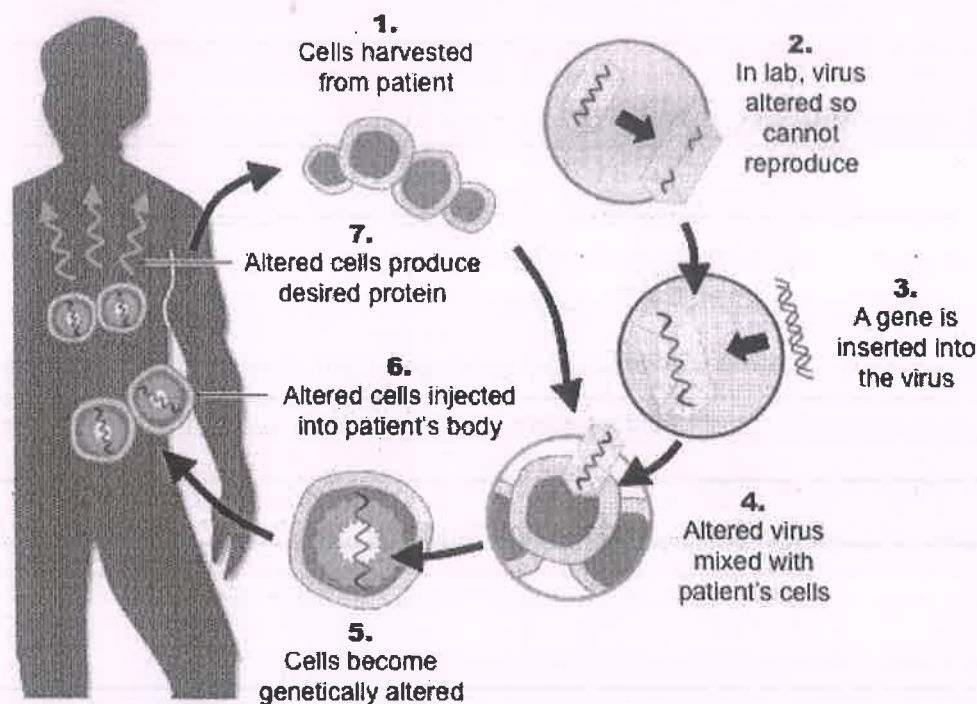
5. Cell-Based Manufacturing: For large-scale production of viruses for use in vaccine production. These include vaccines for polio, rabies, chicken pox, hepatitis B and measles. Second is the large-scale production of cells that have been genetically engineered to produce proteins that have medicinal or commercial value. These include monoclonal antibodies, insulin, hormones, etc. and Third is the use of cells as replacement tissues and organs. Artificial skin for use in treating burns and ulcers is the first commercially available product. However, testing is underway on artificial organs such as pancreas, liver and kidney.

6. Genetic Counselling: Amniocentesis, a diagnostic technique that enables doctors to remove and culture fetal cells from pregnant women, has given doctors an important tool for the early diagnosis of fetal disorders. These cells can then be examined for abnormalities in their chromosomes and genes using karyotyping, chromosome painting and other molecular techniques.

7. Genetic Engineering: The ability to transfect or reprogram cultured cells with new genetic material (DNA and genes) has provided a major tool to molecular biologists wishing to study the cellular effects of the expression of these genes (new proteins).

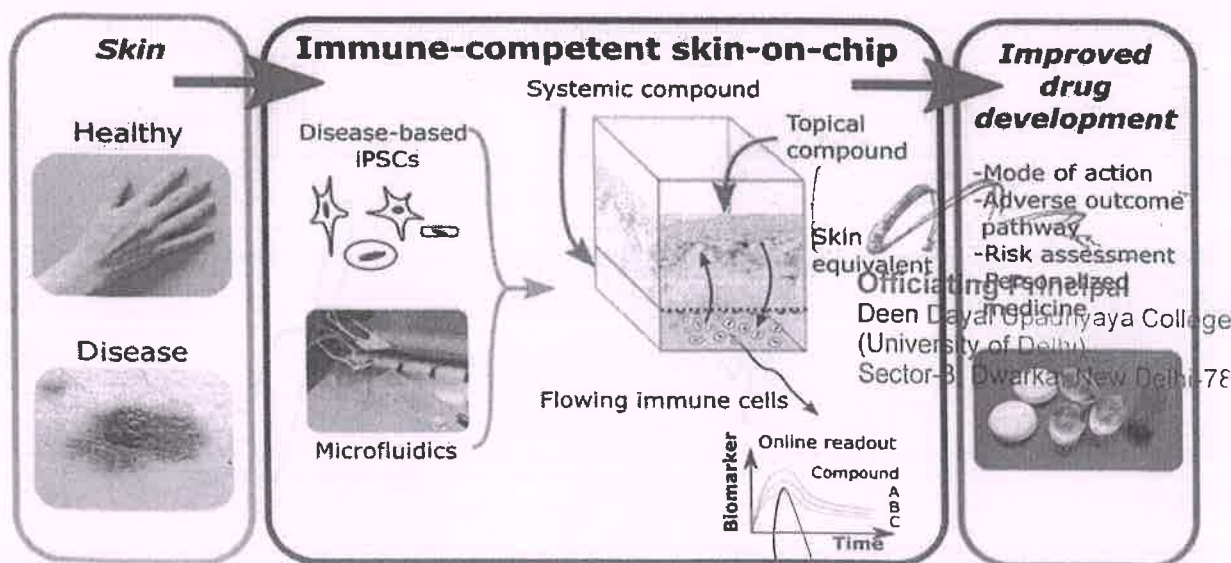
8. Gene Therapy: The ability to genetically engineer cells has also led to their use for gene therapy. Cells can be removed from a patient lacking a functional gene and the missing or damaged gene can then be replaced. The cells can be grown for a while in culture and then replaced into the patient.

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Gene therapy

9. Drug Screening and Development: Cell-based assays have become increasingly important for the pharmaceutical industry, not just for cytotoxicity testing but also for high throughput screening of compounds that may have potential use as drugs. Originally, these cell culture tests were done in 96 well plates, but increasing use is now being made of 384 and 1536 well plates.



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Advantages of Animal Cell Culture:-

- Physio-chemical environment in the culture such as pH, temperature, osmolarity, & level of dissolved gases can be precisely controlled in the in vitro system.
- Controlled and defined physiological conditions.
- Cell in culture can be easily characterised by cytological and immune staining technique.
- The cell culture technique can be used for in vitro cytotoxicity studies to test the possible toxicity of compounds or drugs.
- Homogeneity of cell types (achieved through serial passages).
- Economical, since smaller quantities of reagents are needed than in vivo.
- Legal, moral and ethical questions of animal experimentation are avoided.
- Cell culture can be used to produce monoclonal antibodies and hybridoma technology.


Disadvantages of Animal Cell Culture:-

- Expertise is needed, so that behaviour of cells in culture can be interpreted and regulated.
- Ten times more expensive for same quantity of animal tissue; therefore, reasons for its use should be compelling.
- Unstable aneuploid chromosome constitution.
- Maintaining the sterile environment is the most difficult part.
- High probability of cross contamination of different types of cells in culture.

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





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VIRTUAL VISIT TO YAMUNA BIODIVERSITY PARK

"Protect Nature, Respect Biodiversity, Secure Your Life"
22nd February, 2021



Organised By:

Dr. Pramod Kumar

Assistant Professor

Department of Environmental Studies

Dr. Meghna Aggarwal

Assistant Professor

Department of Commerce

Dr. Rajkumari S. Devi

Coordinator

Department of Environmental Studies

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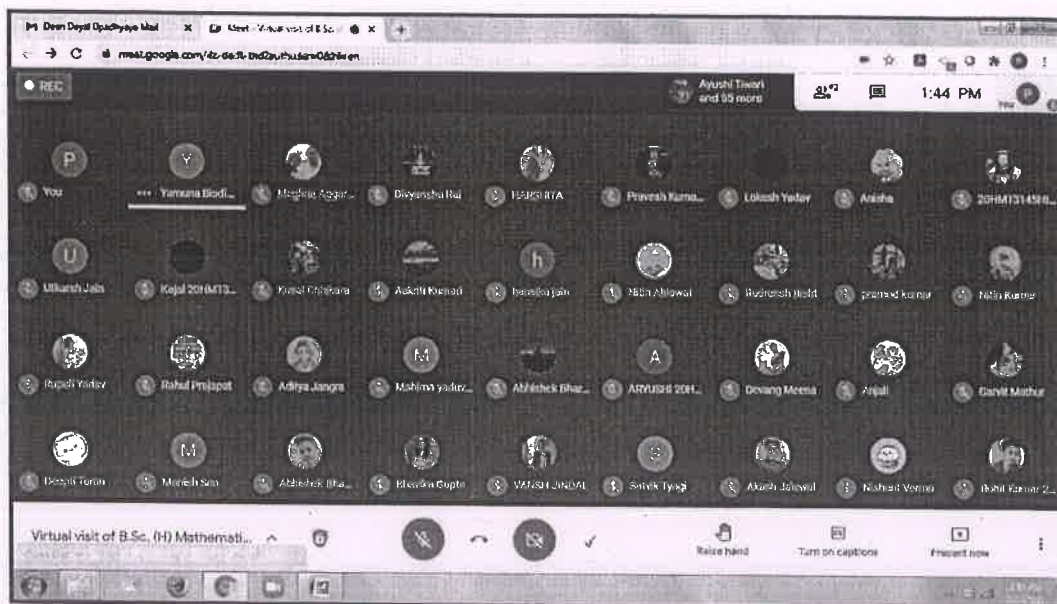
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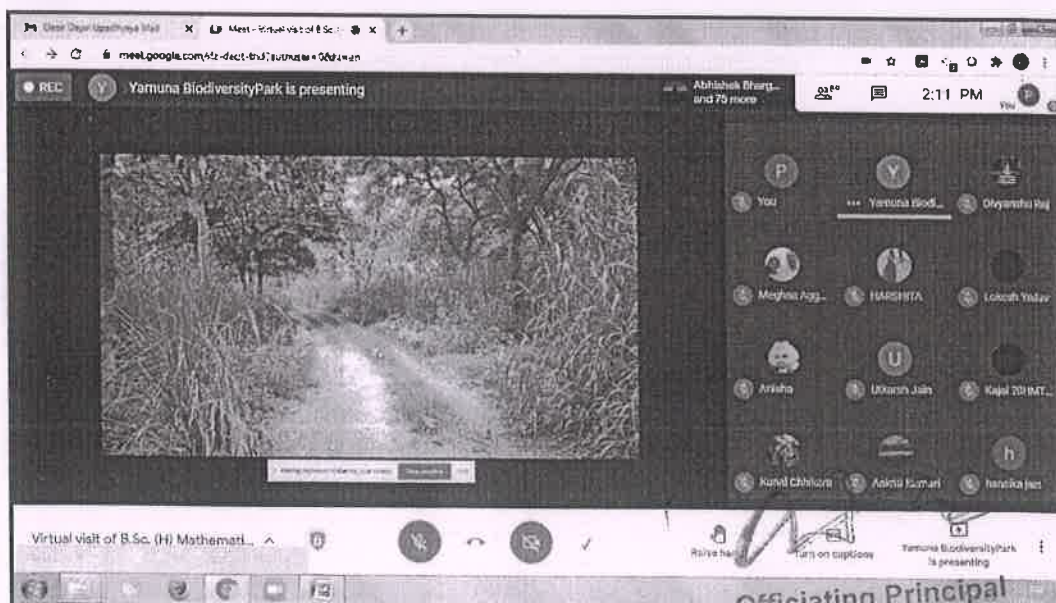
Virtual Visit to Yamuna Biodiversity Park, Jagatpur Khadar, Yamuna, Delhi

REPORT

Department of Environmental Studies organised a virtual visit to the Yamuna Biodiversity Park for B.Sc. (H) Mathematics students of Deen Dayal Upadhyaya College on 22.02.2021 from 01:30 pm onwards. The visit was attended by 96 students from Deen Dayal Upadhyaya College of B.Sc. (H) Mathematics. Students enthusiastically participated in the virtual visit and showed keen interest to be a part of such many more visits in future.



“Protecting our environment is the need of the hour”



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Virtual Visit to Yamuna Biodiversity Park, Jagatpur Khadar, Yamuna, Delhi



Glimpses of Yamuna Biodiversity Park

OUTCOME

The session provided an opportunity to students to understand nature conservation through virtual nature trails covering different forest communities along with Conservatory of Herbal plants, Butterfly Conservatory, Gene Bank and Wetland



Department of Environmental Studies

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Virtual Visit to Yamuna Biodiversity Park, Jagatpur Khadar, Yamuna, Delhi

Ecosystems. The virtual visit to the Biodiversity Park gave opportunity to students to interact with different environmentalists working in the field of ecological restoration. The visit helped to spread an awareness amongst the students that

- Biodiversity is not just a game to be hunted rather it is a gift of nature to be enjoyed and nurtured.
- The biodiversity Parks are unique landscape that serve as nature reserves of Delhi and harbor hundreds of native plants, animals and microbial species living in ecologically sustainable biological communities and rendering ecological services to metropolis.
- Biodiversity parks can also serve as the potent way to tackle with various environmental issues.
- These Biodiversity Parks are first of their kind in the world and serve as innovative models for conserving the natural heritage under matrix of urban development.



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Registration List - Virtual Visit to Yamuna Biodiversity Park

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2/20/2021 17:02:10	Abhishek Bhagat	Bsc mathematics honours	Deen Dayal Upadhyaya C	abhishek11.bhagat@gma	7070269790
2/20/2021 17:06:07	Harish Kumar	Bsc Maths Hons.	Deen Dayal Upadhyaya co	harishjyani9026@gmail.c	08398846934
2/20/2021 17:14:13	Rupali yadav	Bsc Maths Hons	Deen Dayal Upadhyaya C	iamrupaliyadav10@gmail.	8595997485
2/20/2021 17:38:21	Vansh jain	Bsc maths hons	Dduc	vansh1742002@gmail.co	9315538007
2/20/2021 17:53:03	Anisha	Bsc Hons Mathematics	Deen Dayal Upadhyaya C	anishaab752@gmail.com	8920889110
2/20/2021 17:57:35	Anurag Khokhar	BSc honors Mathematics	DDUC	anuragiit2003@gmail.com	9818126029
2/20/2021 18:02:25	Mayank	BSc.(H) Mathematics	Deen Dayal Upadhyaya C	mayank.m8103@gmail.cc	9990100537
2/20/2021 18:05:11	Harsh Gautam	BSc mathematics Hons.	Deen Dayal Upadhyaya co	Harshgautam710@gmail.	08303374446
2/20/2021 18:08:38	Tarun Dwivedi	B.sc. maths honours	Deendayal Upadhyaya coll	dwiveditarun861@gmail.c	06264099577
2/20/2021 18:19:30	Rohit	Bsc maths hons.	deen dayal upadhyaya co	Rohit16718@gmail.com	9812079681
2/20/2021 18:19:52	Pravesh Kumar Yadav	B.SC(hon) Math	Deendayal Upadhdhaya c	praveshyadav975577584	9302250356
2/20/2021 18:29:35	Payal	B.Sc. Mathematics(Hono	Deen Dayal Upadhyaya c	payaldhaniya750@gmail.	9571202395
2/20/2021 18:35:23	Divyanshu Raj	Bsc Hons maths	Deen Dayal Upadhyaya C	rajputdevendra072@gma	9758526455
2/20/2021 18:45:17	Pooja Daila	Mathematics (honours)	Deen Dayal Upadhyaya C	poojadaila7@gmail.com	9351891718
2/20/2021 18:47:55	Aanchal Shekhawat	Bsc malhs hons	Deen Dayal Upadhyay C	aanchalshekhawat267@g	9024991524
2/20/2021 18:51:53	Arpita	Bsc maths hons	DDUC	arpitamanderna2002@gr	9310482240
2/20/2021 19:00:59	Aryushi	Bsc Mathematics hons	Deen Dayal Upadhyaya C	aryushi2002@gmail.com	7678312539
2/20/2021 19:11:25	Geniya	Bsc maths hon.	Deen Dayal Upadhyay co	geniyadalal@gmail.com	8178649991
2/20/2021 19:12:29	Isha gupta	Bsc, Hons maths	Deen dayal upadhyay coll	isha2002gupta@gmail.co	6378696711
2/20/2021 19:32:36	Jyoti Yadav	Bsc math Hons.	Dduc	ydvjyoti11@gmail.com	8447855675
2/20/2021 19:33:29	Swikriti Patel	Bsc Honours Mathematic	Deen Dayal Upadhyaya c	patelswikriti07@gmail.cor	9555928159
2/20/2021 19:38:15	Arushi Kumari	Bsc mathematics hons	Deen dayal upadhyay coll	arushikri2002@gmail.cor	9311352196
2/20/2021 20:05:19	Nitin Kumar	BSc mathematics honers	Deen Dayal Upadhyaya C	nitinkumar.nk654321@gr	9992339951
2/20/2021 20:06:59	Brajesh Gaur	Bsc Hons mathematics	Deen Dayal Upadhyay co	birjoo0420@gmail.com	9305169288
2/20/2021 20:46:57	Shivam Singh Parihar	B.Sc(HONS.) Mathematic	Deen Dayal Upadhyay C	shivamparihar9.official@c	7303370490
2/20/2021 21:02:33	Utkarsh Jain	B.Sc.(H)Mathematics	Deen Dayal Upadhyaya C	jutkarsh37@gmail.com	9871834100
2/20/2021 21:29:58	Hansika Jain	BSc hons mathematics	Deen Dayal upadhyaya c	hansikajain392@gmail.co	6265960134
2/20/2021 21:30:19	Deepa Yadav	B.Sc.Hons mathematics	Deen Dayal Upadhyay co	deepa5487301@gmail.co	6350270137
2/20/2021 21:30:21	Anjali Joshi	Bsc maths hons	Deen dayal upadhyay coll	Anjali2801@gmail.com	7428913335
2/20/2021 21:30:22	Megha	Bsc maths hons	Ddu college	dahiyamegha24@gmail.c	9310440461
2/20/2021 21:30:23	ROHIT KUMAR	Bsc Hons mathematics	DDUC	rohitpoonia0376@gmail.c	7976090385
2/21/2021 13:46:19	Deepti Turan	Bsc hons mathematics	Deen Dayal Upadhyaya c	deeptituran@gmail.com	8295034405
2/21/2021 16:51:27	Vishal	B.sc maths hons	Deen Dayal Upadhyay co	jaanikehri99@gmail.com	8570868541
2/21/2021 17:11:38	AVNI CHAUHAN	Bsc (Hons.) Mathematics	Deen Dayal Upadhyaya c	avnichauhan111@gmail.c	9520373993
2/21/2021 19:48:59	Kajal	B.Sc. Mathematics Honou	Deen Dayal Upadhyaya C	ksehrawat738@gmail.cor	98188 12117
2/21/2021 20:08:50	Arpit singh	Bsc mathematics (hons)	Deen dayal upadhyaya cc	singharpit9981@gmail.co	7224078848
2/22/2021 8:31:28	Agni Tag	B.Sc. Mathematics(Hons.	Deen Dayal Upadhyaya	agnitag123456789@gma	8076362174
2/22/2021 9:51:02	Abhishek	Bsc Mathematics (H)	Deen Dyal Upadhaya coll	bobyrao2002@gmail.com	8595968342

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ZH DSE Course-X: Reproductive Biology

Course Learning Objective:

This course is meant for making the students learn about the various aspects of reproduction in humans. It includes a detailed study of the male and female reproductive systems as well as factors that are important in maintaining reproductive health. The students are also made aware of new technologies in assisted reproduction as well as contraceptive methods. They are taught about social and public health issues related to family planning.

Course Learning Outcome:

After completion of the course the students will be able to:

- Get in-depth understanding of morphology, anatomy and histology of male and female reproductive organs.
- Know different processes in reproduction starting from germ cell formation to fertilization and consequent pregnancy, parturition and lactation.
- Compare estrous and menstrual cycles and their hormonal regulation.
- Comprehend the interplay of various hormones in the functioning and regulation of the male and female reproductive systems.
- Know about the diagnosis and management of infertility, including latest methods, technologies and infrastructure in assisted reproduction.
- Practically understand the modern methods in contraception and their use in family planning strategies.
- Translate their understanding into development of products like non-hormonal contraceptives; contribute to drug discovery programmes as well as neonatal and maternal health programmes and work with family planning teams to understand the needs and preferences of individuals belonging to lower socioeconomic groups.

Course Content:

Theory [Credits 4]

60 hrs

Unit1: Reproductive Endocrinology

12 hrs

Hypothalamo-hypophyseal-gonadal axis. Regulation of gonadotropins and gonadal steroids secretion in male and female; Steroidogenesis; Puberty; Mechanism of action of hormones related to reproduction.

(Chapters 1, 2, 4 and 6: Jones, R.E. and Lopez, K.H.; Chapters 1, 2, 3, 4, 5, 6 and 7: Johnson, M.H. and Everitt, B.J.)

Unit2: Male Reproductive System

10 hrs

Functional histology and anatomy of male reproductive system: Testis, epididymis, vas deferens, prostate gland, seminal vesicle; Spermatogenesis and its regulation; Sperm transport and maturation in male genital tract

(Chapter 4: Jones, R.E. and Lopez, K.H.; Chapters 3 and 8: Johnson, M.H. and Everitt, B.J.)

Unit3: Female Reproductive System

28 hrs

Functional histology and anatomy of female reproductive system: Ovary, fallopian tubes/oviducts, uterus, cervix and vagina; Folliculogenesis; Oocyte maturation and ovulation; Corpus luteum formation and regression; Reproductive cycles (estrous and menstrual) and their regulation; changes in the female tract during these cycles. Fertilization; Implantation;

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Maternal recognition of pregnancy; Feto-placental unit; Hormonal regulation of gestation; gestational adaptations; Parturition and its hormonal regulation; Lactation and its regulation (Chapters 2, 3, 9, 10, 11, and 12: Jones, R.E. and Lopez, K.H.; Chapters 4, 8-13: Johnson, M.H. and Everitt, B.J.)

Unit 4: Reproductive Health and Family Planning

10 hrs

Contraceptive methods; Infertility in male and female: causes, diagnosis and management; Assisted Reproductive Technologies: sperm banks, frozen embryos, IVF, ET, EFT, IUT, ZIFT, GIFT, ICSI, PROST.

(Chapters 14 and 16: Jones, R.E. and Lopez, K.H.; Chapter 14: Johnson, M.H. and Everitt, B.J.)

Practical [Credits: 2]

1. Study of animal house: Set up and maintenance of animal house, breeding techniques, care of normal and experimental animals.
2. Examination of vaginal smear of rats (from live animals).
3. Surgical techniques: principles of surgery in endocrinology. Ovariectomy, hysterectomy, castration and vasectomy in rats.
4. Examination of histological sections from photomicrographs/permanent slides of rat/human: testis, epididymis and accessory glands of male reproductive systems; Sections of ovary, fallopian tube, uterus (proliferative and secretory stages), cervix and vagina.
5. Human vaginal exfoliate cytology through micrographs.
6. Sperm count and sperm motility in rat.
7. Study the effect of cryptorchidism on sperm count and motility in rats.
8. Study of modern contraceptive devices.
9. Mini projects involving survey, data collection, statistical analysis and submission of a project report on reproductive health of a small human community

*All exercises requiring live animals are, at present, being performed with the help of photomicrographs/pictures.

Teaching and Learning Process:

Lecture-based learning; aided with diagrams, flow charts and models; will be interactive with simple questions for students to learn and derive logically and think analytically. Examples, wherever possible, will be given from day-to-day activities to explain the concept and make the basics clear, relevant and interesting. After every lecture students will be posed with questions to help them summarise the topic. Regular practical classes will be held to develop the practical skills of students. The topics for practical will include detailed explanations of organ systems using hands-on and digital means. Histological slides will be shown to explain the microscopic structure of various tissues. The students will be assessed on their performance after each practical class. Seminar-based learning will include by delivering seminar by students followed by a discussion to assess their understanding and grasp of the topics. Students will undertake projects for certain topics to sharpen their understanding, enhance critical thinking, reasoning and analysis, and hone their presentation skills. Students will attend in-college workshops on topics related to their study. Experts in the field will be invited to hold workshops. Students will also be taken on field trips to subject related locations/agencies for a practical understanding of skills required for their potential future workplace. Mock practical/theory examinations will be held before the university

examination. The pattern of questions would match the university question paper to better equip the students to perform with confidence in the final examination.

Assessment Methods:

Students of the reproductive biology study programme will be assessed on the basis of their course learning outcomes as well as relevant skills. A variety of assessment methods will be used:

- Time-constrained oral and written examinations
- Problem-based assignments, individual project reports
- Practical file reports
- *Viva-voce* and
- Class assessments *via* observation of practical skills and regular class tests.

Keywords:

Reproductive system, Puberty, Spermatogenesis, Oogenesis, Folliculogenesis, Menstrual cycle, Estrous cycle, Infertility, Pregnancy, Family planning, Reproductive health

Recommended Books:

- Jones, R.E. and Lopez, K.H. (2014) Human Reproductive Biology. IV Edition, Elsevier.
- Johnson, M.H. and Everitt, B.J. (1995) Essential reproduction. IV Edition, London, Blackwell Science (Eighth edition by Johnson, M.H., 2018)

Suggested Readings:

- Austin, C.R. and Short R.V. (Eds) (2012). Reproduction in Mammals. Cambridge University Press. (online edition)
- De-Groot, L.J. and Jameson, J.L. (eds) (2001). Endocrinology. W.B. Saunders and Company.
- Franklyn F. Bolander (2012). Molecular Endocrinology. III Edition, USA, Academic Press.
- Knobil, E. and Neil, JD (eds.) (2014). The Physiology of Reproduction. IV Edition, Elsevier.
- Hatcher, R.A. et al. (1997). The Essentials of Contraceptive Technology. Population Information Programme. John Hopkins School of Public Health.
- Robert Martin (2013). How We Do It: The Evolution and Future of Human Reproduction. Basic Books.
- Peter T. Ellison (2001). On Fertile Ground: A Natural History of Human Reproduction. Harvard University Press.

Online Tools and Web Resources:

- Introduction to reproduction: <https://www.classcentral.com/course/course-introduction-to-reproduction-4252>
- Anatomy & Physiology: Sexual Reproduction in Humans: <https://www.classcentral.com/tag/reproductive-health?subject=health>


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Deen Dayal Upadhyaya College
University of Delhi
B.Sc. (H) Zoology Semester VI
Assignment Topics 2021
Paper- Reproductive Biology

Assignment Topics:

- | | |
|--|------------------------|
| 1. Gonadal Hormones | Aashi, Aastha |
| 2. Mechanism of hormone action | Adrija, Akanksha |
| 3. Hypothalamo – hypophyseal – gonadal axis | Akriti, Bhawna |
| 4. Development of male and female gonads | Mansi, Nilmadhab |
| 5. Development of male and female genital duct | Nishi, Pooja |
| 6. Development of male and female external genitalia | Prachi, Ram S |
| 7. Spermatogenesis and its hormonal regulation | Shallu, Shilpi |
| 8. Outline of Male reproductive system in rat | Shradha, Shweta |
| 9. Outline of Male reproductive system in human | Simran(27), Simran(28) |
| 10. Gonadotropic hormones, its regulation in male & female | Simran(29), Sonia |
| 11. Mechanism of sexual differentiation | Sourabh, Srashti |
| 12. Cellular functions of Testis | Tanuja, Vaibhav |
| 13. System Cell Renewal | Vishlesh, Chetan |
| 14. Androgen synthesis and metabolism | Kisa, Monika |
| 15. Epididymal function and sperm maturation | Mukul, Sapna |
| 16. Accessory glands functions | Sidrah, Simran (42) |
| 17. Sperm transportation in male genital tract | Aruna, Nirmal |

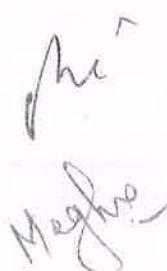

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Nitish Kumar Mahato.


Kumar Golu


Arun


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Megha


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Copy sent
Prof. Dr. Aruna Nehra
(11/11/2018)

Sperm transport in male genital tract

By : Aruna Nehra

18HZL7243

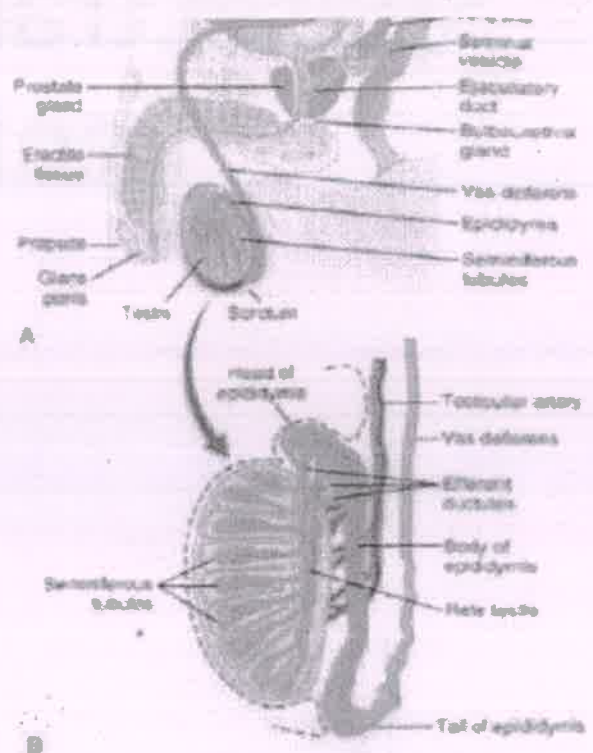
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- The urethra is supplied with mucus derived from urethral glands and also from bilateral bulbourethral glands (Cowper's glands) located near the origin of urethra



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Testes

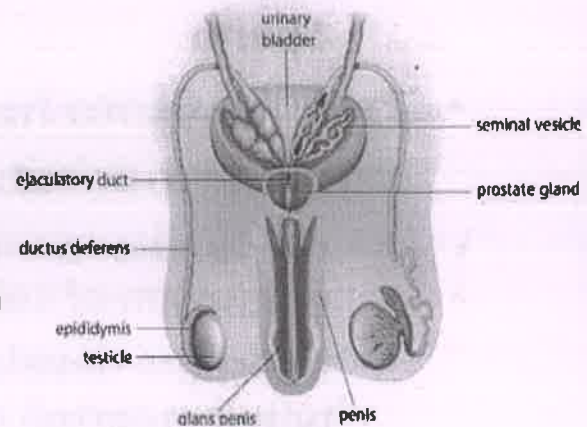
- **Organs responsible for the production of:**
 - male sex steroid hormone testosterone
 - Sperm
- **Organized into hundreds of sperm producing seminiferous tubules.**
 - the tubules are made up of a simple columnar epithelium of sertoli (Nurse) cells
 - the sperm development (spermatogenesis) occur between sertoli cells from the basal surface (inside the body) of the seminiferous tubule to the lumen (outside the body).

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Epididymis

- A mass of coiled tubes on the superficial surface of each testis that the sperm must pass through prior to ejaculation.
- Sperm become mature (capable of fertilizing an ovum) as pass through its tubes towards the vas deferens.
- During ejaculation, a layer of smooth muscle that surrounds the distal epididymis contracts, expelling sperm into the vas deferens.



nasen



- As the newly developed spermatozoa pass through these regions of the epididymis, many changes occur, including:
 - Alterations in net surface charge
 - Membrane protein composition
 - Immunoreactivity
 - Phospholipid and fatty acid content, and
 - Adenylate cyclase activity
- And these changes improve the structural integrity of sperm membrane and also increase the fertilization ability of spermatozoa.
- Finally, epididymal contraction allow sperm emission at ejaculation, sperm are moved from the epididymis to vas deferens.

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Vas deferens (Ductus deferens)

- The vas deferens is a thin tube that starts from the epididymis to the urethra in the penis.
- Conveys sperm during sexual arousal through peristaltic contractions.
 - Can also store sperm several months



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Accessory glands (secrete most of liquid portion of semen)

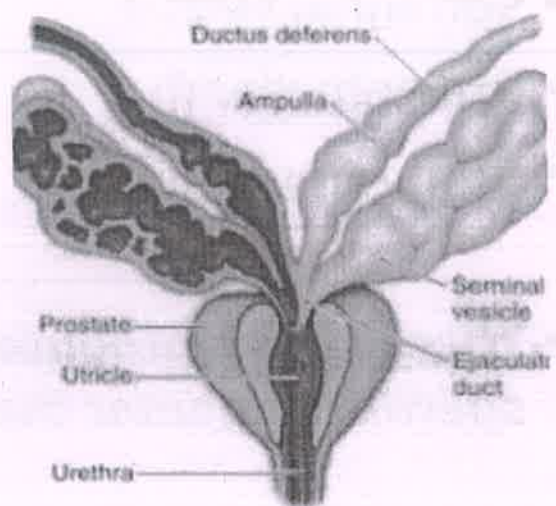
- Seminal vesicle
- Prostate gland
- Bulbourethral gland.
- These glands produce nourishing fluids for the sperms that enter the urethra.

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Prostate Gland

- The Prostate gland surrounds the ejaculatory duct at the base of urethra, just below the bladder.
- The Prostate gland is responsible for making the production of semen, a liquid mixture of sperm cells, prostate fluid and seminal fluid.




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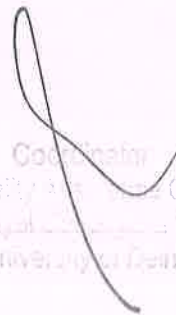
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Thankyou.....


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365

Zoology
field visit

28

A virtual visit to Aravalli Biodiversity Park was organized by Department of Zoology, Deen Dayal Upadhyaya College (University of Delhi). Resource person: Dr. Balwinder Kaur, Nature Education Officer, Aravalli Biodiversity Park. A total of 77 participants from within and outside the college attended the event. The visit started with a formal introduction of the resource person by the organizers. The virtual visit was done with a live video camera, walking through the common paths, observing all the flora and fauna of the park. History and current state of the Park was discussed with the students. The resource person explained various ways the park is adopting to grow the vegetation naturally found on the Aravalli Hills in Delhi, in the Park. A virtual visit to "Nursery", Polyhouse, Nethouse and their transplantation to the forest area in the Park was explained. The Medical Conservatory was shown where the guide explained about the medicinal properties of the various plants/trees there like the Tulsi, the Neem, Aloe Vera, Papaya, etc. Then the virtual visit moved to the "Butterfly Conservatory", where amazing and fascinating species of butterflies were shown. The mining area, Orchid Conservatory, ponds and 'Big Ditch' were also shown. The virtual visit was a really enjoyable and fascinating experience for the students. The event ended with a vote of thanks by the organizers.

Convenors: Dr. Priya Goel and Dr. Nitish Mahato.

Virtual Visit
to
Aravalli Biodiversity Park
17TH FEBRUARY 2021 10:00 - 11:00 AM

PRACTICAL SESSION FOR B.Sc.(H) ZOOLOGY 1ST YEAR STUDENTS

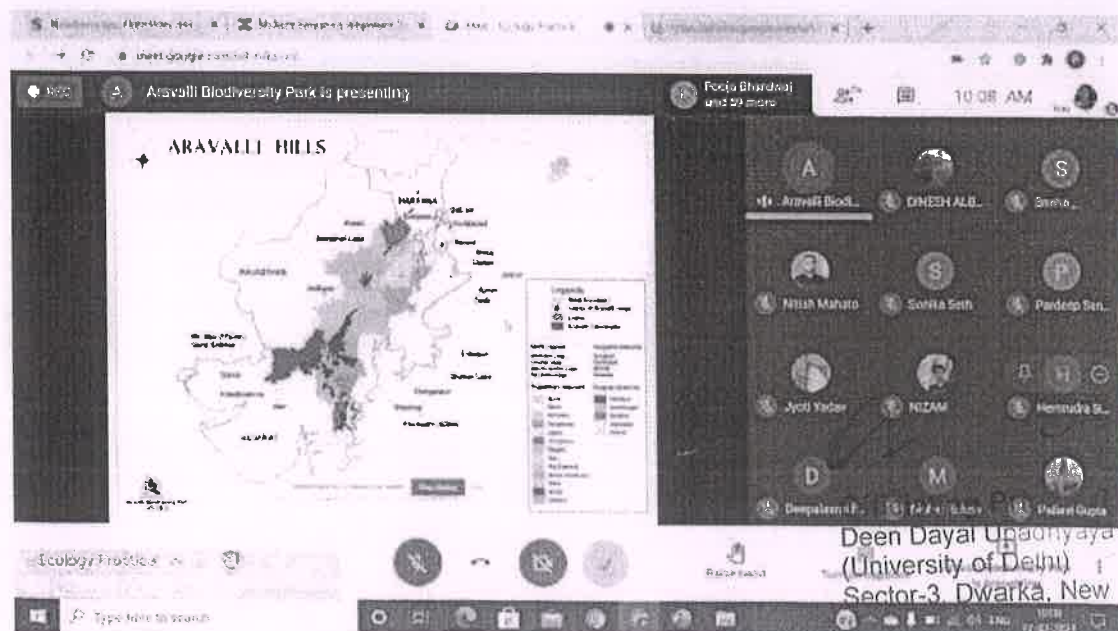
Resource Person: Ms. Balwinder Kaur
(Nature Education Officer,
Aravalli Biodiversity Park)

Google Meet
meet.google.com/rct-rukp-vxz

Principal DDUC:
Dr. Hem Chand Jain

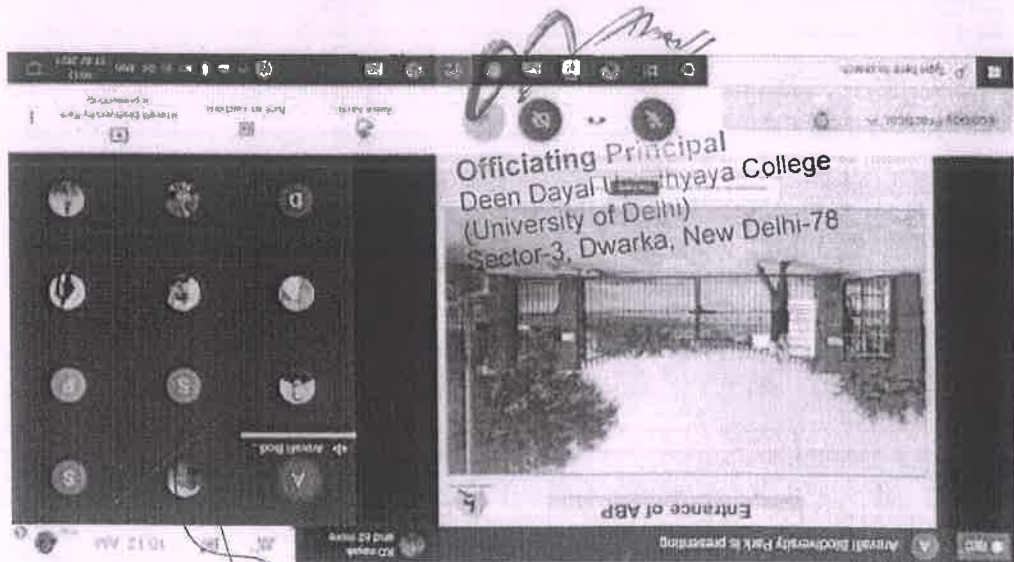
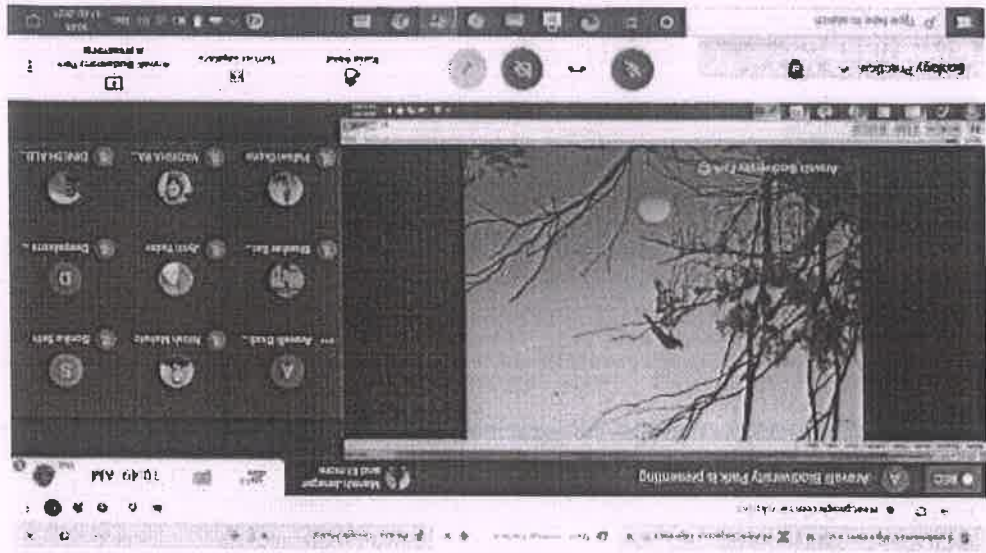
Organizers:
Dr. Priya Goel
Dr. Nitish Kumar Mahato
Department of Zoology
Deen Dayal Upadhyaya College
University of Delhi

Dr. Ranu Solanki



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Aravalli Biodiversity Park is presenting

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ZH DSE Course-II: Animal Biotechnology

Course Learning Objective:

Biotechnology is the advanced branch of biological sciences which mostly deals with technological application on biological systems. It is basically the management of biological processes for industrial and other human welfare purposes. The present paper on biotechnology attempts to give a wholesome idea of biotechnology at a basic level. It provides a tool kit in the form of a number of various techniques and processes developed over time to solve problems involving primarily human welfare with focus on health and medicine. It will equip the students with basic tools of biotechnology which are a must for everyone interested in pursuing a career in biotechnology. It makes one aware of the scope of this field which encompasses almost every field of science like engineering, research, commercialization and academics.

Course Learning Outcome:

Upon completion of the course, students should be able to:

- Use or demonstrate the basic techniques of biotechnology like DNA isolation, PCR, transformation, restriction digestion etc.
- Make a strategy to manipulate genetic structure of an organism for the improvement in any trait or its well-being based on the techniques learned during this course.
- Understand better the ethical and social issues regarding GMOs.
- Use the knowledge for designing a project for research and execute it.

Course Content:

Theory [Credits: 4]

60 hrs

Unit 1: Introduction

3 hrs

Concept and scope of biotechnology

(Chapter 1: Glick, B.R., Pasternak, J.J. and Patten, C.L.)

Unit 2: Basic Tools for Gene Manipulation

12 hrs

Cloning vectors: Plasmids, Cosmids, Phagemids, Lambda Bacteriophage, M13, BAC, YAC, MAC and Expression vectors (characteristics). Restriction enzymes: Nomenclature, detailed study of Type II, DNA modifying enzymes. Transformation techniques: Calcium chloride method, electroporation and biolistic method. Construction of genomic and cDNA libraries and screening by colony and plaque hybridization

(Chapter 3: Glick, B.R., Pasternak, J.J. and Patten, C.L; Chapter 2, 4, 6, 7 and 8: Brown, T.A.)

Unit 3: Advance Tools and Techniques

18 hrs

Southern, Northern and Western blotting DNA sequencing: Sanger method, Next generation sequencing (Illumina), Polymerase Chain Reaction, DNA Finger Printing and DNA micro array, Gene Editing Tools: Zinc finger nucleases (ZFNs), transcription activator-like effector-based nucleases (TALEN) and the clustered regularly interspaced short palindromic repeats (CRISPR/Cas9) system

(Chapter 4: Glick, B.R., Pasternak, J.J. and Patten, C.L; Chapter 9, 10 and 16, Brown, T.A.)

Unit 4: Genetically Modified Organisms

18 hrs

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Production of cloned and transgenic animals: Nuclear Transplantation, Retroviral Method, DNA microinjection; Applications of transgenic animals: Production of pharmaceuticals, production of donor organs, knock out mice. Production of transgenic plants: Agrobacterium-mediated transformation. Applications of transgenic plants: insect and herbicide resistant plants.

(Chapter 9, 16, 18, 19 and 21: Glick, B.R., Pasternak, J.J. and Patten, C.L; Chapter 15: Brown, T.A.)

Unit 5: Applications of Genetic Engineering

9 hrs

Molecular diagnosis of genetic diseases (Cystic fibrosis, Sickle cell anemia), Recombinant DNA in medicines: Recombinant insulin and human growth hormone, Gene therapy

(Chapter 9: Glick, B.R., Pasternak, J.J. and Patten, C.L; Chapter 13 and 14: Brown, T.A.)

Practical [Credits: 2]

1. Genomic DNA isolation from *E.coli*
2. Plasmid DNA isolation (pUC 18/19) from *E.coli*
3. Demonstration of Restriction digestion of Plasmid/Lambda DNA.
4. Construction of circular and linear restriction map from the data provided.
5. Calculation of transformation efficiency from calcium chloride method.
6. To demonstrate following techniques: (Optional)
Southern/ Northern/Western blotting (Any one)
PCR
DNA fingerprinting
DNA Sequencing (Sanger's Method)
7. Project report on animal cell culture OR on a visit to any biotechnology Institute

Teaching and Learning Process:

The students can have hands-on experience of basic biotechnology tools and can acquire jobs and internships in pharmaceutical companies directly after graduation and can also execute research in biotechnology. A problem-solving methodology should be employed in biotechnology education, which consists of four phases: design, production, evaluation and presentation. Various methods will be employed to make learning effective like tutorials, workshops, seminar, online assignments, questionnaires, simulation exercises and presentations. Evaluation elements in these methods will also serve to direct student learning.

Assessment Methods:

- Power Point presentation on any aspect of biotechnology instead of regular assignments.
- The project work would be assessed by the visiting examiner approved by the University.
- Students should execute one project of their choice or teacher may assign the project.
- The project report should be scanned for plagiarism check by freely available software. A soft copy of report should be mandatory.
- Semester-end and term-end examinations will carry the major assessment with regular check on students in the class.

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Keywords:

Biotechnology, Gene manipulation, Vectors, Restriction Enzyme, Transformation, Blotting, Sequencing, Gene Editing, Trans-genesis, Recombinant DNA medicines, Bio-nano Technology, Gene Therapy

Recommended Books:

- Brown, T.A. (2010) Gene Cloning and DNA Analysis. VI Edition, Wiley-Blackwell publishing (Oxford, UK), ISBN: 978-1-4051-8173-0.
- Glick, B.R., Pasternak, J.J. and Patten, C.L. (2010). Molecular Biotechnology - Principles and Applications of Recombinant DNA. IV Edition, ASM press, Washington, USA. ISBN: 978-1- 55581-498-4 (HC).
- Primrose, S.B., and Twyman, R. M. (2006). Principles of Gene Manipulation and Genomics. VII Edition, Blackwell publishing (Oxford, UK) ISBN: 13: 978-1-4051-3544-3.

Suggested Readings:

- Watson, J.D., Myers, R.M., Caudy, A. and Witkowski, J.K. (2007) Recombinant DNA- Genes and Genomes- A Short Course. III Edition, Freeman and Co., N.Y., USA.
- Clark, D. P. and Pazdernik, N.J. (2012) Biotechnology, Academic Press, ISBN: 978-0-12-385063-8

Online Tools and Web Resources:

- <https://swayam.gov.in/courses/5178-molecular-biology-genetic-engineering-and-plant-tissue-culture> Module no.:14to 21,23&24
- <https://nptel.ac.in/courses/102103041/2> Gene Therapy
- <https://nptel.ac.in/courses/102103013/49> Genetic Engineering & Applications (Web)
- <https://nptel.ac.in/courses/102107058/6> Biomedical nanotechnology (Video)
- <https://nptel.ac.in/courses/102107028/40> Analytical Technologies in Biotechnology (Video) Electrophoresis, PCR, DNA sequencing methods
- https://www.edx.org/course?search_query=biotechnology
- <https://www.coursera.org/courses?query=biotechnology&>



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Zoology
Animal Bio

2020-21

DEEN DAYAL UPADHYAYA COLLEGE

University of Delhi

Course Name : B.Sc.(H) Zoology Sem. 6

Academic year : 2020-2021

Subject Name : [32237903] CBCS Animal Biotechnology(Lab)

Faculty Name : SHAILLY ANAND

Sr. No	Roll No	Student Name	Total (Class Test/Presentation)	Class Test/Presentation Marks	Lect. Att.	Tut. Att.	Total (L+T)	Eca Benefit Given (L+T)	Adj Att	Adj Att(%)	Att Marks	Ass	Total(Assign Marks)	Assign Marks	Class Test	Attendance	Total Marks
1	18HXL7201	AASHI	0.00/0	0.00/10	22/40	0/0	22/40	0	66/96	68.75	1/5	0/0	0.00/10	0.00/10	0.00/10	1/5	1/25
2	18HXL7202	AASTHA	0.00/0	0.00/10	32/40	0/0	32/40	0	76/96	79.17	3/5	0/0	0.00/10	0.00/10	0.00/10	3/5	3/25
3	18HXL7203	ADRIJA MOHANTA	0.00/0	0.00/10	30/40	0/0	30/40	0	66/96	68.75	1/5	0/0	0.00/10	0.00/10	0.00/10	1/5	1/25
4	18HXL7204	AKANKSHA SINGH	0.00/0	0.00/10	30/40	0/0	30/40	0	66/96	68.75	1/5	0/0	0.00/10	0.00/10	0.00/10	1/5	1/25
5	18HXL7205	AKRITI KUMARI	0.00/0	0.00/10	30/40	0/0	30/40	0	74/96	77.08	3/5	0/0	0.00/10	0.00/10	0.00/10	3/5	3/25
6	18HXL7243	ARUNA NEHRA	0.00/0	0.00/10	32/40	0/0	32/40	0	76/96	79.17	3/5	0/0	0.00/10	0.00/10	0.00/10	3/5	3/25
7	18HXL7207	BHAWNA SOLANKI	0.00/0	0.00/10	38/40	0/0	38/40	0	94/96	97.92	5/5	0/0	0.00/10	0.00/10	0.00/10	5/5	5/25
8	18HXL7236	Chetan Chowdhary	0.00/0	0.00/10	18/40	0/0	18/40	0	50/96	52.08	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
9	18HXL7237	KISA BATOOL	0.00/0	0.00/10	22/40	0/0	22/40	0	66/96	68.75	1/5	0/0	0.00/10	0.00/10	0.00/10	1/5	1/25
10	18HXL7213	MANSI JANGRA	0.00/0	0.00/10	16/40	0/0	16/40	0	60/96	62.50	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
11	18HXL7238	MONIKA	0.00/0	0.00/10	36/40	0/0	36/40	0	92/96	95.83	5/5	0/0	0.00/10	0.00/10	0.00/10	5/5	5/25
12	18HXL7239	MUKUL ROHILLA	0.00/0	0.00/10	26/40	0/0	26/40	0	62/96	64.58	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
13	18HXL7215	NILAMADHAB SENAPATI	0.00/0	0.00/10	26/40	0/0	26/40	0	50/96	52.08	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
14	18HXL7245	NIRMAL SINGH	0.00/0	0.00/10	28/40	0/0	28/40	0	60/96	62.50	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
15	18HXL7216	NISHI PANT	0.00/0	0.00/10	20/40	0/0	20/40	0	56/96	58.33	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
16	18HXL7217	POOJA VERMA	0.00/0	0.00/10	32/40	0/0	32/40	0	76/96	79.17	3/5	0/0	0.00/10	0.00/10	0.00/10	3/5	3/25
17	18HXL7218	PRACHI	0.00/0	0.00/10	28/40	0/0	28/40	0	80/96	83.33	4/5	0/0	0.00/10	0.00/10	0.00/10	4/5	4/25
18	18HXL7220	RAM SHANKAR	0.00/0	0.00/10	40/40	0/0	40/40	0	96/96	100.00	5/5	0/0	0.00/10	0.00/10	0.00/10	5/5	5/25
19	18HXL7240	SAPNA YADAV	0.00/0	0.00/10	26/40	0/0	26/40	0	78/96	81.25	4/5	0/0	0.00/10	0.00/10	0.00/10	4/5	4/25
20	18HXL7223	SHALLU	0.00/0	0.00/10	34/40	0/0	34/40	0	86/96	89.58	5/5	0/0	0.00/10	0.00/10	0.00/10	5/5	5/25
21	18HXL7224	SHILPI SINHA	0.00/0	0.00/10	32/40	0/0	32/40	0	84/96	87.50	5/5	0/0	0.00/10	0.00/10	0.00/10	5/5	5/25
22	18HXL7225	SHRADHA DARIYAL	0.00/0	0.00/10	32/40	0/0	32/40	0	84/96	87.50	5/5	0/0	0.00/10	0.00/10	0.00/10	5/5	5/25

Project Marks are included in IA marks of Practical Examination

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23	18HXL7226	SHWETA DOHARE	0.00/0	0.00/10	34/40	0/0	34/40	0	78/96	81.25	4/5	0/0	0.00/10	0.00/10	0.00/10	4/5	4/25
24	18HXL7241	SIDRAH IQBAL	0.00/0	0.00/10	30/40	0/0	30/40	0	74/96	77.08	3/5	0/0	0.00/10	0.00/10	0.00/10	3/5	3/25
25	18HXL7242	SIMRAN	0.00/0	0.00/10	26/40	0/0	26/40	0	66/96	68.75	1/5	0/0	0.00/10	0.00/10	0.00/10	1/5	1/25
26	18HXL7227	SIMRAN	0.00/0	0.00/10	6/40	0/0	6/40	0	6/96	6.25	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
27	18HXL7228	SIMRAN	0.00/0	0.00/10	32/40	0/0	32/40	0	68/96	70.83	2/5	0/0	0.00/10	0.00/10	0.00/10	2/5	2/25
28	18HXL7229	SIMRAN SINGH	0.00/0	0.00/10	32/40	0/0	32/40	0	68/96	70.83	2/5	0/0	0.00/10	0.00/10	0.00/10	2/5	2/25
29	18HXL7230	SONIA	0.00/0	0.00/10	32/40	0/0	32/40	0	72/96	75.00	3/5	0/0	0.00/10	0.00/10	0.00/10	3/5	3/25
30	18HXL7231	SOURABH MEENA	0.00/0	0.00/10	14/40	0/0	14/40	0	50/96	52.08	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
31	18HXL7232	SRASHTI SAHU	0.00/0	0.00/10	22/40	0/0	22/40	0	66/96	68.75	1/5	0/0	0.00/10	0.00/10	0.00/10	1/5	1/25
32	18HXL7233	TANUJA	0.00/0	0.00/10	18/40	0/0	18/40	0	34/96	35.42	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
33	18HXL7234	VAIBHAV SAINI	0.00/0	0.00/10	38/40	0/0	38/40	0	82/96	85.42	5/5	0/0	0.00/10	0.00/10	0.00/10	5/5	5/25
34	18HXL7235	VISHLESH KOTARYA	0.00/0	0.00/10	38/40	0/0	38/40	0	86/96	89.58	5/5	0/0	0.00/10	0.00/10	0.00/10	5/5	5/25

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PROJECT REPORT ON ANIMAL CELL CULTURE

Practical work submitted to Deen Dayal Upadhyaya College
University Of Delhi in Partial Fulfillment of the requirements for
awards of

Under Graduate Science - Third Year

B.Sc Zoology (Hons)

ANIMAL BIOTECHNOLOGY

Submitted by

R. Ram Shankar

Univ Roll No: 18015569014

College Roll No: 18HZL7220

Under the guidance of

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BONAFIDE CERIFICATE

This is to certify that the practical work was done and is submitted by
R. RAM SHANKAR to the **DEEN DAYAL UPADHYAYA**
COLLEGE in partial fulfillment of the requirement for the award of
Undergraduate third year during the year 2020-2021.

TEACHERS:

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DATE: / / 2021

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INTRODUCTION:

- ❖ Cell culture can be defined as the process of **cultivating cells** and **tissues outside the body** of an organism in an **artificial environment**, which stimulates the **invivo** conditions such as **temperature, nutrition** and **protection** from microorganisms.
- ❖ The cells may be removed directly or by **mechanical or enzymatic** action grown subsequently in a favorable environment.
- ❖ The cells can also be **obtained** by previously made **cell line** or cell strain.
- ❖ Ex) fibroblast, lymphocytes, cells from cardiac and skeletal tissues, cells from liver, breast, skin, and kidney and different types of tumor cells.
- ❖ The environment usually consist of suitable **culture vessels** containing medium that supplies the nutrients essential for **survival** and **growth**.

HISTORY

Year	Scientist	Contribution
1878	Claude Bernard	Maintained physiological systems of an organism even after the death of an organism.
1885	Roux	Maintained embryonic chick cells in a saline culture
1897	Loeb	Demonstrated the survival of cells isolated from blood and connective tissue in serum and plasma.
1903	Jolly	Observed cell division of salamander leucocytes in vitro.
1907	Harrison Father of cell culture	Cultivated frog nerve cells in a lymph clot held by the 'hanging drop' method
1910	Burrows	Succeeded in long-term cultivation of chicken embryo cell in plasma clots .

1911	Lewis	Made the first liquid media and observed limited monolayer growth
1913	Carrel	Introduced strict aseptic techniques so that cells could be cultured for long periods.
1916	Rous and Jones	Introduced proteolytic enzyme trypsin for the subculture of adherent cells.
1923	Carrel and Baker	Developed 'Carrel' or T-flask as the first specifically designed cell culture vessel
1927	Carrel, Rivera	Produced the first viral vaccine - Vaccinia
1948	Earle	Isolated mouse fibroblasts which formed clones from single cells
1949	Enders	Reported that polio virus could be grown on human embryonic cells in culture
1952	Gey	Established a continuous cell line from a human cervical carcinoma known as HeLa (Helen Lane) cells.
1955	Eagle	Studied the nutrient requirements of selected cells in culture
1961	Hay flick and Moorhead	Isolated human fibroblasts and showed that they have a finite life-span in culture.
1964	Littlefield	Introduced the HAT medium for cell selection
1965	Ham	Introduced the first serum-free medium which was able to support the growth of some cells
1965	Harris and Watkins	Fused human and mouse cells by the use of a virus
1975	Kohler and Milstein	Produced the first hybridoma capable of secreting a monoclonal antibody
1978	Sato	Established the basis for the development of serum-free media from cocktails of hormones and growth factors
1982	Human insulin became the first recombinant protein to be licensed as a therapeutic agent.	
1985	Human growth hormones produced from recombinant bacteria was accepted for therapeutic use.	
1987	Tissue-type plasminogen activator from recombinant animal cells became commercially available	
1989	Recombinant erythropoietin in trial.	
1990	Recombinant products in clinical trial	

Minimal Requirements for Cell Culture:

- i. Clean and quite sterile area
- ii. Preparation facilities
- iii. Animal house
- iv. Microbiology laboratory
- v. Storage facilities (for glassware, chemicals, liquids, small equipment).

Centrifuge, Water bath, pH meter, Chemical balance, Stirrer, Bunsen burner, Pasteur pipettes, Bench centrifuge, Soaking bath, Deep washing sink, Pipette cylinder, Pipette washer

❖ **Sterile Work Area:**

Separate room should be made available for clean cell culture work. A HEPA (**H**igh **E**fficiency **P**article **A**ir **F**ilter) filtered air supply is desirable but not always affordable.

❖ **Incubation Facilities:**

The laboratory will need an incubator to maintain the cells at **30-40°C**. The incubation temperature will depend on the type of cells being cultivated

❖ **Refrigerators and Freezer:**

Important for storage of liquid media at 4°C and for **enzymes** (e.g., trypsin) and some **media** components (e.g., glutamine and serum) at -20°C. A refrigerator or cold room is required to store medium and **buffers, reagents..**

❖ **Microscopes:**

A simple inverted microscope to recognize **morphological changes** in cultures

❖ **Tissue Culture Ware:**

Most common being specially treated **polystyrene**.

❖ **Washing Up and Sterilizing Facilities:**

Glassware should be soaked in a suitable **detergent**, then passed through a stringent washing procedure with thorough soaking in distilled water prior to **drying** and **sterilizing**.

All other equipment are autoclaved at **121°C for 20 min.**

❖ **Liquid Nitrogen Deep Freezer:**

Cultures should be frozen in exponential phase of growth with a suitable preservative, usually **DMSO**. The cells are frozen slowly at 1°C/min to -50°C and then kept either at -196°C immersed in **liquid N₂**.

❖ **Water Still or Reverse Osmosis Apparatus:**

Essential for preparation of media, and rinsing glassware. Storage in plastic may result in leaching of toxic substances from the plastic into the water.

❖ **Filter Sterilization:**

Media that cannot be autoclaved must be sterilized through a 0.22 mm pore size membrane filter.

Other Requirements:

i. **Temperature:**

In most of the mammalian cell cultures, the temperature is maintained at 37°C.

ii. **pH:**

Most media maintain the pH between 7 and 7.4. A pH below 6.8 inhibits cell growth.

iii. **Osmolality:**

A change in osmolality can affect cell growth and function. Salt, Glucose and Amino acids in the growth media determine the osmolality of the medium

iv. **Buffering:**

There is a direct relationship between the concentration of carbon dioxide, bicarbonate ions and pH of the media. By increasing the atmospheric CO₂, the pH will be reduced making the medium acidic.

v. **Growth Factors:**

Amino acids like **cysteine** and **tyrosine**, and some non-essential amino acids may be needed. Cultured cells use **glutamine** as an energy and carbon source in preference to glucose, although glucose is present in most defined media.

vi. **Antibiotics and Antimycotics:**

It is necessary to incorporate antibiotics and antimycotics into the media. e.g., penicillin/streptomycin solutions, to broader spectrum antibacterial/antimycotic agents such as kanamycin or amphotericin B.

Should not be toxic to the cells in culture and may depend on the type of contamination experienced in the individual laboratory

Some of them are stated below:

EMEM—Eagle's minimal essential medium

DMEM—Dulbecco's modification of Eagle's medium

CMEM—Glasgow's modification of Eagle's medium

vii. **Culture Media:**

The culture media should provide:

a. The optimum conditions of factors like pH, osmotic pressure, etc.

b. It should contain chemical constituents which the cells or tissues are incapable of synthesizing.

Phenol Red is added as a pH indicator of the medium.

Types of culture media:

- (a) **Natural Media:** The natural media are the natural sources of nutrient sufficient for growth and proliferation of animal cells and tissues.

1. **Coagulant, such as plasma clots:** Commercially available in the form of liquid plasma kept in silicon ampoules or lyophilized plasma. Plasma can also be prepared in the laboratory taking out blood from male fowl and adding heparin to prevent blood coagulation.
2. **Biological fluids such as serum:**
 - ❖ Serum is the source of various amino acids, hormones, lipids, vitamins, poly- amines, and salts containing ions such as calcium, ferrous, ferric, potassium
 - ❖ Also contains the growth factors which promotes cell proliferation, cell attachment and adhesion factors. Obtained from human adult blood, placental, cord blood, horse blood, calf blood. The other forms of biological fluids used are coconut water, amniotic fluid, pleural fluid, insect haemolymph serum, culture filtrate, aqueous humour, from eyes.
3. **Tissue extracts** ex) Embryo extracts- Extracts from tissues such as embryo, liver, spleen, leukocytes, tumour, bone marrow etc. are also used for culture of animal cells.

(b) Synthetic Media: Prepared artificially by adding several organic and inorganic nutrients, vitamins, salts, serum proteins, carbohydrates, co-factors, etc. Different types of synthetic media can be prepared for a variety of cells and tissues to be cultured.

1. Serum containing media

2. Serum- free media

Ex) minimal essential medium (MEM), RPMI 1640 medium, CMRL 1066, F12

Advantages of Serum in Culture Medium are:

- ❖ Serum binds and neutralizes toxins
- ❖ Serum contains a complete set of essential growth factors, hormones, attachment and spreading factors, binding and transport proteins, Contents
- ❖ It contains the protease inhibitors,
- ❖ It increases the buffering capacity,
- ❖ It provides trace elements.

Disadvantages of Serum in Culture Medium are:

- ❖ It is not chemically defined, and therefore, its composition varies a lot,
- ❖ It is sometimes source of contamination by viruses, mycoplasma, prions, etc.,
- ❖ It increases the difficulties and cost of downstream processing,
- ❖ It is the most expensive component of the culture medium.

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Common media and their applications

Media	Tissue or cell line
IMDM	Bone marrow, hematopoietic progenitor cells, human lymphoblastoid leukemia cell lines
MEM	Chick embryofibroblast, CHO cells, embryonic nerve cells, alveolar type cells, endothelium, epidermis, fibroblast, glia, glioma, human tumors, melanoma
DMEM	Mesenchymal stem cell, chondrocyte, fibroblast, Endothelium, fetal alveolar epithelial type II cells, cervix epithelium, gastrointestinal cells, mouse neuroblastoma, porcine cells from thyroid glands, ovarian carcinoma cell lines, skeleton muscle cells, sertoli cells, Syrian hamster fibroblast
RPMI-1640	T cells and thymocytes, hematopoietic stem cells, human tumors, human myeloid leukemia cell lines, human lymphoblastoid leukemia cell lines, mouse myeloma, mouse leukemia, mouse erythroleukemia, mouse hybridoma, rat liver cells
Nutrient mixture F-10 and F-12	Chick embryo pigmented retina, bone, cartilage, adipose tissue, embryonic lung cells, skeletal muscle cells

Based on the number of cell division

(A) Primary cell culture

- ❖ Obtained **straight from the cells of a host tissue** and grown on container
- ❖ Comprises **heterogeneous cells** and cells divide only for a limited time. However, these cells are much **similar to their parents**.
- ❖ Primary cells grow either as an adherent monolayer or in a suspension.

Adherent cells

- ❖ These cells are **anchorage dependent** and propagate as a **monolayer**. These cells need to be attached to a substrate for proliferation. When the bottom of the culture vessel is covered with a continuous layer of cells, these are known as monolayer cultures. Single layers, can be transferred directly to a cover slip to examine under microscope.

Advantages of primary cultures are the retention of:

1. The Capacity for Biotransformation:

- ❖ Metabolism of a primary cell culture has greater similarity to in vivo.

2. The Tissue-Specific Functions:

- ❖ Ex) primary cultures of rat myocardial cells consisting of synchronously beating cells can be prepared. When these cultures were exposed to tricyclic antidepressants that are cardio toxic, beating were observed.

Limitations of Primary Cell Cultures:

- ❖ Necessity to **isolate cells** for each experiment. Procedures to isolate cells require the disruption of the tissue, often with proteolytic enzymes.
- ❖ Result in the **loss or damage of specific membrane receptors**, damage to the integrity of the membrane, and loss of cellular products.

Suspension cells

- ❖ Do not attach to the surface of the culture vessels. These cells are also called **anchorage independent** or **non-adherent cells** which can be grown floating in the culture medium. Hematopoietic stem cells and tumor cells can be grown in suspension.
- ❖ These cells grow much faster and do not require the frequent replacement of the medium and can be easily maintained. Enzyme treatment is not required for the dissociation of cells; similarly these cultures have short lag period.

Necessity of sub-culture

- ❖ After the cells are isolated from the tissue and proliferated under the appropriate conditions, they occupy all of the available substrate i.e. reach confluence. For a few days, it can become too crowded for their container and this can be detrimental to their growth, generally leading to cell death if left for a long time.
- ❖ The cells thus have to be subculture i.e. a portion of cells is transferred to a new vessel with fresh growth medium which provides more space and nutrients for the continual growth of both portions of cells. Hence subculture keeps cells healthy and in a growing state.
- ❖ A passage number refers specifically to how many times a cell line has been sub-cultured. In contrast with the population doubling level in that the specific number of cells involved is not relevant. It simply gives a general indication of how old the cells may be for various assays.

B. Secondary cell culture and cell line

- ❖ When a primary culture is sub-cultured, it is known as secondary culture or cell line or sub-clone. The process involves removing the growth media and disassociating the adhered cells (usually enzymatically).

On the basis of the life span of culture, the cell lines are of two types:

Finite cell lines

- ❖ The cell lines which go through a **limited number of cell division** having a limited life span are known as finite cell lines and are derived from **primary cultures** of normal cells are finite cell lines.

Continuous cell lines

- ❖ When a finite cell line undergoes transformation and acquires the ability to **divide indefinitely**, it becomes a continuous cell line. Cell cultures prepared in this way can be **sub-cultured** and grown indefinitely as permanent cell lines and are **immortal**.
- ❖ These cells are **less adherent**, **fast growing**, less fastidious in their nutritional requirements, able to grow up to higher cell density and different in phenotypes from the original tissue.
- ❖ They also have a tendency to grow on top of each other in **multilayers** on culture-vessel surfaces.

Common cell lines

- ❖ Human cell lines:
- ❖ MCF-7 (breast cancer)
- ❖ HL 60 (Leukemia)
- ❖ HeLa (Human cervical cancer cells)
- ❖ Primates cell lines: Vero (African green monkey kidney epithelial cells)

Cell strain

- ❖ **Lineage of cells** originated from the primary culture is called strain. These are either derived from a primary culture or a cell line by the **positive selection** or **cloning of cells** having specific properties or characteristics. A cell strain often acquires additional genetic changes subsequent to the initiation of the parent line.

Characteristics of Cultured Animal Cells:

i. Cell Culture Systems:

- ❖ Two basic culture systems are used for growing cells based primarily upon the ability of the cells to either grow attached to a glass or treated plastic substrate, called as monolayer culture systems, or floating free in the culture medium called as Suspension Culture Systems.
- ❖ **Monolayer cultures** are usually grown in tissue culture treated dishes, T-flasks, roller bottles, Cell-STACK® Culture Chambers, or multiple well plates. (IQAC)
- ❖ **Suspension Cultures** are usually Grown Either:
 1. In magnetically rotated **spinner flasks** or shaken **Erlenmeyer flasks** where the cells are kept actively suspended in the medium;
 2. In stationary culture vessels such as **T-flasks** and bottles where, although the cells are not kept agitated, they are unable to attach firmly to the substrate.

ii. Types of Cells:

Cultured cells are usually described based on their morphology (shape and appearance) or their functional characteristics.

There are three basic morphologies:

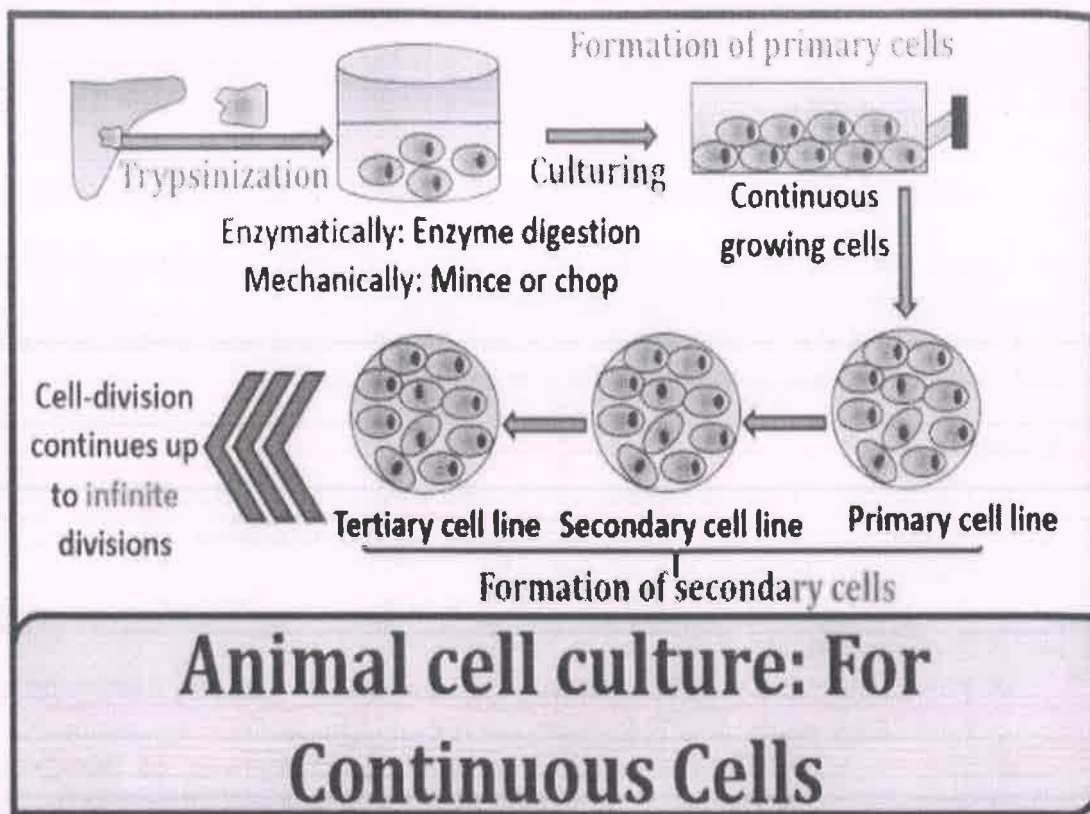
1. **Epithelial-Like:** cells that are attached to a substrate and appear flattened and polygonal in shape.
2. **Lymphoblast-Like:** Cells that do not attach normally to a substrate but remain in suspension with a spherical shape.
3. **Fibroblast-Like:** Cells that are attached to a substrate and appear elongated and bipolar, frequently forming swirls in heavy cultures.

Hybridoma :

- ❖ Using cell fusion techniques, it is also possible to obtain hybrid cells by fusing cells from two different parents. **Hybridomas** are formed by fusing two different but related cells.
- ❖ The first is a **spleen-derived** lymphocyte that is capable of producing the desired antibody.
- ❖ The second is a rapidly **dividing myeloma cell** that has the machinery for making antibodies but is not programmed to produce any antibody.
- ❖ The resulting hybridomas can produce large quantities of the desired antibody. These antibodies, called **Monoclonal Antibodies** due to their purity, have many important clinical, diagnostic, and industrial applications with a yearly value of well over a billion dollars.

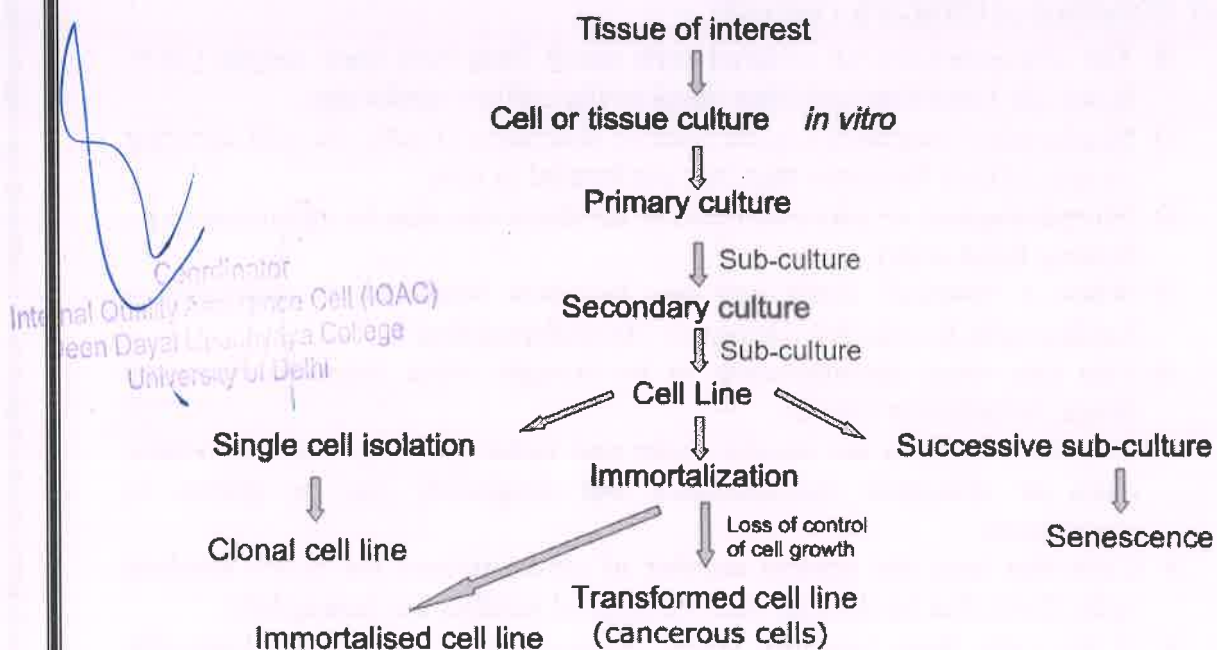
iii. Functional Characteristics:

- ❖ The characteristics of cultured cells result from both their **origin** (liver, heart, etc.) and how well they adapt to the culture conditions.
- ❖ **Biochemical markers** can be used to determine if cells are still carrying on specialized functions that they performed in vivo
- ❖ **Morphological or ultra-structural markers** can also be examined (e.g., beating heart cells).
- ❖ When a "normal" finite cell line becomes immortal, it undergoes a fundamental irreversible change or "**transformation**".
- ❖ This can occur spontaneously or be brought about intentionally using drugs, radiation or viruses.
- ❖ Transformed Cells are usually easier and faster growing, may often have extra or abnormal chromosomes and frequently can be grown in suspension.
- Cells that have the normal number of chromosomes are called **Diploid** cells; those that have other than the normal number are **Aneuploid**.
- If the cells form tumours when injected, they are **Neo-plastically Transformed**.



Animal cell culture: For Continuous Cells

Isolation of cell lines for *in vitro* culture



Process to obtain primary cell culture

1. Pieces of tissues from the organ are removed **aseptically minced** with a sharp sterile razor and dissociated by **proteolytic enzymes** (such as trypsin) that break apart the intercellular cement.
2. The obtained cell suspension is then washed with a **physiological buffer** (to remove the proteolytic enzymes used). The cell suspension is spread out on the bottom of a flat surface, such as a bottle or a **Petri dish**.
3. This thin layer of cells adhering to the glass or plastic dish is overlaid with a suitable **culture medium** and is incubated at a **suitable temperature**.

Aseptic techniques

- Bacterial infections, like Mycoplasma and fungal infections, commonly occur in cell culture creating a problem to identify and eliminate. Thus, all cell culture work is done in a **sterile environment** with proper aseptic techniques.
- Work should be done in **laminar flow** with the constant unidirectional flow of **HEPA** filtered air over the work area. All the material, solutions and the whole atmosphere should be of contamination-free.

Cryopreservation

- If a surplus of cells is available from sub-culturing, they should be treated with the appropriate protective agent (e.g., **DMSO** or glycerol) and stored at temperatures below -130°C until they are needed.
- This stores cell stocks and prevents original cell from being lost due to unexpected **equipment failure** or **biological contaminations**.
- It also prevents finite cells from reaching **senescence** and minimizes risks of changes in long term cultures.
- When thawing the cells, the frozen tube of cells is warmed quickly in warm water, rinsed with medium and serum and then added into culture containers once suspended in the appropriate media.

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TABLE 33.2 Sterilization of major equipment, apparatus and liquids used in tissue culture

<i>Sterilization device</i>	<i>Items sterilized</i>
I For equipment and apparatus	
Dry heat	Glass slides Pipettes Ampoules (glass) Pasteur pipettes Instruments Test tubes
Autoclave	Ampoules (plastic) Apparatus with silicone tubing Filters (reusable) Glass bottles with screw caps Glass syringes Magnetic stirrer bases Screw caps Stoppers (rubber silicone)
II For liquids and nutrients	
Autoclave	Salt solutions Glucose-20% Agar Bacto-peptone Glycerol Lactalbumin hydrolysate Phenol red Tryptose HEPES EDTA Water
Filter	Serum Amino acids Vitamins Antibiotics Bovine serum albumin Collagenase Glutamine Drugs NaOH Trypsin Transferrin

TABLE 33.1 Major routes of contamination in a tissue culture laboratory

Equipment and facilities

Laminar-flow hoods
Dry incubators
CO₂ incubators
Humidified incubators
Wooden furniture, benches
Other instruments

Glassware and reagents

Pipettes
Screw caps
Culture glasses
Media bottles
Media and various solutions

Biological materials

Infected tissue samples
Cell lines

Operating techniques

Operator hands, hair, clothing, breathing
Work spaces
Pipetting, dispensing
Operating manipulations

How do we culture cells in the laboratory?

Revive frozen cell population
Isolate from tissue



Maintain in culture
(aseptic technique)



Sub-culture (passaging)



Count cells

Cryopreservation



Containment level 2
cell culture laboratory



Typical
cell culture flask



'Mr Frosty'
Used to freeze cells

Liquid nitrogen is
also used

Subculturing

Remove spent media from the culture vessel.



Add the pre-warmed dissociation reagent such as trypsin. Gently rock the container to get complete coverage of the cell layer.



Incubate the culture vessel at room temperature for approximately 2 minutes.



Add equivalent of 2 volumes of pre-warmed complete growth medium. Disperse the medium by pipetting over the cell layer surface several times.



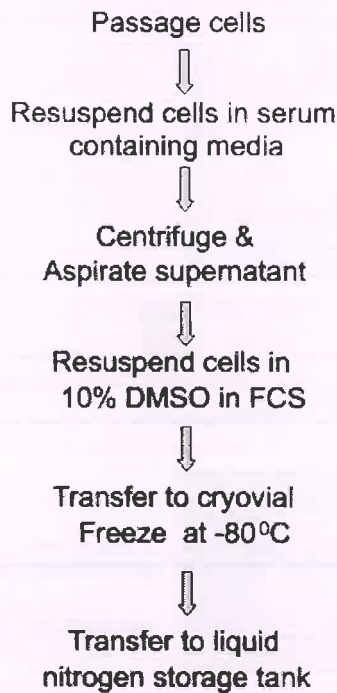
Then split the cells into 2 or 3 flasks containing complete media.



Incubate the cells.

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Cryopreservation of cells



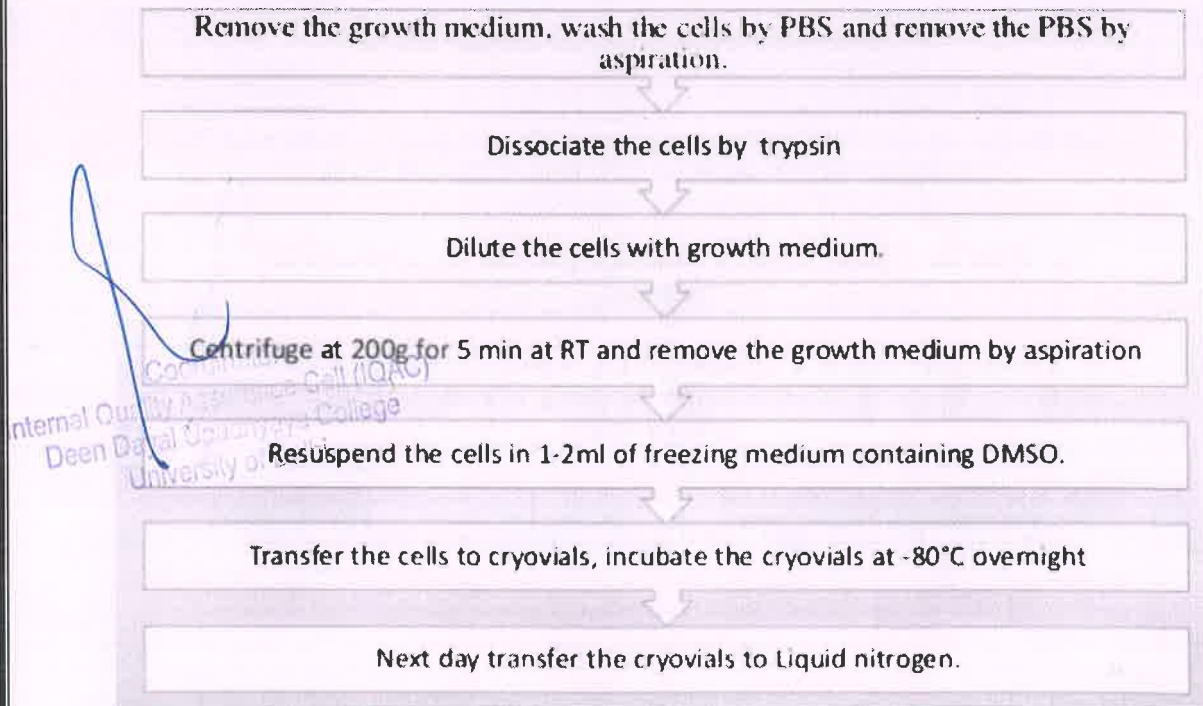
Why cryopreserve cells?

- Reduced risk of microbial contamination.
- Reduced risk of cross contamination with other cell lines.
- Reduced risk of genetic drift and morphological changes.
- Research conducted using cells at consistent low passage.

How?

- Log phase of growth and >90% viability
- Passage cells & pellet for media exchange
- Cryopreservant (DMSO) – precise mechanism unknown but prevents ice crystal formation
- Freeze at -80°C ('slow' freezing)
- Liquid nitrogen -196°C

Cryopreservation



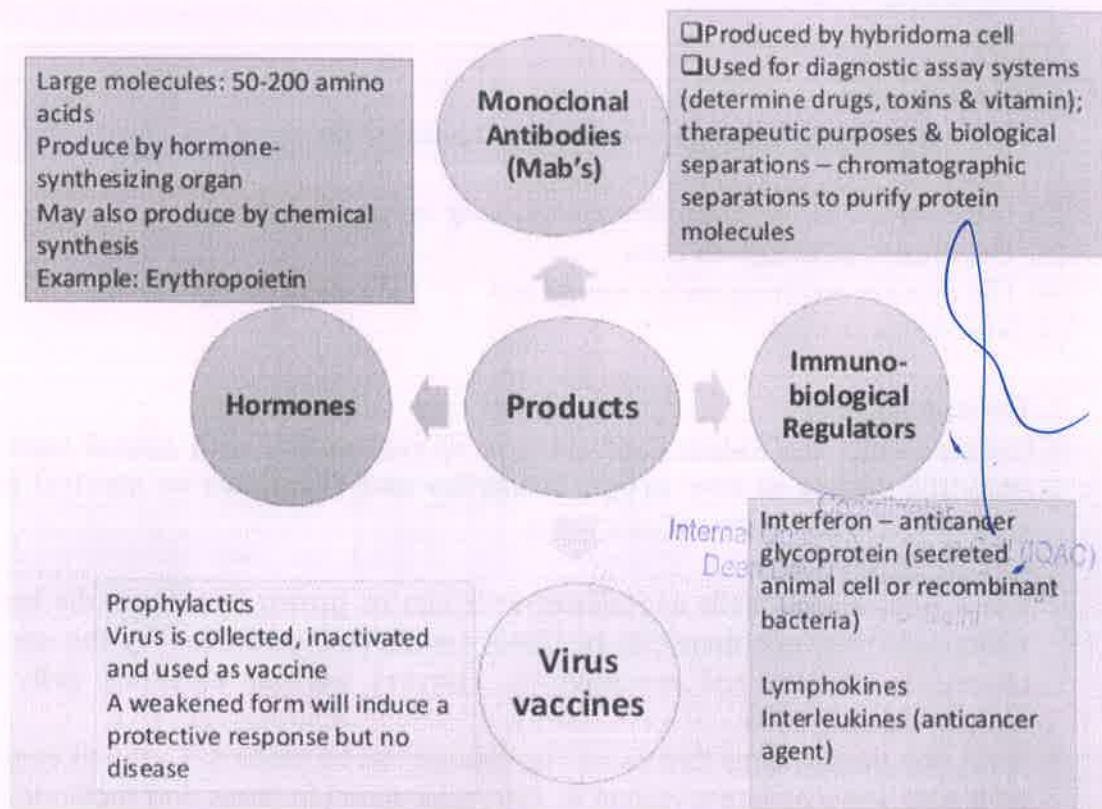
Applications of Cell Culture

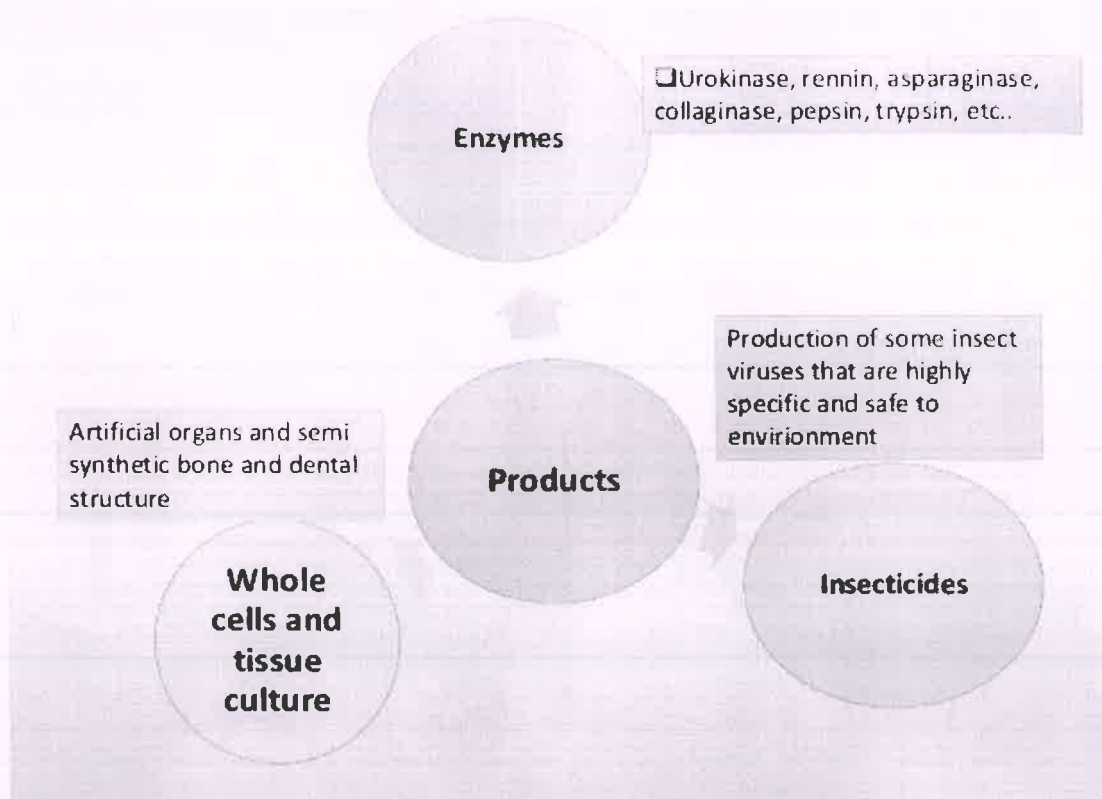
- **Excellent model systems for studying:**

- ✓ The normal physiology, cell biology and biochemistry of cells
- ✓ The effects of drugs, radiation and toxic compounds on the cells
- ✓ Study mutagenesis and carcinogenesis

- **Used for gene transfer studies.**

- Large scale manufacturing of biological compounds
- (vaccines, insulin, interferon, other therapeutic protein)





APPLICATIONS

1. Model Systems:

Cell cultures provide a good model system for studying:

- (1) Basic cell biology and biochemistry,
- (2) The interactions between **disease-causing agents** and cells,
- (3) The **effects of drugs** on cells,
- (4) The process and triggers for aging, and
- (5) Nutritional studies.

2. Toxicity Testing:

- ❖ Cultured cells are widely used alone or in conjunction with animal tests to study the **effects of new drugs, cosmetics and chemicals** on survival and growth in a wide variety of cell types.

3. Cancer Research:

- ❖ Since both normal cells and cancer cells can be grown in culture, the basic differences between them can be closely studied. In addition, by the use of chemicals, viruses and radiation, to **convert normal cultured cells to cancer causing cells**.
- ❖ Thus, the mechanisms that cause the change can be studied. Cultured cancer cells also serve as a test system to determine suitable drugs and methods for selectively destroying types of cancer.

4. Virology:

- ❖ One of the earliest and major uses of cell culture is the replication of viruses in cell cultures for use in **vaccine** production.
- ❖ Cell cultures are also widely used in the clinical detection and isolation of viruses, as well as basic research into how they grow and infect organisms.

5. Cell-Based Manufacturing:

- i) Large-scale production of viruses for use in **vaccine production**. These include vaccines for polio, rabies, chicken pox, hepatitis B and measles.
- ii) Large-scale production of cells that have been genetically engineered to produce proteins that have **medicinal or commercial value**. These include monoclonal antibodies, insulin, hormones, etc.
- iii) Use of cells as **replacement tissues and organs**. Artificial skin for use in treating burns and ulcers is the first commercially available product.

6. Genetic Counselling:

- ❖ **Amniocentesis**, a diagnostic technique that enables doctors to remove and culture fetal cells from pregnant women, has given doctors an important tool for the early diagnosis of fetal disorders.
- ❖ These cells can then be examined for abnormalities in their chromosomes and genes using **karyotyping**, chromosome painting and other molecular techniques.

7. Genetic Engineering:

- ❖ The ability to transfect or reprogram cultured cells with new genetic material (DNA and genes) has provided a major tool to molecular biologists wishing to study the cellular effects of the expression of these genes (new proteins).
- ❖ These techniques can also be used to produce these new proteins in large quantity in cultured cells for further study.
- ❖ Insect cells are widely used as miniature cells factories to express substantial quantities of proteins that they manufacture after being infected with genetically engineered baculoviruses.

8. Gene Therapy:

- ❖ The ability to genetically engineer cells has also led to their use for gene therapy. Cells can be removed from a patient lacking a functional gene and the missing or damaged gene can then be replaced.
- ❖ The cells can be grown for a while in culture and then replaced into the patient. An alternative approach is to place the missing gene into a viral vector and then "infect" the patient with the virus in the hope that the missing gene will then be expressed in the patient's cells.

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Purpose of Gene Therapy:

- a. Swapping harmful mutant alleles with functional ones by selective reverse mutation.
- b. Deactivating improperly functioning mutated gene.
- c. Inserting a new gene into the body to help battle a disease.
- d. Interchanging non-functional gene with normal gene through homologous recombination.

9. Drug Screening and Development:

- ❖ Cell-based assays have become increasingly important for the pharmaceutical industry, not just for **cytotoxicity** testing but also for high throughput screening of compounds that may have potential use as drugs.
- ❖ Originally, these cell culture tests were done in 96 well plates, but increasing use is now being made of 384 and 1536 well plates

Advantages of Animal Cell Culture:

- ❖ Control of **physicochemical environment**- pH, temperature, dissolved gases (O₂ and CO₂), osmolarity.
- ❖ Regulation of physiological conditions-**nutrient concentration, cell to cell interactions, hormonal control.**
- ❖ The cultured cell lines become **homogenous** (i.e. cells are identical) after one or two subcultures. This is in contrast to the heterogenous cells of tissue samples. The homogenous cells are highly useful for a wide range of purposes.
- ❖ It is easy to characterize cells for **cytological and immunological studies.**
- ❖ Cultured cells can be **stored in liquid nitrogen for several years.**
- ❖ Due to direct access and contact to the cells, biological studies can be carried out more conveniently. The main advantage is the **low quantities of the reagents required** in contrast to in vivo studies where most of the reagents (more than 90% in some cases) are lost by distribution to various tissues, and excretion.
- ❖ Utility of tissue cultures will drastically **reduce the use of animals** for various experiments.

Disadvantages of Animal Cell Culture:

- ❖ Need of **expertise and technical** skill for the development, and regular use of tissue culture.
- ❖ **Cost factor** is a major limitation. Establishment of infrastructure, equipment and other facilities are expensive.
- ❖ It is estimated that the cost of production of cells is about 10 times higher than direct use of animal tissues.
- ❖ Control of the **environmental factors** (pH, temperature, dissolved gases, disposal of biohazards) is not easy.
- ❖ The native in vivo cells exist in a **three- dimensional geometry** while in in vitro tissue culture, the propagation of cells occurs on a two dimensional substrate. Due to this, the cell to cell interactive characters are lost.
- ❖ The cell lines may represent one or two types of cells from the native tissue while others may go unrepresented.
- ❖ Tissue culture techniques are associated with the differentiation i.e. **loss of the characters** of the tissue cells from which they were originally isolated.
- ❖ Continuous cell lines may result in **genetic instability** of the cells. This may ultimately lead to heterogeneity of cells.
- ❖ The **components of homeostatic in vivo regulation** (nervous system, endocrine system, metabolic integration) are lacking in vitro cultures. Addition of hormones and growth factors has been started recently.

Risks in a Tissue Culture Laboratory and Safety:

- ❖ There are several risks associated with tissue culture technology. Most of the accidents that occur in culture laboratories are **due to negligence and casual approach while dealing** with biological and radiological samples, besides improper maintenance of the laboratory.

Some of the developed countries have formulated general safety regulations to minimize the risks associated with tissue culture laboratories.

Selected examples:

1. "Biosafety in microbiological and biomedical laboratories", U. S. Department of Health and Human Sciences (1993).
2. "Safe working and the prevention of infection in clinical laboratories" U.K. Health Services Advisory Committee (1991).

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Some of the **general precautions** for the safety of a tissue culture laboratory are listed here:

- i. Strict adherence to recommendations of regulatory bodies.
- ii. Periodical meetings and discussions of local safety committees.
- iii. Regular monitoring of the laboratories.
- iv. Periodical training of the personnel through seminars and workshops.
- v. Print and make the standard operating procedures (SOPs) available to all staff.
- vi. Good record keeping.
- vii. Limited access to the laboratory (only for the trained personnel and selected visitors).
- viii. Appropriate waste disposal system for biohazards, radioactive wastes, toxins and corrosives.

Biohazards:

TABLE 33.6 Sources that contribute to biohazards

Biological material(s)

Tissue samples and cultures with human pathogens.

Human cells infected with viruses (including retroviruses)

Cells subjected to various genetic manipulations.

Operating processes

Preparation of the media.

Development of primary cultures, cell lines and other laboratory works.

TABLE 33.5 Risks in a tissue culture laboratory

Category	Contributing factors(s)
Maintenance risks	Age and condition of various equipment, leakage of disposals.
Personnel risks	Inadequate training, lack of concentration and interest.
Physical risks	Electric shocks, fire, intense cold.
Chemical risks	Toxicity due to poisons, carcinogens, mutagens, irritants, allergens.
Biohazards	Pathogenic organisms, viruses, genetic manipulations, culture cells and DNA (quality and quantity).
Radioisotope risks	Energy emission and its penetration, ionization.

The accidents or the risks associated with the biological materials are regarded as biohazards or **biological hazards**.

There are two main systems that contribute to the occurrence of biohazards :

1. The direct sources of the biological materials.
2. The processes or operations involved in their handling.

Control of biohazards:

Biohazards can be controlled to a large extent by **strict adherence** to the regulatory guidelines and maintenance programmes. Some important aspects are listed.

- i. **Microbiological safety cabinet** or biohazard hood with pathogen trap filters have been developed.
- ii. **Vertical laminar-flow hood** (instead of horizontal laminar-flow hood) is recently in use. This minimizes the direct exposure of the operator to the samples/processes.
- iii. Pathogen containing samples are treated in separate rooms with separate facilities (centrifuge, incubator, cell counting etc.).
- iv. Sterilization of all wastes, solid glassware etc. and their proper disposal.
- v. Facilities for change of clothing while entering and leaving the rooms.
- vi. Strict adherence to the access of designated personnel to the culture rooms.

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- ❖ <https://www.slideshare.net/cytogene/trainig-in-animal-cell-culture-in-up>
- ❖ <https://www.slideshare.net/nagendragowda143/animal-cell-culture-techniques>
- ❖ <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7325846/#:~:text=Cell%20culture%20is%20the%20process,lines%20or%20established%20cell%20strains.&text=Animal%20cell%20culture%20has%20found,from%20basic%20to%20advanced%20research.>
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- ❖ <https://www.biologydiscussion.com/cell/animal-cell-culture/applications-of-animal-cell-culture-9-applications/12694>
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- ❖ <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7325846/table/t0010/?report=objectonly>



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ZH Core-VIII: Comparative Anatomy of Vertebrates

Course Learning Objective:

This course aims to provide the undergraduate students a thorough knowledge of structural details and comparative account of the different organ systems of the body from lower to higher vertebrates, and protochordates, thus enabling them to appreciate the incredible vertebrate diversity. The course furnishes an understanding of evolutionary basis of morphological and anatomical differences as well as similarities that occur among vertebrates. It helps students propose possible homology between structures, and understand how they evolved as the vertebrates dwelled different habitats. The structural modifications of digestive, circulatory, respiratory and skeletal system relates to the distribution of animals in their different comfort zones of habitat and ecological niches. The understanding of anatomical details of organ systems of mammals like rat and mice aims to give the basic information for their use in experimental and research studies in different branches of Zoology like Immunology, Medical Zoology and Reproductive Biology etc.

Course Learning Outcome:

Upon completion of the course, students should be able to:

- Explain comparative account of the different vertebrate systems
- Understand the pattern of vertebrate evolution, organisation and functions of various systems.
- Learn the comparative account of integument, skeletal components, their functions and modifications in different vertebrates.
- Understand the evolution of heart, modification in aortic arches, structure of respiratory organs used in aquatic, terrestrial and aerial vertebrates; and digestive system and its anatomical specializations with respect to different diets and feeding habits.
- Learn the evolution of brain, sense organs and excretory organs to a complex, highly evolved form in mammals;
- Learn to analyze and critically evaluate the structure and functions of vertebrate systems, which helps them to discern the developmental, functional and evolutionary history of vertebrate species.
- Understand the importance of comparative vertebrate anatomy to discriminate human biology.

Course Content:

Theory [Credits: 4]

Unit1: Integumentary System

Structure and derivatives of integument, functions of skin.

(Chapter 6: K.V.Kardong; Chapter 6: G.C. Kent)

60 hrs

7hrs

Unit2: Skeletal System

Outline of axial and appendicular skeleton: basic plan of bones of skull, girdles and limbs. Classification of vertebrae, structure of a typical vertebra, Jaw suspensorium, Visceral arches.

(Chapter 7, 8 and 9: K.V.Kardong; Chapter 7, 8, 9 and 10: G.C.Kent)

9 hrs

Unit 3: Digestive System

Alimentary canal and associated glands, dentition

8 hrs

(Chapter 13: K.V.Kardong; Chapter 12: G.C. Kent)

Unit 4: Respiratory System

8hrs

Skin, gills, lungs and air sacs; Accessory respiratory organs

(Chapter 11: K.V.Kardong; Chapter 13: G.C.Kent)

Unit 5: Circulatory System

8hrs

General plan of circulation, Evolution of heart and aortic arches

(Chapter 12: K.V. Kardong; Chapter 14: G.C.Kent)

Unit 6: Urinogenital System

6 hrs

Succession of kidney, Evolution of urinogenital ducts, Types of mammalian uteri.

(Chapter 14: K.V. Kardong; Chapter 15: G.C.Kent)

Unit 7: Nervous System

8 hrs

Comparative account of brain; Autonomic nervous system, Spinal cord, Cranial nerves in mammals

(Chapter 16 : K.V. Kardong ; Chapter 16 : G.C. Kent)

Unit 8: Sense Organs

6 hrs

Classification of receptors; Brief account of visual and auditory receptors in man

(Chapter 17: K.V.Kardong; Chapter 17: G.C. Kent)

Practical [Credits: 2]

1. Study of placoid, cycloid and ctenoid scales of fish through permanent slides/photographs.
2. Study of different types of feathers of birds.
3. Disarticulated skeleton of Frog, *Varanus*, Fowl, Rabbit (Skull, Limb bones, Vertebral Column, Sternum, Girdles, Ribs).
4. Carapace and plastron of turtle/tortoise.
5. Mammalian skulls: One herbivorous and one carnivorous animal.
6. Study of digestive, circulatory and urinogenital system of frog/rat through videos on dissection or through virtual dissections.
7. Study of anatomical details of any two organs (brain, heart, lung, kidney, eye and ear) through videos.
8. Project on modifications in skeletal structures/GI tract/Respiratory organs in vertebrates.
9. Documentary film show on vertebrates/Visit to Zoological park, Biodiversity park or Sanctuary.

Teaching and Learning Process:

In order to ensure best understanding of concepts and learning of skills by students, various strategies will be adopted to explore and compare the major vertebrate groups. Class room lectures and crossover learning will provide a conceptual foundation to the learner and will bridge the informal learning to formal learning. Use of models and computer-assisted learning by showing photographs/diagrams/models/animations/videos will help to clarify theoretical as well as practical concepts, from referred textbooks and E-resources available in NCBI, SWAYAM etc. Project work will encourage students to undertake projects on certain topics like modifications in GI tract, appendages, respiratory organs etc. with respect to different habitats. Peer teaching including presentation and group discussions on various topics of

vertebrate comparative anatomy will allow effective participation of students in class room and develop confidence in students. Computer-aided methods by showing virtual dissections or videos of anatomy of circulatory, digestive and reproductive systems of frog and rat, will provide an understanding of animal systems. Viewing documentary films or visiting biodiversity parks, aquarium, sanctuaries and zoological parks will help students correlate the anatomical changes in the vertebrates studied in the classroom with actual observation in living animals. Assignments will improve the writing and abstracting skills of students.

Assessment Methods:

- Formative assessment on regular basis: This includes putting up questions in order to monitor students' learning. Students are marked on the basis of continuous assessment and end term exam.
- Continuous assessment: includes class test, assignment and attendance.
- Marks for the attendance: to maintain regularity in the class.
- Practical: provide a great opportunity to assess students for their understanding about a concept lectured, and demonstrate activity in small groups. Additionally, regular assessment of the practical skills gained by students can also be done.
- Summative assessment: includes project reports, assignments, oral presentations, *viva-voce*, evaluation of practical records, regular tests.

Keywords:

Anatomy, integument, axial, appendicular, cranium, jaw suspensorium, pectoral and pelvic girdle, visceral arches, dentition, air sacs, accessory respiratory receptors, visual, cranial, spinal nerves,

Recommended Books:

- Kardong, K.V. (2005). Vertebrate's Comparative Anatomy, Function and Evolution. IV Edition. McGraw-Hill Higher Education.
- Kent, G.C. and Carr R.K. (2000). Comparative Anatomy of the Vertebrates. IX Edition. The McGraw-Hill Companies.
- Leiem C.F., Bermis W.E, Walker, W.F, Grande, L. (2001). Functional anatomy of the vertebrates, An evolutionary perspective. III Edition, Brookes/Cole, Cengage Learning.

Suggested Readings:

- C.K Weichert and W. Presch (1970). Elements of Chordate Anatomy, IV Edition, McGraw-Hill.
- Pough.H. (2018). Vertebrate Life.X Edition. Pearson International.

Online Tools and Web Resources:

- SWAYAM (Functional anatomy and regulation of vision, hearing, taste, smell and touch, Link - <https://www.swayamprabha.gov.in/index.php/program/upcoming/9>).
- SWAYAM (Structure of heart), Link- <https://www.swayamprabha.gov.in/index.php/program/archive/9>
- COURSERA (PALEONTOLOGY: Early vertebrate evolution, Link – <https://www.coursera.org/learn/early-vertebrate-evolution>).

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CONSOLIDATE ASSIGNMENT REPORT

Course Name : B.Sc.(H) Zoology Sem. 4

Academic year : 2020-2021

Subject Name : [32231401] CBCS-COMPARATIVE ANATOMY AND DEVELOPMENT BIOLOGY VERTEBRATES(Lab) *port.*

Subject Batch : All

Professor Name : ANINA JAMES

Sr.No	Roll No	Student Name	Max Marks	Obtained	Percentage
1	19HZL7001	AKANKSHA NANDWANA	25	23	92.00
2	19HZL7002	AMISHA SINGH	25	23	92.00
3	19HZL7003	ANJALI CHAUHAN	25	25	100.00
4	19HZL7004	annapurna	25	24	96.00
5	19HZL7005	ASHISH	25	25	100.00
6	19HZL7007	Harshita Pant	25	23	92.00
7	19HZL7008	HITESH SINGH	25	23	92.00
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Modifications in Gastrointestinal Tract Of Vertebrates

Akanksha Nandwana

19HZL7001

B.Sc. Zoology (H) 2 yr

Acknowledgment

I would like to express my special thanks of gratitude to my teacher (Dr. Anina James) who gave me the golden opportunity to do this wonderful project of Comparative anatomy of vertebrates on the topic (modifications in Gastrointestinal Tract of vertebrates) which also helped me in doing a lot of Research and I came to know about so many new things . I am really thankful to her.

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Secondly , I would also like to thank my parents and friends who helped me a lot in finalizing this project within the limited time frame.

Akanksha Nandwana

19HZL7001

CERTIFICATE

THIS IS TO CERTIFY THAT AKANKSHA NANDWANA (ROLL NO. 19HZL7001) OF B.Sc. HONS ZOOLOGY (SEM-4) HAS SUCCESSFULLY COMPLETED HER COMPARATIVE ANATOMY PROJECT ON THE TOPIC "MODIFICATIONS IN THE GASTROINTESTINAL TRACT OF VERTEBRATES" AS PRESCRIBED BY DR. ANINA JAMES, DURING THE ACADEMIC YEAR 2019-2022

Oxygen, water and food are necessary for the continuance of life. Oxygen enters the body through the agency of the respiratory system, but water and food are first taken into the digestive tract of every living being. Associated with the tract are its derivatives or accessory organs, such as tongue, teeth, oral glands, pancreas, liver, all bladder, etc. The digestive tract and associated Respiratory organs together constitute the digestive system. The basic pattern of digestive system is similar in all vertebrates.

Digestion

Purpose : reduce food particles to molecules that can be absorbed into the blood

- Mechanical breakdown of food - chewing
- Chemical breakdown of food - HCl in the stomach, enzymes
- Contractions of digestive tract

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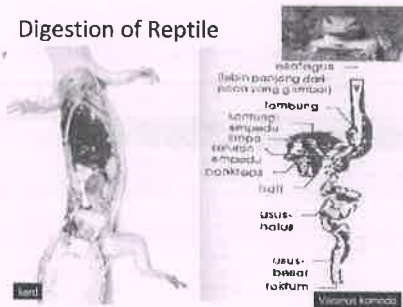
Digestion system of fish



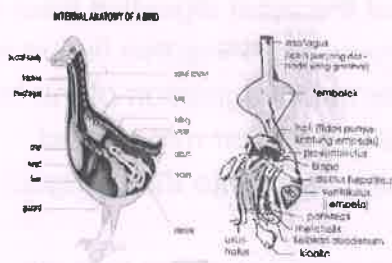
Digestion of frog, Amphibian



Digestion of Reptile



Digestion of Bird, Aves, Columba livia



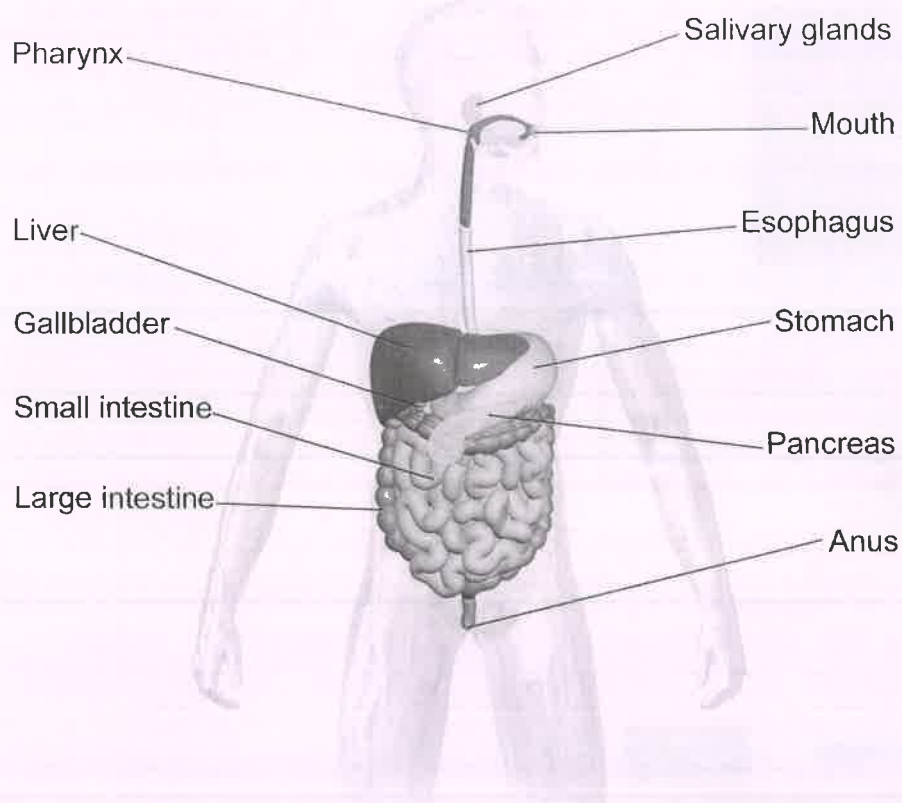
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The Components of the Digestive System

Embryonic Digestive Tract

Archenteron

The embryonic archenteron becomes the lining of the adult digestive tract and of all its derivatives. Splanchnic mesoderm adds layers of connective tissue and smooth muscles around the archenteron. Ectodermal invagination of the head forms the stomodaeum leading into oral cavity, and a similar mid-ventral ectodermal invagination forms proctodaeum, which leads into the hindgut.

The stomodaeum becomes the adult buccal cavity and gives rise to teeth enamel, epithelial covering of tongue, glands, e.g., mucous, poison and salivary, etc., and Rathke's pouch of anterior pituitary gland. The proctodaeum forms either a small terminal part of the cloaca in lower vertebrates and rectum in mammals.

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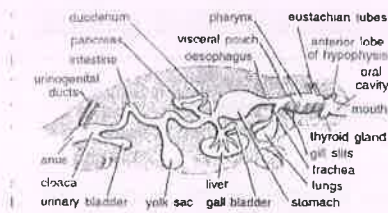


Fig. 1 Alimentary canal and its chief derivatives in a vertebrate.

The alimentary canal in embryos from stomach to cloaca is attached to the dorsal body wall by a double fold of peritoneum, called the dorsal mesentery, and to ventral body wall by a ventral mesentery. In adults, dorsal mesentery persists but the ventral mesentery disappears leaving only in the region of liver and urinary bladder.

Digestive Tract of Adult:

The digestive tract differentiates for different functions into the following regions- mouth, buccal cavity, pharynx, oesophagus, stomach, small intestine, large intestine and cloaca. Following outgrowths arise from the digestive tract- oral glands, Rathke's pouch, thyroid gland, gill-clefts, tympanic cavity, thymus and other glands of gill clefts, trachea, lungs, swim bladder, liver, pancreas, yolk sac, and urinary bladder.

Histology:

The wall of the alimentary canal is made of four concentric layers.

They are:

(i) An outermost visceral peritoneum or serous coat is made of mesothelial cells and a thin layer of connective tissue. It is lacking in the oesophagus,

(ii) Below this is a muscular layer formed of smooth muscle fibres arranged in outer longitudinal and inner circular muscle fibres. Between the two layers of muscles is a network of nerve cells and nerve fibres of the autonomic nervous system, known as myenteric plexus or plexus of Auerbach.

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(iii) Beneath the muscle layer is a submucosa made of connective tissue having elastic fibres, fat, blood and lymph vessels, nerve cells and fibres glands,

(iv) The innermost layer is a mucosa composed of three regions:

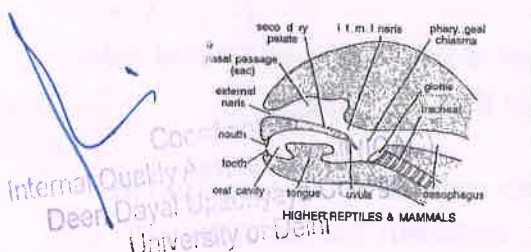
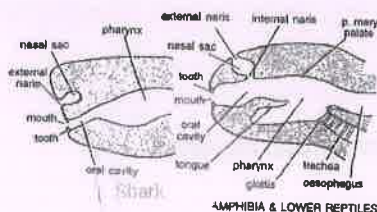
(a) Outer-most narrow muscularis mucosa of outer longitudinal and inner circular smooth muscle fibres.

(b) Middle thin layer of lamina propria of connective tissue, blood vessels, nerves and nodules of lymphatic tissue, and

(c) A basement membrane supporting a layer of columnar epithelial cells which are often glandular and ciliated.

Mouth

Mouth is the opening leading into the buccal cavity. In lampreys (cyclostomes) it is a circular opening at the base of buccal funnel and remains permanently open due to lack of jaws, etc. In gnathostomes it is terminal. Mouth is bounded by lips which are immovable and formed of cornified skin in fishes, amphibians and reptiles. In mammals these are fleshy and muscular.



Buccal Cavity

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lung

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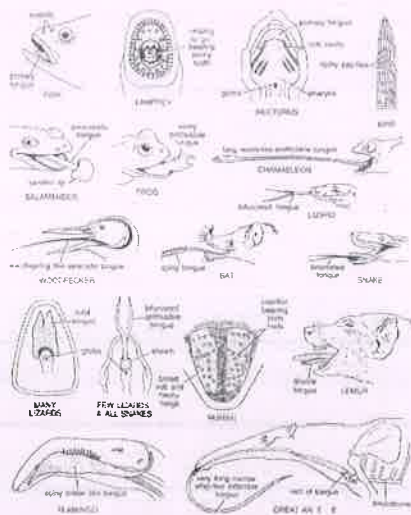


Fig. 3 Types of tongues in some vertebrates.

Derivatives of Buccal Cavity

1. Oral Glands : There are two kinds of integumentary multicellular glands opening into the buccal cavity. They are mucous glands and enzymatic glands. Fishes and aquatic amphibians have only mucous glands. Reptiles have glands in groups, such as palatine, lingual, sublingual, and labial glands named according to location, they also produce mucus.

In poisonous snakes the upper labial glands are modified to secrete venom, while in the Gila monster the sublingual glands produce poison. Birds have sublingual glands and a gland in the angle of the mouth. Mammals have many small mucous glands besides true and enlarged salivary glands which are enzymatic. They are parotid, sublingual, submaxillary and infraorbital salivary glands, secreting mucin and ptyalin.

2. Tongue : The tongue is found mostly in all vertebrates. Tongue in vertebrates show much diversity and are not homologous. In cyclostomes, there is a muscular, fleshy, rasping tongue with horny teeth for rasping the skin and muscles of their prey.

Fishes have a primary tongue formed of a fleshy fold of the buccal floor. It has no muscles, but receptors and teeth are present on the tongue in some bony fishes. The tongue is covered with mucous membrane. In some amphibians the tongue is either lacking or immovable. Most amphibians, however, have a protrusible

tongue and in some frogs and toads it may be folded back on itself when not in use.

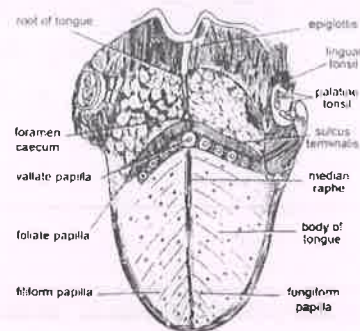


Fig. 43.7. Dorsal view of human tongue (after Toldt).

It can be thrown out of mouth by rapid inflow of lymph for capturing the insects. The tongue in lizards and snakes is often highly developed. In chameleons, it is very extensible used to capture insects. The tip is thickened and sticky. The forked tip of the tongue in snakes serves as a means of transferring chemical stimuli from the external environment to the paired vomero-nasal organs on the roof of the mouth.

In turtles and crocodilians, the tongue cannot be extended. The amniote tongue has voluntary muscles, it receives the hypoglossal nerve and has glands and taste buds. It also develops intrinsic muscles which move the tongue. In birds, the tongue is slender and has a horny covering. In some birds the tongue is immobile, while in some birds it is long, protractile and often used for capturing the food.

In most mammals, except whales, the tongue is highly developed and capable of considerable movement, in addition to extension and retraction, due to the presence of a number of intrinsic muscles.

In mammals the mucous membrane below the tongue forms a median fold, called frenulum which joins the tongue to the floor of the mouth. In mammals the upper surface of the tongue bears four kinds of papillae, (filiform, fungiform, foliate and circumvallate), bearing taste buds except filiform papillae.

3. Teeth

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 The word "Lungs" is written in blue ink.
 The word "navea" is written in blue ink.
 A signature is written in blue ink.
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Vertebrates have two types of teeth attached to jaw bones- epidermal teeth and true teeth. Epidermal teeth are best developed in cyclostomes. They are hard, conical, horny structures derived from the stratum corneum. In lampreys they are found on the walls of the buccal funnel and on the tongue. Tadpole larvae of frogs and toads have serrated epidermal teeth in rows on the lips. In mammals the adult duckbill platypus has epidermal teeth.

True Teeth:

Teeth are not found in baleen whales and anteaters in mammals, and agnathans, sturgeons, some toads, sirenians, turtles and modern birds, etc. In lower vertebrates (such as fish, amphibians and most reptiles) teeth may be replaced continually an indefinite number of times, such teeth are called polyphyodont. These teeth are homodont (similar type) and acrodont. (with the jaw bones).

In most mammals teeth are diphyodont, thecodont and heterodont. In some mammals these are monophyodont having only one set of teeth, e.g., moles, Indian squirrel. Teeth are similar in structure to the placoid scales of sharks, formed of a central pulp cavity, around which is present a thick but soft layer, the dentine, which is externally covered by a thin, extremely hard enamel. These are supposed to have derived from bony scales of ostracoderms and placoderms.

4. Adenohypophysis :

The anterior lobe of pituitary gland develops as a dorsal evagination of stomodaeum, called Rathke's pouch, which constricts off to form the anterior and middle lobes of pituitary gland (adenohypophysis). The posterior lobe of pituitary or neurohypophysis is the ventral evagination of diencephalon, called infundibulum. Thus, it is nervous part.

Pharynx

The part of the alimentary canal immediately behind the buccal cavity is a pharynx, lined with endoderm. It is a common passage serving both for the digestion and respiration. As a part of the digestive system it is used as a

passage for food from the buccal cavity to the oesophagus, its muscles initiate swallowing

In fishes, the pharynx is large and laterally perforated for gill-slits, while in tetrapoda, it is short and bears openings of nostrils. In embryos, the wall of pharynx gives off a number evaginations which develop into spiracles, gill-clefts, air bladders, lungs, tonsils and a few endocrine glands (e.g., thymus, thyroid and parathyroids).

Oesophagus

The oesophagus is short in most fishes and amphibians because they lack neck, but it is longer in amniotes due to presence of neck. The oesophagus of reptiles is more elongate than that of fishes and amphibians. In granivorous and carnivorous birds, a portion of the oesophagus is enlarged into a sac-like pouch called crop which serves to store food which has been eaten quickly.

The crop is essentially lacking in digestive glands although in pigeons the crop has 2 crop glands in both sexes, they are really not glands but cell-forming structures, the cells form pigeon milk' which is fed to the young. In mammals, the oesophagus is long, lacks glands and varies in relation to the length of neck.

It passes through the diaphragm, the portion below the diaphragm is covered with visceral peritoneum which is lacking from the upper part. Oesophagus has mucous glands. Its lining forms longitudinal folds, or finger-like fleshy papillae (elasmobranchs) or horny papillae in marine turtles.

Histologically, the oesophagus differs from the rest of the alimentary canal in three facts:

- (1) It has no visceral peritoneum because it lies outside the coelom, its outermost covering layer is a thin tunica adventitia.
- (ii) The muscle fibres in its anterior part are striped, middle part has both striped and unstriped muscles, and the posterior part has only unstriped muscles. But there are exceptions in ruminating mammals, all the muscles are striped or voluntary.

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(iii) The mucous membrane lining is made of stratified squamous epithelial cells and not of columnar cells.

Stomach

There is practically no stomach in cyclostomes, chimeras, lung fishes and some primitive teleost fishes, since it has no gastric glands, but in most fishes and tetrapods it is dilated for storage and maceration of solid food, and digestion of food because it contains gastric glands.

The first part of the stomach, next to the oesophagus, is the cardiac region and the lower end near the intestine is the pyloric region, which has a pylorus or pyloric valve in which the mucous membrane lining is surrounded by a thick sphincter muscle which regulates the opening and closing of the pyloric stomach into the intestine.

Stomach is straight in cyclostomes, gar, Belone, etc., and spindle-shaped in Proteus, Necturus, some lizards and snakes. In turtles and tortoises, it is a wide curved tube, and in elasmobranchs the stomach is J-shaped. In crocodiles and birds the stomach has two parts, a proventriculus with gastric glands, and a highly muscular gizzard, which represents the pyloric region and has a hard, cornified lining for grinding food.

In mammals the stomach lies transversely and may be a simple sac or divided into 3 regions, namely cardiac, fundic and pyloric and each region has its gastric glands. In many ruminants the stomach has four chambers—a rumen, reticulum, omasum and an abomasum. It is claimed that the first three chambers are modifications of the oesophagus, and abomasum is the true stomach representing the cardiac, fundic, and pyloric parts of the stomach.

It has been shown embryologically that all four chambers are modified regions of the stomach. In camels, there is no omasum, the rumen and reticulum have pouch-like water cells which were once believed to store water, but they are probably digestive.



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In elasmobranchs, it is divided into small and large portions, and the small portion has a spiral valve which greatly increases the absorptive surface. A spiral valve is also present in the small intestine of a few more primitive bony fishes, but is lacking in higher forms in which the intestine is long and coiled.

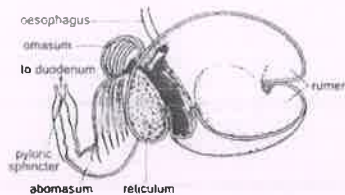
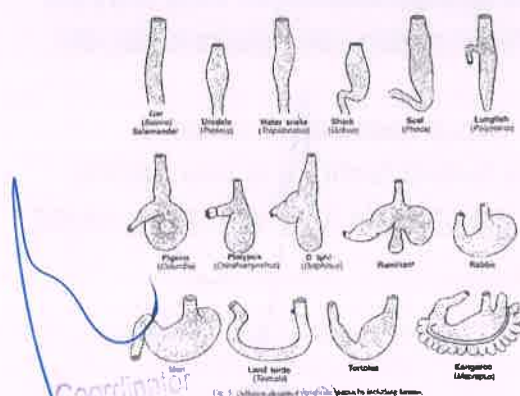


Fig. 43.9 Diagram of a ruminant stomach

In caecilians, it is little coiled and not differentiated into a small and large tract. In frogs and toads it is relatively long and coiled. In reptiles, it is more coiled than in amphibians. For the first time in vertebrates a caecum or blind diverticulum arises at the junction of small and large intestines.

However, this is not permanent in all reptiles. In birds, the small intestine is coiled or looped and one or two colic caeca are also present at the junction of small and large intestines. In most mammals also the small intestine is proportionately long and coiled. Its length, however, is correlated with food habits. In herbivores it is relatively more longer in comparison to insectivores and carnivores.



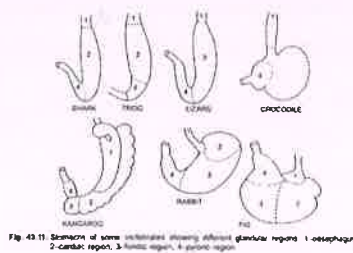
There is a blind pocket or caecum at the junction of the colon and small intestine which is generally small in carnivorous species and quite long in many herbivores. The first part of the small intestine is the duodenum, which is short

beginning from pylorus and terminates beyond the entrance of pancreatic and hepatic ducts.

It has many folded villi and contains branching Brunner's glands in the submucosa which secrete mucus, some alkaline watery-fluid, and a little enzyme. Duodenum also produces two hormones called secretin and cholecystokinin which stimulate the pancreas and gall bladder to liberate their juices. Ducts from the gall bladder and pancreas open into the duodenum.

Behind the duodenum is an **ileum**, which only in mammals is differentiated into an anterior smaller jejunum and posterior longer ileum. A large number of small digestive glands are present in the small intestine. They are tubular glands or crypts of Lieberkuhn found through the entire length, they secrete mucus and a succus entericus which has several enzymes.

The lining of the small intestine is folded to form small villi, which increase the surface area for secretion and absorption. The villi are covered densely by minute finger-like projections, called microvilli which assist in absorption into the villi. In mammals nodules of lymphoid tissue called Peyer's patches are found on the ileum.



Large Intestine

Large intestine has a larger diameter than the small intestine. It is generally short in fishes, amphibians, reptiles, and birds, but in mammals it is long. In lower forms the large intestine forms a rectum, but in tetrapoda it has a colon and terminal rectum. In most fishes and amphibians, the terminal part of the rectum leads into a cloaca formed by the proctodaeum

The rectum, excretory ducts, and genital ducts open into the cloaca, and it opens to the exterior by a cloacal aperture. But in many bony fishes and all mammals (except monotremes) the rectum and urinogenital ducts have separate openings to the exterior; the opening of the former is an anus.

Rectum of mammals is not homologous with the rectum of vertebrates since in mammals it is derived by partitioning of embryonic cloaca. In most vertebrate embryos there is a postanal gut as an extension of the intestine into the tail, but it disappears later.

In elasmobranchs the large intestine bears a pair of rectal glands which secrete mucus and sodium chloride. In amniotes there is an ileocolic valve at the junction of small and large intestines, which is absent in fishes. It prevents bacteria from entering into ileum from colon.

In amniotes from this junction arises an ileocolic caecum which is two in birds. It contains cellulose digesting bacteria. It is very long in herbivorous mammals (rabbit, horse, cow, etc.). In primates caecum is small, having a vestigial vermiform appendix.

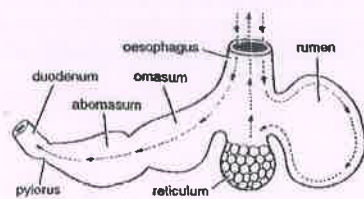


Fig. 6. Stomach of a ruminant or cud-chewing mammal. Arrows indicate course of food.

Digestive Glands :

1. Liver:

The liver arises as a single or double outgrowth from the ventral wall of the embryonic archenteron. This outgrowth forms a hollow hepatic diverticulum, which soon differentiates into an anterior part, which proliferates to become the liver and its bile ducts, and a posterior part, which gives rise to the gall bladder and cystic duct. The bile ducts join to form a hepatic duct which unites with the

cystic duct to form a common bile duct or ductus choledochus. The region of the archenteron from which the liver arises becomes the duodenum.

The liver is the largest lobed gland in the body, suspended by a double layer of peritoneum from the transverse septum or its representative.

A gall bladder is for storage of bile secreted by the hepatic cells, lies in the liver and drains into the duodenum through common bile duct formed by the union of cystic duct and hepatic duct. A gall bladder is not indispensable and is lacking in many birds and mammals.

A liver is present in all vertebrates. In cyclostomes, it is small, single lobed (lampreys) and two lobed in hagfishes. It is bilobed in elasmobranchs, two or three lobed in bony fishes, amphibians, reptiles and birds and many lobed in mammals. Liver is long, narrow and cylindrical in fishes, urodeles and snakes.

It is short, broad and flattened in birds and mammals. A gall bladder and bile duct are present in larval cyclostomes but they are absent in the adult. Fishes, amphibians, and reptiles generally have a gall bladder, but it is lacking in many birds. Most mammals have a gall bladder but is absent in Cetacea and Ungulata.

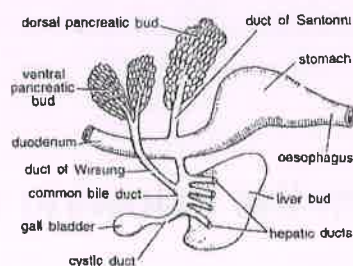


Fig. 7. Embryonic development of liver, gall bladder and pancreas.

The liver secretes a watery, alkaline bile but have no enzymes. It neutralises the acidity of food entering the duodenum. It aids in the digestion of fats.

2. Pancreas

Pancreas is formed from the endoderm of the embryonic archenteron. A single dorsal diverticulum from embryonic duodenum and one or two ventral outgrowths from the liver form pancreatic diverticula. The proximal parts of diverticula form

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pancreatic ducts, but these ducts undergo reduction or fusion so that only one or two pancreatic ducts remain in the adult, they open into the duodenum either separately or after uniting with the common bile duct.

The distal parts of diverticula undergo budding to form the main mass of pancreatic cells to which mesodermal derivatives are added. Thus, a single gland is made which has several lobes forming either a diffuse or a compact pancreas.

The pancreas is both an exocrine and endocrine gland, bound together by delicate strands of connective tissue. The exocrine part secretes digestive enzymes which are poured into the duodenum through pancreatic ducts. Whereas the endocrine part secretes hormones such as insulin and glucagon.

A pancreas is present in all vertebrates. In lampreys, some bony fishes, lungfishes and lower tetrapods, it is a diffuse organ embedded in the liver, mesenteries and intestinal wall.

Hagfishes have small pancreas. Elasmobranchs have a well defined bilobed pancreas. In higher tetrapoda it is generally a compact gland. One or two pancreatic ducts open into the duodenum.

Bibliography

To finish this project , help from the following sources was taken :

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- Google.com
- notesonzoology.com



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LS Core II: Comparative Anatomy and Developmental Biology of Vertebrates

Course Learning Objective:

The course offers a complete understanding about anatomy of vertebrate animals. It educates the students regarding derivatives of integuments, skeletal system and visceral arches, anatomy of digestive system and associated glands, different respiratory organs, urinogenital organs, components of nervous system and receptors in vertebrates. Thorough understanding of essential and evolutionary aspects of comparative anatomy will be developed through pictorial presentation of different anatomical details. The course will also provide a glimpse of scope and historical background of developmental biology to the students, impart knowledge regarding basic concepts of differentiation, morphogenesis and pattern formation and insight into IVF, stem cells and cloning. Detailed understanding of essential events of developmental biology will be imparted through proper explanation of gametogenesis, and stages of embryonic development and foetal formation.

Course Learning Outcome:

Upon completion of this course, students should be able to:

- Know about the levels of organization among different groups of vertebrates.
- Understand that different organs and organ systems integrate with each other to impart proper regulation of a particular function.
- Understand how the various organs evolved during the course of evolution through succession.
- Know the evolution of different concepts in developmental biology.
- Be able to understand the process of gamete formation from stem cell population to mature ova and sperm.
- Be able to comprehend the sequence of steps leading to the formation of gametes and development of embryo..
- Learn the mechanisms underpinning cellular diversity and specificity in animals.
- Study the methods and tools related to developmental biology which help to understand different processes of embryogenesis.

Content:

Theory (Credits: 4)

Unit 1: Integumentary System

Structure and function of integument, Derivatives of integument glands

Chapter 5: Weichert

60 hrs

5hrs

Unit 2: Skeletal System

Overview of skeleton Brief account of jaw suspensorium and visceral arches

Chapter 6, 8: Weichert

4 hrs

Unit 3: Digestive System

Brief account of alimentary canal and digestive glands

3 hrs

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Chapter 9: Weichert

Unit 4: Respiratory System

4 hrs

Brief account of gills, lungs, air sacs and swim bladder

Chapter 8: Weichert

Unit 5: Circulatory System

3 hrs

Evolution of heart and aortic arches

Chapter 12: Weichert

Unit 6: Urinogenital System

4 hrs

Succession of kidney, Evolution of urinogenital ducts

Chapter 10: Weichert

Unit 7: Nervous System

3 hrs

Comparative account of brain

Chapter 13: Weichert

Unit 8: Sense Organs

4 hrs

Types of receptors, Visual receptors in man

Chapter 15: Weichert

Unit 9: Scope and History of Developmental Biology

5 hrs

Concepts of Epigenesis, Preformation, Specification, Determination, Differentiation, Morphogenesis, Embryonic induction

Chapter 1 and 3: Gilbert

Unit 10: Early Embryonic Development

12 hrs

Gametogenesis: Spermatogenesis and Oogenesis in mammals; Fertilization: External (amphibians), Internal (mammals), blocking mechanisms to Polyspermy; Types and Patterns of cleavage; Types of morphogenetic movements; Early development of frog and human (up to formation of gastrula); Fate maps, Fate of germ layers

Chapter 3, 4, 5, 6, 7, 10: Balinsky; Chapter 8, 9 and 17: Gilbert

Unit 11: Late Embryonic Development

7 hrs

Metamorphic events in life cycle of frog and its hormonal regulation.

Implantation of embryo in human; Formation, types and functions of placenta in mammals.

Chapter 11 and 18: Balinsky; Chapter 16: Gilbert

Unit 12: Applied Aspects of Developmental Biology

6 hrs

Stem cells, Cloning, IVF

Chapter 3: Gilbert

Practical (Credits: 2)

1. Osteology:

a) Disarticulated skeleton of fowl and rabbit

- b) Carapace and plastron of turtle/tortoise
- c) Mammalian skulls: one herbivorous and one carnivorous animal.
2. Frog - Study of developmental stages - whole mounts and sections through permanent slides - cleavage stages, blastula, gastrula, neurula, tail bud stage, tadpole external and internal gill stages.
3. Study of the different types of placenta- histological sections through permanent slides or photomicrograph.
4. Temporary mount of sperm (frog/rat) *(To be approved by Animal Ethical Committee of the college)
5. Study visit to a IVF centre and submission of report.

Teaching and Learning Processes:

Information and concepts about morphology, anatomy and development of animals will be imparted through classroom lectures assisted with online tools and power point presentations. Hands-on exposure would be provided to the students leading to more comprehensive learning. Inquiry-based collaborative learning environment through presentations, debates, group discussions, and roundtables on the various aspects of animal biology would be created to not only ensure effective learning and understanding of the concepts, but also inculcate confidence in the students. Curriculum-related assignments would improve the reading, writing and abstracting skills; and enhance the critical thinking of the students.

Assessment Methods:

The learners/ students can be assessed in many different ways- such as: MCQs/Quizzes, Assignments, Projects, Paper presentations, Class tests and Continuous evaluation

Keywords:

Integument, Viscera, Gills, Bladder, Aortic, Urinogenital, Gametogenesis, Fertilization, Polyspermy, Fate map, Placenta, Metamorphosis, Stem cell, Cloning, IVF.

Recommended Books:

- Weichert C.K and William Presch (1970). *Elements of Chordate Anatomy*. Tata McGraw Hills
- Hilderbrand, M and Gaslow G.E. *Analysis of Vertebrate Structure*. John Wiley and Sons
- Wolpert, L & Tickle, C (2011) *Principles of Developmental Biology (4th edition)*. Oxford University Press, ISBN: 9780198792918
- Carlson, Bruce M (1996). *Patten's Foundations of Embryology*, McGraw Hill, Inc. ISBN: 9780070634275

Suggested Readings:

- Kent, G.C. and Carr R.K.(2000)*Comparative Anatomy of the Vertebrates*. IX Edition. The McGraw-Hill Companies
- Kardong, K.V.(2005) *Vertebrates' Comparative Anatomy, Function and Evolution*. IV Edition. McGraw-Hill Higher Education

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2021

DEEN DAYAL UPADHYAYA COLLEGE

University of Delhi

Course Name: B.Sc. Life Science Sem. 2

Academic year: 2020-2021

Subject Name: [42231202] CBCS-COMPARATIVE ANATOMY AND DEVELOPMENT BIOLOGY
VERTEBRATES (Lab)

Faculty Name: KAMLESH KUMARI, MANISH SHARMA -a, PRIYA GOEL, PRIYA GOEL-a, Rashmi Kumari

Sr. No	Roll No	Student Name	Total (Class Test/Presentation)	Class Test/Presentation Marks	Lect. Att.	Tut. Att.	Total (L+T)	Eca Benefit Given (L+T)	Adj Att	Adj Att(%)	Att Marks	Ass	Total(Assign Marks)	Assign Marks	Class Test	Attendance	Total Marks
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2	20LFS7702	ARCHANA DHILLO	0.00/0	0.00/10	42/50	0/0	42/50	0	86/114	75.44	3/5	0/0	0.00/10	0.00/10	0.00/10	3/5	3/25
3	20LFS7703	ARUN ARUN ARUN	0.00/0	0.00/10	40/50	0/0	40/50	0	104/114	91.23	5/5	0/0	0.00/10	0.00/10	0.00/10	5/5	5/25
4	20LFS7704	ARYAN NEGI	0.00/0	0.00/10	34/50	0/0	34/50	0	90/114	78.95	3/5	0/0	0.00/10	0.00/10	0.00/10	3/5	3/25
5	20LFS7705	BHAGIRANI LEISHANGTHEM	0.00/0	0.00/10	50/50	0/0	50/50	0	114/114	100.00	5/5	0/0	0.00/10	0.00/10	0.00/10	5/5	5/25
6	20LFS7706	BHAWNA	0.00/0	0.00/10	44/50	0/0	44/50	0	108/114	94.74	5/5	0/0	0.00/10	0.00/10	0.00/10	5/5	5/25
7	20LFS7746	CHHAVI BASRA	0.00/0	0.00/10	18/50	0/0	18/50	0	62/114	54.39	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
8	20LFS7707	HARDIK KUMAR SAH	0.00/0	0.00/10	38/50	0/0	38/50	0	102/114	89.47	5/5	0/0	0.00/10	0.00/10	0.00/10	5/5	5/25
9	20LFS7709	KAMAL SINGH	0.00/0	0.00/10	10/50	0/0	10/50	0	62/114	54.39	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
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11	20LFS7711	KSHITIJ GROVER	0.00/0	0.00/10	38/50	0/0	38/50	0	94/114	82.46	4/5	0/0	0.00/10	0.00/10	0.00/10	4/5	4/25
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16	20LFS7717	NEHA	0.00/0	0.00/10	44/50	0/0	44/50	0	92/114	80.70	4/5	0/0	0.00/10	0.00/10	0.00/10	4/5	4/25
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40	20LFS7740	VIKAS PANDEY	0.00/0	0.00/10	42/50	0/0	42/50	0	106/114	92.98	5/5	0/0	0.00/10	0.00/10	0.00/10	5/5	5/25
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43	20LFS7743	YASHIKA TRIVEDI	0.00/0	0.00/10	44/50	0/0	44/50	0	104/114	91.23	5/5	0/0	0.00/10	0.00/10	0.00/10	5/5	5/25




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Student work

Report - Virtual visit to an IVF lab.

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Abhishek Jaat



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Archana Dhillon



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Aryan Negi



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Bhagi
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Bhawna Sharma



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Chhavi Basra



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HARDIK
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khushboo
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Report on IVF

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Kshitij Grover
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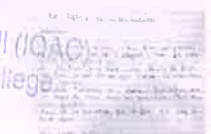


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Manish Kumar

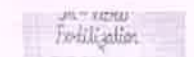


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Manisha
Rawat20LFS771
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Invitro fertilization



Monica Garwe



Neha



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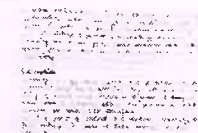
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SHIVAM
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Shreya
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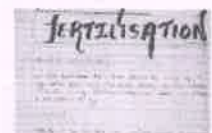
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Shruti Kumari
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Shruti Saini



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Shubham



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Simran



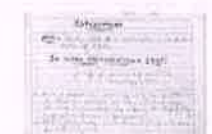
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Surajit Mondal



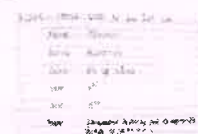
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Sweta Sharma
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Tamanna Singh



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Tanisha Sharma
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Vaidehi
Jain20LFS7738



Vikas
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REPORT

Name - Nisha Kumari

Roll No. - 20LF57719

Course - B.Sc. Life Science

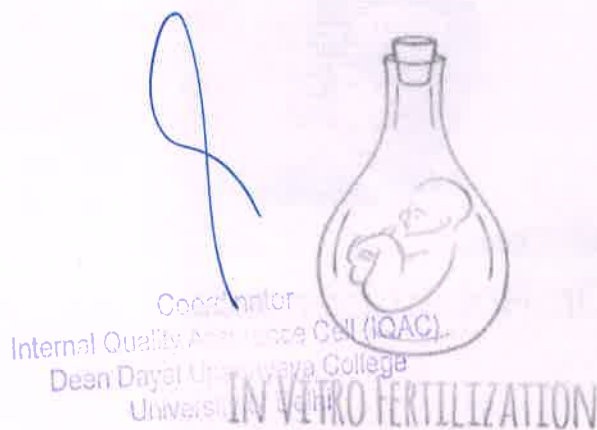
Year - 1st

Semester - 2nd

Paper - Comparative Anatomy and Developmental
Biology of Vertebrates

Topic - Virtual Visit to an IVF Lab

Submitted to - Dr. Priya Groel



Priya

neveen

Dr

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Louise Joy Brown



Dr. Robert Edwards

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Report : Virtual Visit to an IVF Lab

* IVF (In-Vitro Fertilization) :

- In vitro fertilization (IVF) is a process by which egg cells are fertilized in vitro i.e. outside of the body. This embryo is then transferred to the uterus to hopefully implant and become a pregnancy.
- A colloquial term for babies conceived as the result of IVF, is "test tube babies". IVF is not the first step - but after Artificial insemination / fertility drugs.

- * Dr. Robert Edwards (Embryologist, 2010 won Nobel Prize in Physiology) and Dr. Steptoe (Gynaecologist) for the development of in vitro fertilization.

- * The 1st test tube baby : Louise Joy Brown (England) was born on 25th July 1978. She was born as a result of natural cycle IVF where no stimulation was made.

* History of IVF :

- Dr. Subhash Mukhopadhyay (16 January 1931 - 19 June 1981) was a physician from Kolkata, India, who created the world's second and India's first child using in-vitro fertilization, Durga who was born 67 days after the first IVF baby in United Kingdom.
- Unfortunately, he was harassed by the state government and not allowed to share his achievements with the international scientific community.
- He committed suicide on 19 June, 1981.
- The critically acclaimed film EK Doctor Ki Maut (1990) was






made on his life.

* Need of IVF :

- Infertility : Extremely Prevalent
- 17-26% of couples worldwide (90 million women)
- 27-47% of infertile couples have impaired male fertility ; decline in semen quality worldwide over last 50 years.

* Why the increase in Infertility?

- Delayed marriage and child-bearing
- Sexually transmitted diseases.
- Hormonal Contraception
- Obesity
- Environmental Pollution
- Genetic : Y-Chromosome microdeletions
- Damage to Testes : Anatomical

* Types and Causes of Infertility in Female

- ⊙ Tubal Infertility : Blocked tubes / Infection (Chlamydia)
 - Cure : Surgery / Grafting , though tubes are not required in IVF.
- ⊙ Ovarian Infertility : nonfunctional / absent / premature ovarian failure.
 - Cure : use donor for ova
- ⊙ Uterine Infertility : absent (Mullerian defect - congenital)
 - Cure : Surrogate mother
- ⊙ Cervix Factor : mucus, pelvic pain during periods, pain during intercourse, fatigue, painful urination.

- ⑤ Endometriosis : Pelvic anatomy distortions - functional endometrial tissue present outside the uterus.
- ⑤ Hormonal Malfunctioning : Insensitivity / less amounts / absent less Estrogen / high ESH / autoimmune disorders.
Causes : Stress / exercise
- ⑤ Pelvic cysts (mechanical disorder)
- ⑤ Age - Related Factors : women's ovarian function diminishes with age
- ⑤ PCOS : polycystic ovarian disorders.
Irregular ovulation, menses / obesity / acne / weight gain.
- ⑤ Idiopathic factors : unknown.

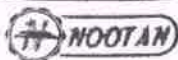
* Types and Causes of Infertility in Males.

1. Azoospermia : absence of sperms (less than 32%) functional
2. Oligospermia : sperm count (less than 13.5 million) mL. Here IVF is helpful : No. of sperms required : Natural Conception : 20×10^6
IVF = 10

* Causes \Rightarrow 1. Genetic : Y-chromosomal microdeletions

2. Damage to testis : anatomical
3. Infection
4. Sperm Capacitation Problems
5. Vas deferens : blockage / absence
6. Lifestyle : tobacco / cocaine / drugs / alcohol / heat / exercise.

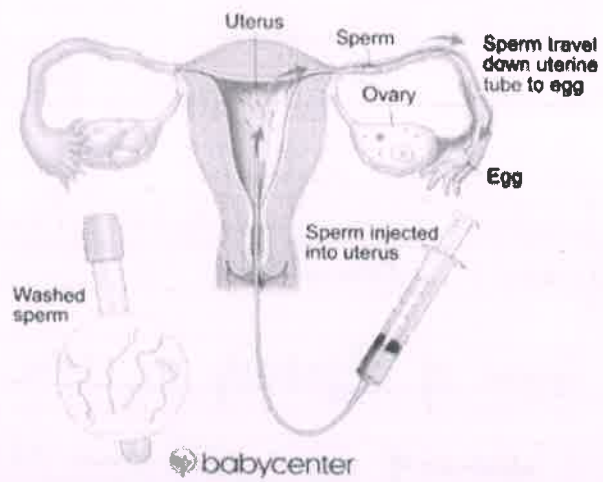
* Parameters of Infertility :



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Indications of IVF

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- Egg : Ovulation time, egg quality, Hormonal level (LH, FSH).
- Sperm : Presence / absence, Capacitation,
 Quality : Volume > 2ml
 Motility > 50%.
 Concentration > 2×10^7 per ml
- Gamete Transport : Intact reproductive tract
- Implantation : Uterine lining

* Prerequisites for IVF :

- Physical fitness : (postmedical history) Obesity / Hereditary disorders / STBs / Abdominal or Pelvic surgery.
- Ovarian Accessibility : else ovariectomy (exposing by surgery) or Laparotomy (opening through abdomen)
- Uterus : Capable of accepting pregnancy, sustaining for 280 days (human).
- Cervical canal sperm : negotiable, to allow embryos to pass through if epididymis / vas deferens problems, sperm collected by TESE (testicular sperm extraction) incision in testis through scrotum.

* Indications of IVF :

- Fallopian tube blockage or absent
- Unexplained infertility
- Severe Endometriosis
- Mullerian agenesis
- Genetic disorders (IVF & PGD)
- Premature ovarian failure
- Fertility preservation (Cancer treatment)

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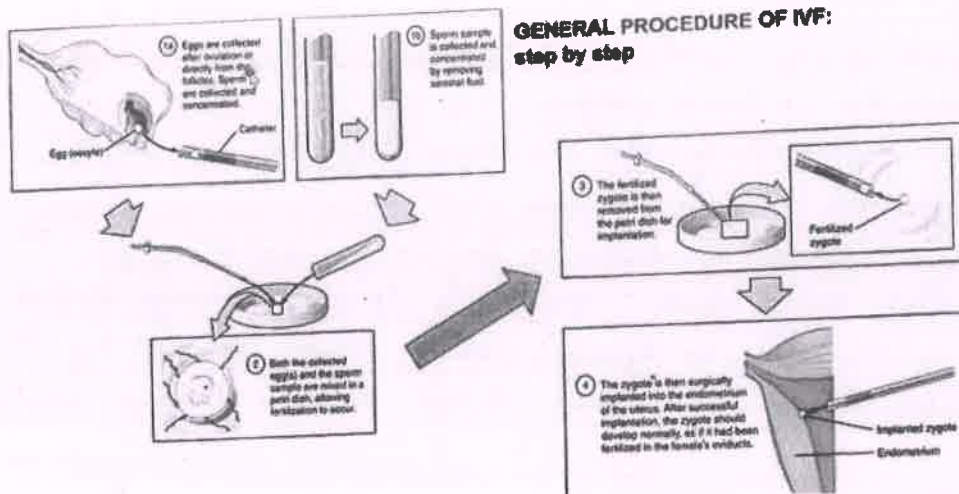
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* Ideal Patient Selection:

- Age < 35 years
- Presence of ovarian reserve
- Normal seminogram
- Couple is negative for viral markers
- Normal uterine cavity.

* Steps involved in IVF: IVF involves hormonally controlling a woman's ovulatory process, retrieving ovum from the woman's ovaries and fertilizing them with the sperm in a culture medium kept in a petridish and transferring the resulting embryos back to her uterus 2-3 days later.

1) Initial evaluation:

- Blood tests
- Seminal Fluid examination
- Hysterosalpingogram (HSG)
- Trans vaginal ultrasound.

2) Treatment of female for IVF: Selection of cycle for Recovering oocyte.

- Natural cycle: Luteinizing hormone (LH) surge time = time of ovulation.
- Stimulated cycle: ovulation-inducing hormones (a short course of gonadotrophins) is administered to cause development of many Graffian follicles (many oocytes)
- Controlled cycle: hCG arrests development of Graffian follicles for controlled ovulation time. Oocyte retrieval 34-36 hours after hCG injection.

• Regular Ovarian Monitoring and stimulation:

• Monitoring of ovarian stimulation:

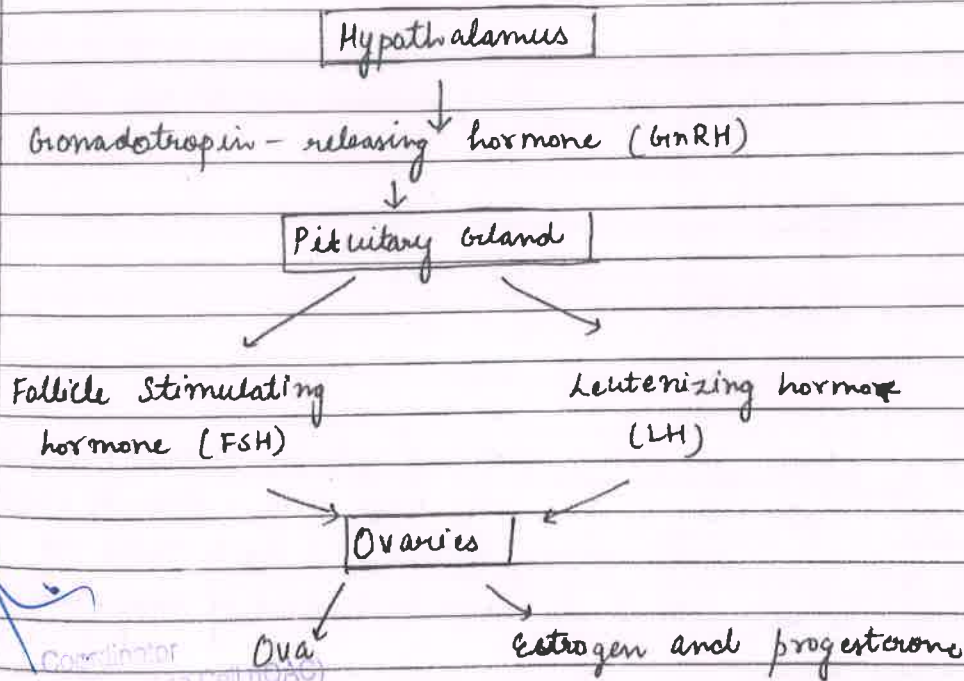
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- Ultrasound monitoring of follicle size (1.9 cm diameter optimum)
- Temperature charts.
- Changes in cervical mucus.
- ② Spontaneous LH Surge :
 - Statistical prediction of LH surge from last 6 menstrual cycles and urine / plasma levels.
 - Gives accurate time of ovulation and hence, laparoscopy.
- ③ Administration of hCG to control ovulation



Hormonal Control of oogenesis

* Controlled Ovarian Stimulation :

- Serum $E_2 > 40 \text{ pg/ml}$ and NO ovarian follicle $> 10 \text{ mm}$ on TVS.

→ Advantages:

- Quality of oocyte
- Timings controlled
- Less cycle cancellation
- Multiple eggs (cost effective)

→ Regimen:

- Clomiphene Citrate (CC)
- CC + human menopausal gonadotropin (hMG)
- Letrozole + pure FSH
- Letrozole + recombinant FSH
- hMG
- FSH
- GnRH analogs + hMG or pure FSH

→ Monitoring

- 2 or more follicles 17-18 mm.
- Serum E2 > 250 pg/ml
- ET ≥ 8-9 mm (trilaminar)

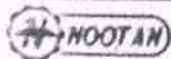


5000 - 10000 IU of HCG
(Trigger shot)

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→ Possible side effects of ovarian stimulation:

- Discomfort, bruising or swelling at injection.
- Rash, Allergic sensitivity, Headache, Mood swings
- Abdominal discomfort and bloating.



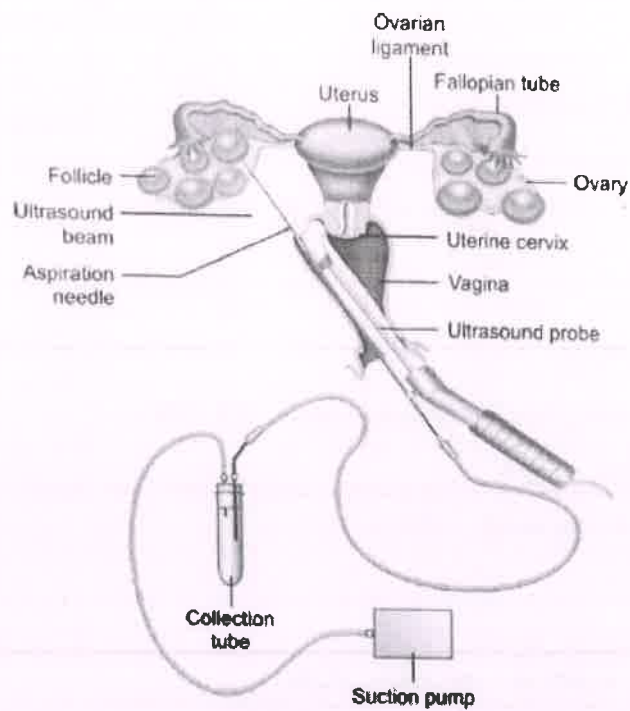
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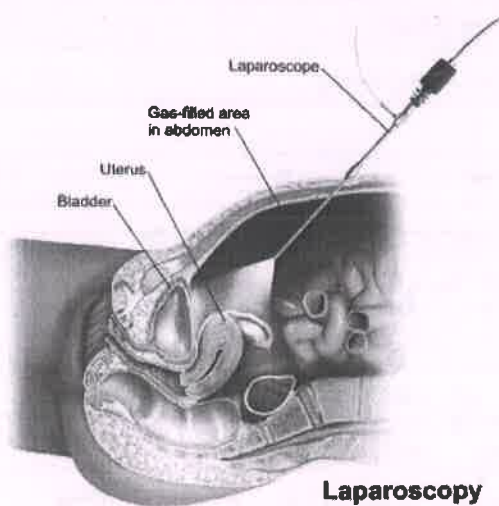
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Oocyte Retrieval



Laparoscopy

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- Chances of multiple pregnancies
- Ovarian Hyperstimulation Syndrome (OHSS)

3) Oocyte Retrieval:

- 36 hours after hCG injection
- Short anesthesia
- The eggs are aspirated (removed) from the follicles through the needle connected to a suction device.
- Aspiration of oocyte at Metaphase II stage from mature Graafian follicles with a needle directly from ovary
(Transvaginal oocyte retrieval) with laparoscope



Tissue covering the ova scraped away with laparoscopic scissors



Aspirate may contain blood, heparinised solution added to avoid formation of blood clots



Segregation of ova based on morphological characteristics



Oocyte culture incubation for 5-10h



Oocyte mature ready for insemination

4) Collection of Sperm:

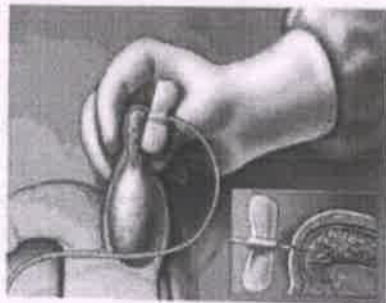
- Shortly before or after the oocyte collection
- Sexual abstinence
- 60-90 minutes prior to fertilization.
- Liquefied, centrifuged, suspended in culture medium, and incubated for 30-60 mins at 37°C.

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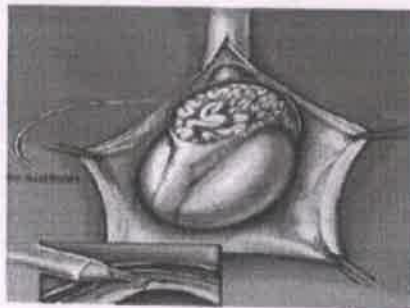
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Collection of sperms Surgical sperm retrieval



Percutaneous epididymal sperm aspiration (PESA)



Microscopical epididymal sperm aspiration (MESA)

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- The most active sperms on the surface of the medium.

5) In vitro fertilization : Variants

(i) Intra Cytoplasmic Sperm Injection (ICSI)

- Started in 1992
- Number of sperm required : 1
- Helpful in male oligospermia or obstructive Azoospermia (abnormal/blocked ejaculatory duct).
- Sperm are retrieved directly from the testes Percutaneous epididymal sperm aspiration (PESA), microepididymal sperm aspiration (MESA) in men with vasa-epididymal obstruction.
- Corona radiata and the cumulus mass around the oocytes are removed by oocyte picking.
- A single spermatozoan is directly (during IVF) with a special needle (the wall of egg).

* Indications of ICSI :

- Severe oligospermia
- Asthenospermia, teratospermia
- Presence of sperm antibodies.
- Obstruction of efferent duct system.
- Congenital absence of vas
- Cryopreserved oocytes.

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(ii) Gamete Intrafallopian Transfer (GIFT) :

- Eggs are removed from a woman's ovaries, and placed in one of the Fallopian tubes, along with the man's sperm.



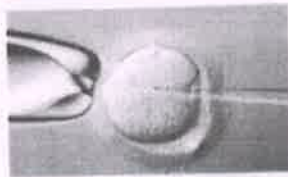

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ICSI



An oocyte is held in place with the large holding pipette on the left, while the smaller pipette is used to pick up a single live sperm.



This pipette is then manipulated to pierce the oocyte cell membrane and the sperm is injected into the cytoplasm.

In vitro fertilization of oocytes Development of embryo



Day 1: 2 cell stage
male and female pronuclei



Day 2: 4 cell stage



Day 3: 4 cell stage



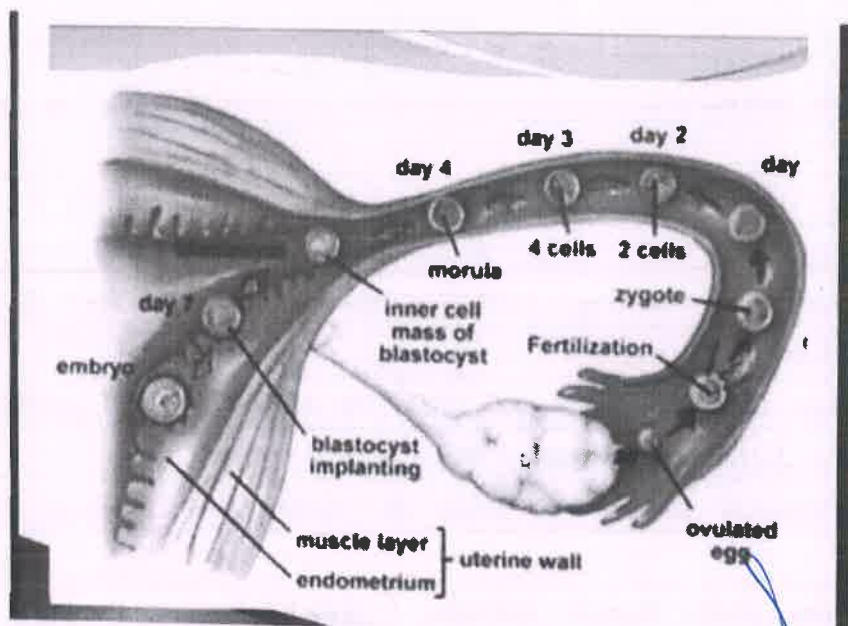
Day 4: morula of 128-256 cells

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- Oocytes collected laparoscopically are examined under the microscope for quality.
- The best quality eggs are mixed with washed and prepared from sperm sample. The sperm-egg mixture is released into the fimbrial end of the fallopian tube with a guided catheter.
- Fertilization happens in the fallopian tubes and the resulting embryos travel down into the uterus for implantation.
- * Mimics the normal process of fertilization in fallopian tube.
- * Requisite : Female has normal fallopian tubes and male produces adequate sperm.

(ii) Zygote Intra-Fallopian Transfer (ZIFT) : combines in vitro fertilization (IVF) and GIFT.

- Eggs collected during IVF are mixed with sperm to undergo fertilization in vitro.
- Fertilized eggs (zygotes) are then inserted with a guided catheter into the fallopian tubes (not uterus as in IVF)
- Zygote travels down the tube to reach the uterus for implantation.

(iv) Pronuclear stage tubal transfer (PROST) :

- Similar to ZIFT, ~~was~~ uses in vitro fertilization.
- But the fertilized eggs is transferred to the fallopian tube at the pronuclear stage.

* Autologous Endometrial Culture : A possible treatment for patients who have failed previous IVF attempts or who have failed previous IVF attempts or who have poor embryo quality.

- The patient's fertilized eggs are placed on top of a layer of cells from the patient's own uterine lining.

* Risks associated with IVF :

① Ovarian Hyperstimulation Syndrome :

- Overstimulation of ovaries in response to fertility drugs.
- Body fluids accumulate in abdomen.
- Many follicles develop simultaneously superovulation.
- Enlarged / swollen ovaries.
- Can affect vascular / respiratory / renal system.
- Can be fatal rarely.

② Multiple Births :

- Since > 1 embryos are inserted to increase chances of implantation.
- Morbidity / mortality to mother / child or preterm delivery.
- Birth defects (low wt. / disabilities).
- Neurologic / cardiovascular / musculoskeletal defects (missing digits).

③ Psychological aspects :

- If failure : disappointment / depression.
- Feeling of being cheated, money wastage guilt.

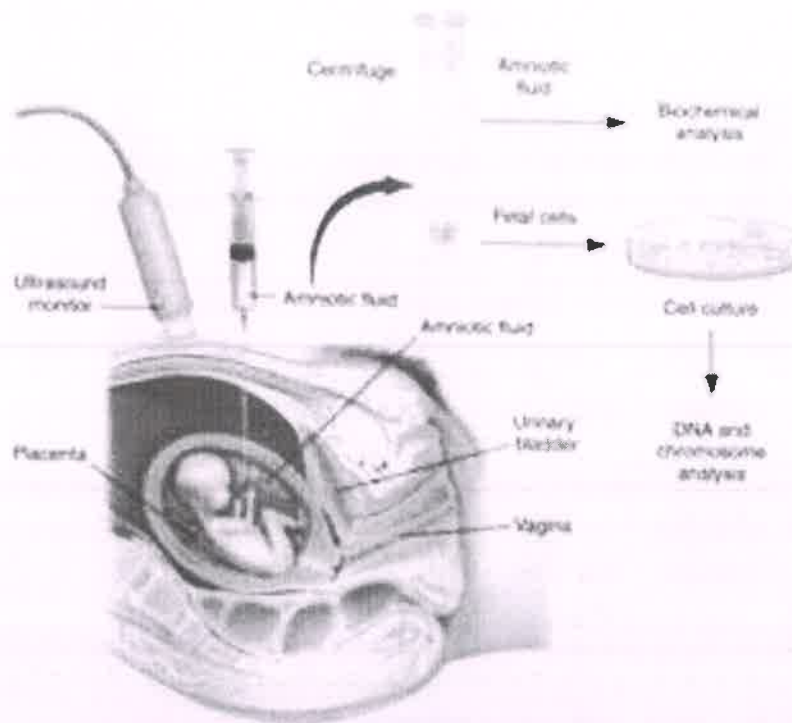
* Ethical Considerations :

- By passing the natural way of conception : even pregnancy post-menopause.
- Creation of life in lab.
- Discarding of excess embryos.
- Unnatural environment for embryos.
- Potential to modify / select embryos.

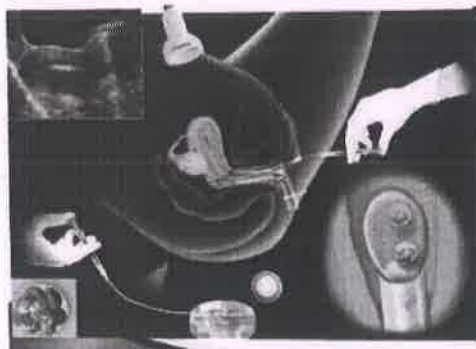
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Aminocentesis



Embryo transfer

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* Embryo Transfer :

- Embryo transfer may be performed on day 2, 3 or 5 post fertilization.
- A transfer catheter, a long, thin sterile tube with a syringe or one end.
- Fluid containing the embryos into the uterine cavity.

* Post Care :

- Luteal phase support.

Results :

- Live birth rate 45% (<35 yrs) to 4.5% (>42 years)
- Miscarriage (18%)
- Multiple pregnancy (31%)
- Ectopic (0.9%)
- No inc in congenital malformation.

* Prognostic factors:

- Maternal age
- Ovarian reserve
- Indication of IVF
- Presence of hydrosalpinx.
- Fibroid uterus.
- Smoking.

* Variations of IVF :

- Gamete Intrafallopian transfer (GIFT)

Pregnancy rate \rightarrow 27-30%.

- Zygote Intrafallopian transfer (ZIFT)

Pregnancy rate \rightarrow 29-30%.

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* Embryo or Oocyte Donation :

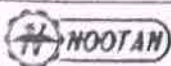
- Indications
- ⊙ Essential requirements :
 - Successful ovum donation and IVF.
 - Embryo- endometrial Synchronization.
 - Exogenous hormonal support.

* Gestrogacy :

- ⊙ Indication :
 - Irreparable uterine factor
 - Significant risk to mother.
 - Recurrent unexplained miscarriages.
 - Prior hysterectomy.

⇒ In Vitro fertilization (IVF) Laboratory Must Have →

- Incubators
- Microscopes
- Disposable materials like tissue culture grade plastic
- Glassware, dish-washing equipment.
- pH meter and an Osmometer for regular monitoring of media.
- All laboratory chemicals and reagents must be labeled to indicate date received, date opened, and shelf life, where applicable.
- The lab should also have devices to maintain the temperature and pH of media, eggs and embryos during various phases of the procedure. Examples are slide warmers, water baths, heating blocks and isolettes.



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ZH Core-III: Non-Chordates II: Coelomates

Course Learning Objective:

The course would provide an insight to the learner about the existence of different life forms on the Earth, and appreciate the diversity of animal life. It will help the student to understand the features of Kingdom Animalia and systematic organisation of the animals based on their evolutionary relationships, structural and functional affinities. The course will also make the students aware about the characteristic morphological and anatomical features of diverse animals; economic, ecological and medical significance of various animals in human life; and will create interest among them to explore the animal diversity in nature.

Course Learning Outcome:

Upon completion of the course, students should be able to:

- Learn about the importance of systematics, taxonomy and structural organization of animals.
- Appreciate the diversity of non-chordates living in diverse habit and habitats.
- Understand evolutionary history and relationships of different non-chordates through functional and structural affinities.
- Critically think about the organization, complexity and characteristic features of non-chordates.
- Getting familiarized with the morphology and anatomy of representatives of various animal phyla.
- Comprehend the economic importance of non-chordates, their interaction with the environment and role in the ecosystem.
- Enhance collaborative learning and communication skills through practical sessions, team work, group discussions, assignments and projects.

Course Content:

Theory [Credits: 4]

60 hrs

Unit 1: Introduction to Coelomates

Evolution of coelom and metamerism

2 hrs

(Chapter 9 and 27: Barnes, R.D.; Chapter 5: Pechenik, J. A.)

Unit 2: Annelida

General characteristics and Classification up to classes; Digestion, Excretion and Reproduction in Annelida

14 hrs

(Chapter 13: Barnes, R.D.; Chapter 13: Pechenik, J. A.)

Unit 3: Arthropoda

General characteristics and Classification up to classes, Classification of Insecta up to orders
Vision and Respiration in Arthropoda; Metamorphosis in Insects; Social life in bees and termites

17 hrs

(Chapters 16-21: Barnes, R.D.; Chapter 14: Pechenik, J. A.)

Unit 4: Onychophora

General characteristics and Evolutionary significance

2 hrs

(Chapter 15: Barnes, R.D.; Chapter 15: Pechenik, J. A.)

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Unit 5: Mollusca

14 hrs

General characteristics and Classification up to classes; Respiration in Mollusca; Torsion and detorsion in Gastropoda; Pearl formation in bivalves
(Chapter 12: Barnes, R.D.; Chapter 12: Pechenik, J. A.)

Unit 6: Echinodermata

11 hrs

General characteristics and Classification up to classes; Protective mechanisms in echinoderms (Dermal skeleton, evisceration, autotomy); Water-vascular system in Asteroidea; Larval forms in echinoderms
(Chapter 28: Barnes, R.D.; Chapter 20: Pechenik, J. A.)

Practical [Credits: 2]

1. Study of *Aphrodite*, *Nereis*, *Heteronereis*, *Sabella*, *Serpula*, *Chaetopterus*, *Pheretima*, *Hirudinaria*, Trochophore larva
2. Study of T.S. through pharynx, gizzard, and typhlosolar intestine of earthworm
3. Study of *Limulus*, *Palaemon*, *Palaemon*, *Daphnia*, *Balanus*, *Sacculina*, *Cancer*, *Eupagurus*, *Scolopendra*, *Julus*, *Bombyx*, *Periplaneta*, termites, *Apis*, *Musca*, Crustacean larvae (Any three)
4. Study of *Peripatus*
5. Study of *Chiton*, *Dentalium*, *Pila*, *Doris*, *Helix*, *Unio*, *Patella*, *Ostrea*, *Pinctada*, *Sepia*, *Octopus*, *Nautilus*
6. Study of *Pentaceros*/*Asterias*, *Ophiura*, *Clypeaster*, *Echinus*, *Cucumaria*, *Antedon*
7. Study of mouth parts, digestive system and nervous system of *Periplaneta**
8. Submit a Project Report on field study of the social behaviour of any insect (bees/termites/ants/wasps) or behavioural pattern of earthworm in nature.
(*Subject to UGC guidelines)

Teaching and Learning Process:

Information and concepts about morphology, anatomy and physiology of non-chordates will be imparted not only through classroom lectures to inculcate a conceptual base among the students about the subject but also through observations in nature and through real animals/preserved specimens/models. Hands-on exposure would be provided to the students leading to more comprehensive learning. Blended learning using chalk-n-talk method and e-learning using presentations, animations, simple animal model systems, etc. would be used to enhance their conceptual understanding. Inquiry-based collaborative learning environment through presentations, debates, group discussions, and roundtables on the various aspects of non-chordate biology would be created to ensure effective learning and understanding of the concepts. Field-based project activities have been included to create interest among the students to study and explore the biology and behaviour of non-chordates inculcating research aptitude.

In addition, study of animals in their natural habitat will improve the observation skills, data collection skills, critical thinking and analytical skills of students. Furthermore, museology will give them a comprehensive idea of structural features of non-chordates and the basis of classification. Curriculum-related assignments would improve the reading, writing and abstracting skills; and enhance the critical thinking of the students.

Assessment Methods:

Various measures adopted will be as follows:

- **Class Tests:** Regular class tests will judge the grasp of the topics by the students. It includes practice sessions as well as the ones during which students will be evaluated.
- **Projects and Assignments:** Individual/group projects will inculcate independent thinking as well as the team work skills among the students. Assessment on the participation of each student, analytical skills and project outcome will be held.
- **Regular Presentations:** Presentations by the students on a particular topic will enhance students' learning and confidence. The presentations will be assessed based on the content, novelty, explanation and response to queries raised by peers.
- **Viva-voce:** Viva-voce is another critical component of assessment of the practical component of a course. Inquiry-based learning blended with hands-on learning will develop critical thinking and competencies among students.
- **Semester-end Examination:** Semester-end examination and grading of students based on their performance in the exams is an indicator of student's learning throughout the semester. Assessment of students through final exams analyses comprehensive knowledge gained by each student comparatively.

Keywords:

Annélida, Arthropoda, Coelomates, Classification, Deuterostomia, Echinodermata, Insecta, Metamerism, Metazoa, Mollusca, Onychophora, Structural organization, Symmetry, Triploblastic

Recommended Books:

- Barnes, R.D. (2006). Invertebrate Zoology, VII Edition, Cengage Learning, India.
 - Pechenik, J. A. (2015). Biology of the Invertebrates. VII Edition, McGraw-Hill Education
- *Note: Classification to be followed from "Barnes, R.D. (2006). Invertebrate Zoology, VII Edition, Cengage Learning, India"

Suggested Readings:

- Ruppert, E.E., Fox, R.S., Barnes, R. D. (2003). Invertebrate Zoology: A Functional Evolutionary Approach. VII Edition, Cengage Learning, India
- Barnes, R.S.K., Calow, P., Olive, P.J.W., Golding, D.W. and Spicer, J.I. (2002). The Invertebrates: A New Synthesis, III Edition, Blackwell Science
- Barrington, E.J.W. (2012). Invertebrate Structure and Functions. II Edition, EWP Publishers

Online Tools and Web Resources:

- Swayam (MHRD) Portal
- Animal Diversity (<https://swayam.gov.in/courses/5686-animal-diversity>)
- Advances in Animal Diversity, Systematics and Evolution (<https://swayam.gov.in/courses/5300-zoology>)

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Course Name : B.Sc.(H) Zoology Sem. 2

Academic year : 2020-2021

Subject Name : [32231201] CBCS-NON-CHORDATES II ;COELOMATES(Lab)

Faculty Name : KAMLESH KUMARI, LATHIKA NAIR, SHAILLY ANAND

Sr. No	Roll No	Student Name	Total (Class Test/Pres entation)	Class Test/Pres entation Marks	Lect. Att.	Tut. Att.	Total (L+T)	Eca Benefit Given (L+T)	Adj Att	Adj Att(%)	Att Marks	Ass	Total(Ass ign Marks)	Assign Marks	Class Test	Attendan ce	Total Marks
1	20HZL7101	ABHIRUPA BARMAN	0.00/0	0.00/10	0/42	0/0	0/42	0	0/102	0.00	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
2	20HZL7153	ANCHAL JHA	0.00/0	0.00/10	34/42	0/0	34/42	0	90/102	88.24	5/5	0/0	0.00/10	0.00/10	0.00/10	5/5	5/25
3	20HZL7142	ANJALI	0.00/0	0.00/10	2/42	0/0	2/42	0	2/102	1.96	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
4	20HZL7143	ANKUSH SINGH	0.00/0	0.00/10	42/42	0/0	42/42	0	98/102	96.08	5/5	0/0	0.00/10	0.00/10	0.00/10	5/5	5/25
5	20HZL7102	ARJUN RAM	0.00/0	0.00/10	38/42	0/0	38/42	0	98/102	96.08	5/5	0/0	0.00/10	0.00/10	0.00/10	5/5	5/25
6	20HZL7103	ARKA KUMAR CHOWDHURY	0.00/0	0.00/10	0/42	0/0	0/42	0	0/102	0.00	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
7	20HZL7104	ASHISH KUMAR SINGH	0.00/0	0.00/10	16/42	0/0	16/42	0	40/102	39.22	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
8	20HZL7154	Balwant singh solanki	0.00/0	0.00/10	32/42	0/0	32/42	0	76/102	74.51	2/5	0/0	0.00/10	0.00/10	0.00/10	2/5	2/25
9	20HZL7106	BHAVYA	0.00/0	0.00/10	0/42	0/0	0/42	0	0/102	0.00	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
10	20HZL7107	DEEPALAXMI BRAHMA	0.00/0	0.00/10	38/42	0/0	38/42	0	94/102	92.16	5/5	0/0	0.00/10	0.00/10	0.00/10	5/5	5/25
11	20HZL7108	GANESH KUMAR	0.00/0	0.00/10	34/42	0/0	34/42	0	82/102	80.39	4/5	0/0	0.00/10	0.00/10	0.00/10	4/5	4/25
12	20HZL7109	GAURAV YADAV	0.00/0	0.00/10	18/42	0/0	18/42	0	50/102	49.02	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
13	20HZL7111	JANVI	0.00/0	0.00/10	0/42	0/0	0/42	0	0/102	0.00	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
14	20HZL7112	JAYA	0.00/0	0.00/10	42/42	0/0	42/42	0	102/102	100.00	5/5	0/0	0.00/10	0.00/10	0.00/10	5/5	5/25
15	20HZL7113	JYOTI YADAV	0.00/0	0.00/10	40/42	0/0	40/42	0	80/102	78.43	3/5	0/0	0.00/10	0.00/10	0.00/10	3/5	3/25
16	20HZL7114	KALYANI SINHA	0.00/0	0.00/10	0/42	0/0	0/42	0	0/102	0.00	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
17	20HZL7115	KANIKA GHUGTIYAL	0.00/0	0.00/10	22/42	0/0	22/42	0	62/102	60.78	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
18	20HZL7116	KHUSHI PATEL	0.00/0	0.00/10	42/42	0/0	42/42	0	102/102	100.00	5/5	0/0	0.00/10	0.00/10	0.00/10	5/5	5/25
19	20HZL7145	KHUSHI KUMARI	0.00/0	0.00/10	18/42	0/0	18/42	0	54/102	52.94	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
20	20HZL7117	KUMARI HONEY	0.00/0	0.00/10	40/42	0/0	40/42	0	100/102	98.04	5/5	0/0	0.00/10	0.00/10	0.00/10	5/5	5/25

21	20HSL7119	MAHAK TICKOO	0.00/0	0.00/10	0/4	0/0	0/42	0	0/102	0.00		0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
22	20HSL7120	MANISH KUMAR	0.00/0	0.00/10	24/42	0/0	24/42	0	80/102	78.43	3/5	0/0	0.00/10	0.00/10	0.00/10	3/5	3/25
23	20HSL7122	NAMAN KUMAR PATODIA	0.00/0	0.00/10	22/42	0/0	22/42	0	58/102	56.86	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
24	20HSL7155	Neeraj Yadav	0.00/0	0.00/10	4/42	0/0	4/42	0	8/102	7.84	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
25	20HSL7123	NIKITA	0.00/0	0.00/10	40/42	0/0	40/42	0	96/102	94.12	5/5	0/0	0.00/10	0.00/10	0.00/10	5/5	5/25
26	20HSL7124	NIKITA ROHILLA	0.00/0	0.00/10	34/42	0/0	34/42	0	78/102	76.47	3/5	0/0	0.00/10	0.00/10	0.00/10	3/5	3/25
27	20HSL7150	NISHA MEENA	0.00/0	0.00/10	12/42	0/0	12/42	0	36/102	35.29	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
28	20HSL7125	PIYUSH DADHICH	0.00/0	0.00/10	42/42	0/0	42/42	0	102/102	100.00	5/5	0/0	0.00/10	0.00/10	0.00/10	5/5	5/25
29	20HSL7146	PRIYANSHI	0.00/0	0.00/10	6/42	0/0	6/42	0	18/102	17.65	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
30	20HSL7141	RANJITA	0.00/0	0.00/10	40/42	0/0	40/42	0	100/102	98.04	5/5	0/0	0.00/10	0.00/10	0.00/10	5/5	5/25
31	20HSL7128	RITIK YADAV	0.00/0	0.00/10	24/42	0/0	24/42	0	68/102	66.67	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
32	20HSL7129	RITU THAKUR	0.00/0	0.00/10	0/42	0/0	0/42	0	0/102	0.00	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
33	20HSL7130	RIYA SHARMA	0.00/0	0.00/10	36/42	0/0	36/42	0	88/102	86.27	5/5	0/0	0.00/10	0.00/10	0.00/10	5/5	5/25
34	20HSL7132	SANDHYA KUMARI	0.00/0	0.00/10	26/42	0/0	26/42	0	54/102	52.94	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
35	20HSL7147	SHRUTI AGARWAL	0.00/0	0.00/10	40/42	0/0	40/42	0	100/102	98.04	5/5	0/0	0.00/10	0.00/10	0.00/10	5/5	5/25
36	20HSL7134	SIMRAN	0.00/0	0.00/10	4/42	0/0	4/42	0	4/102	3.92	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
37	20HSL7148	SONALI PHOGAT	0.00/0	0.00/10	0/42	0/0	0/42	0	8/102	7.84	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
38	20HSL7135	SONIKA SETH	0.00/0	0.00/10	38/42	0/0	38/42	0	98/102	96.08	5/5	0/0	0.00/10	0.00/10	0.00/10	5/5	5/25
39	20HSL7151	SUBHI PANDEY	0.00/0	0.00/10	0/42	0/0	0/42	0	0/102	0.00	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
40	20HSL7136	TANYA MISHRA	0.00/0	0.00/10	32/42	0/0	32/42	0	84/102	82.35	4/5	0/0	0.00/10	0.00/10	0.00/10	4/5	4/25
41	20HSL7138	TULSIMAYEE TUDU	0.00/0	0.00/10	8/42	0/0	8/42	0	24/102	23.53	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
42	20HSL7139	TUSHANT KUMAR SAINI	0.00/0	0.00/10	36/42	0/0	36/42	0	92/102	90.20	5/5	0/0	0.00/10	0.00/10	0.00/10	5/5	5/25
43	20HSL7149	VIJAY KUMAR SHARMA	0.00/0	0.00/10	0/42	0/0	0/42	0	0/102	0.00	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
44	20HSL7140	YOGITA	0.00/0	0.00/10	40/42	0/0	40/42	0	100/102	98.04	5/5	0/0	0.00/10	0.00/10	0.00/10	5/5	5/25

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Zoology

2020-21

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Student list required Non-Chordata II

Topics for Project :

1. Social behaviour of Earthworms
2. Social life of honey bees
3. Social life of ants
4. Social life in wasps
5. Social life of termites

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NON CHODATES-II

REPORT

SESSION: 2020-21

Semester- 2nd

TOPIC: SOCIAL BEHAVIOUR IN
EARTHWORM

SUBMITTED TO-

Dr. Lathika Nair

Dr. Anina James

Assistant Professor

Deen Dayal Upadhyaya
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SUBMITTED BY-

Name- Ankush Singh

Course- B.Sc. (H) Zoology

Roll No. – 20HZL7143

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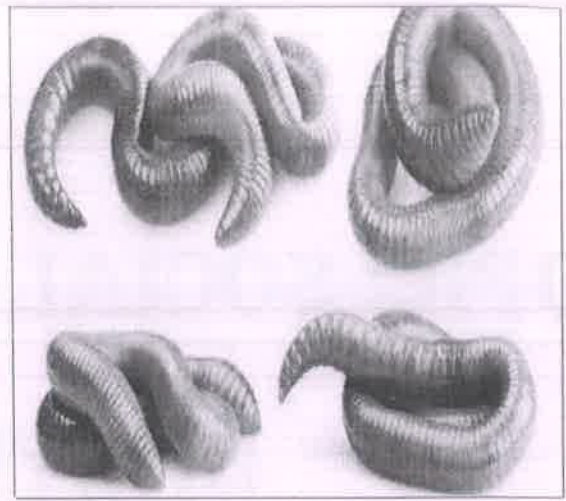
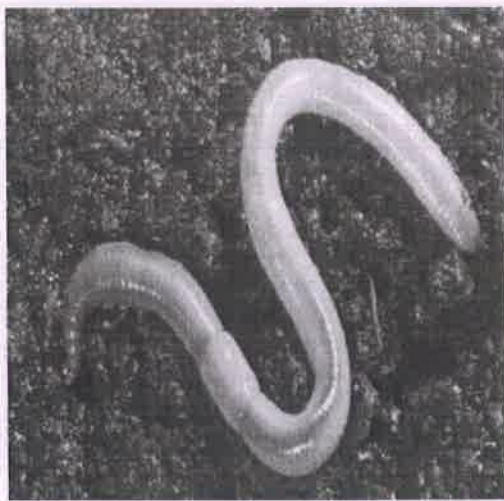




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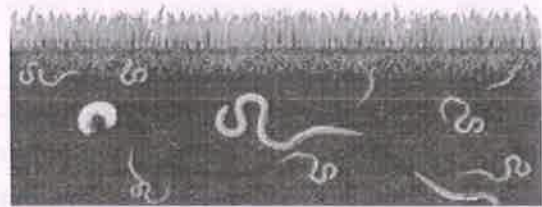
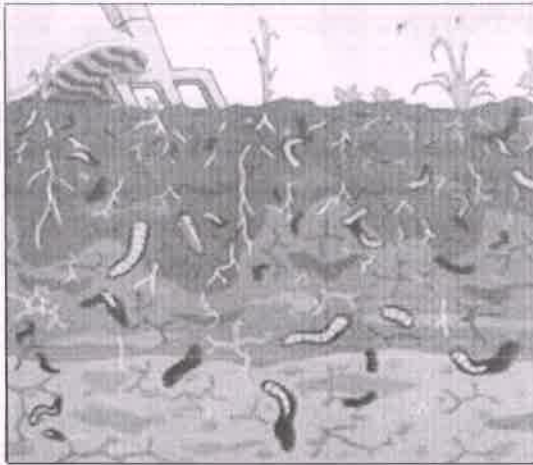
INTRODUCTION-

Earthworms are smooth-skinned worms, with a body made of many small segments. Body of the earthworm is segmented. Each segment has stiff little hairs that help the worm move; sometimes the hairs are hard to see. They have no skeleton, but do have lots of muscles. Earthworms don't have much colouration, so they usually look white, grey, pink or reddish brown. Some earthworms have red blood, and can be seen through their skin. Their skin produces slimy mucus that helps them slide through the soil. Like most animals they have a front and back end, and their mouth and tiny brain are at the front. They don't have eyes or a nose, but can detect light and vibrations, and have senses of touch and taste.



HABITAT-

During the day earthworms mostly stay in their burrows underground. At night they come up near or on to the surface to feed. If the air it is too cold or too dry, they stay down in the soil. Some species also come on to the surface during the day if it is raining. Most earthworm species live in the top layer of the soil and spend much of their time just below the surface where there is plenty of decomposing plant material. Some species emerge onto the surface at night when it is damp enough. They go deeper to avoid droughts or winter freezes. These are habitual dwellers of damp places and descendants of aquatic earthworms and usually found underground. There, they feed on living and dead organic matter. Therefore, worms have adapted to both aquatic environments – they breathe through their skin and resort to quiescence to avoid drying out – as well as terrestrial environments.



PREDATORS-

Earthworms are preyed upon by many species of birds like robins, starlings, thrushes, gulls, crows along with many snakes, wood turtles, mammals (e.g. bears, boars, foxes, hedgehogs, pigs, moles) and invertebrates (e.g. ants, flatworms, ground beetles and other beetles, snails, spiders, and slugs). Earthworms have many internal parasites, including protozoa, Platyhelminthes and nematodes; they can be found in the worm's blood, seminal vesicles, coelom, intestine or even in their cocoons.



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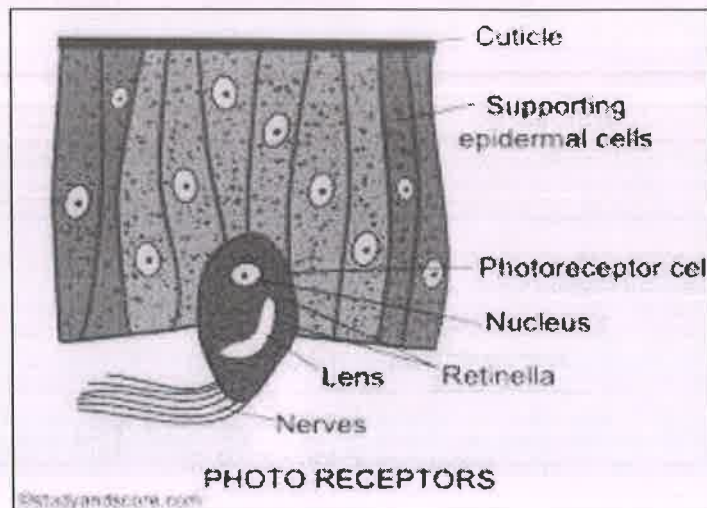
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HOW DO THEY SENSE ENVIRONMENT?

Worms are primitive creatures with no limbs, eyes or ears to provide them with sensory information about their environment. They have sensory receptors in their skin that are sensitive to vibrations, touch, chemicals and light. These receptors transmit information to a very primitive and simple brain that directs their body movements in response to the sensory information provided.

Photosensitive Receptors

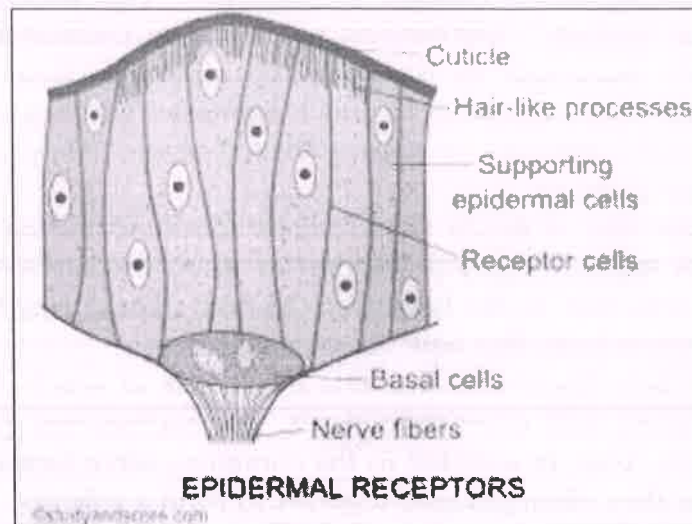
Earthworms do not have eyes; however, they do have specialized photosensitive cells. These photoreceptor cells have a central intracellular cavity filled with microvilli. As well as the microvilli, there are several sensory cilia which are structurally independent of the microvilli. The photoreceptors are distributed in most parts of the epidermis but are more concentrated on the back and sides of the worm. A relatively small number occurs on the ventral surface of the 1st segment. They are most numerous in the prostomium and reduce in density in the first three segments; they are very few in number past the third segment.



Epidermal Receptors

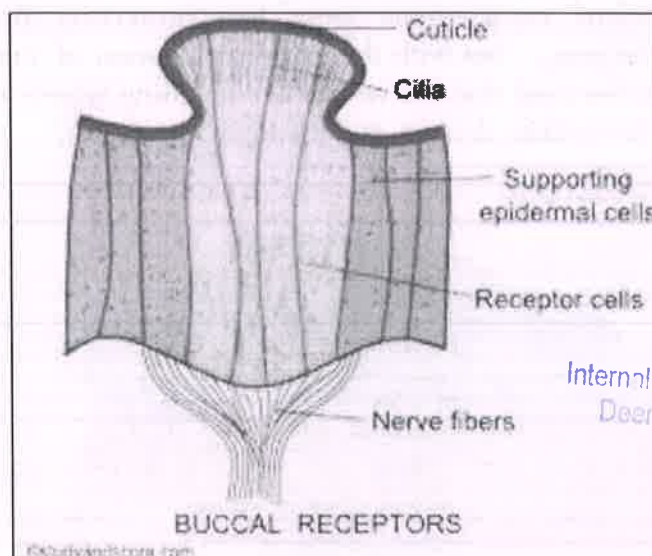
These are abundant and distributed all over the epidermis. Each receptor shows a slightly elevated cuticle which covers a group of tall, slender and columnar receptor cells. These cells bear small hair like processes at their outer ends and their inner ends are connected with nerve fibres. The epidermal receptors are tactile in function. They are also concerned with changes in temperature and respond to chemical stimuli. Earthworms are extremely sensitive to touch and mechanical vibration. Worms rely most heavily on their sense of touch. Nerve endings cover the worm's entire body so that they can feel

vibrations and different textures in their surroundings. Their sense of touch helps worms avoid predators and unsafe conditions.



Buccal Receptors

These receptors are located only in the epithelium of the buccal chamber. These receptors are gustatory and olfactory (related to taste and smell). They also respond to chemical stimuli. So, these organs are called chemoreceptors, and they help worms detect chemical sensations, which translate into taste reception. Worms also use these chemoreceptors to smell the air and their potential food source.



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HOW DO THE EARTHWORMS COMMUNICATE?

According to the journal of Ethology: "The International Journal of Behavioural Biology". Earthworms use touch to communicate and influence each other's behaviour to travel in the same direction. Earthworms only communicate with each other by touch and taste, but they can feel vibrations, and often avoid predators by sensing their footsteps. They can also sense light and moisture in the air.

A few years ago, a group of scientists observed during experiments that earthworms tended to group together to go to the surface of the substrate. The same was true in the laboratory as well. They usually chose the route that led them to food. But how did they do it?

The researchers discovered that this is because of touch. More specifically, through contact with other individuals. The earthworms guided one another to the places. This, in addition to the communicative factor, had a protective function, as they often grouped together to form a sphere.

At the same time, worms secrete antibacterial fluids that protect them from infectious agents. Therefore, contact between them would add more of these fluids, an event that further increases the protective factor.

After communication signals have been swapped, the worms will then collectively move in the same direction, meaning that worms do not act singularly, but they form 'herds'.

This indicates that the earthworms intertwine themselves as clumps of balls, especially when the environment is not particularly right for them due to low temperatures, shortage of food or when they are out in the open.

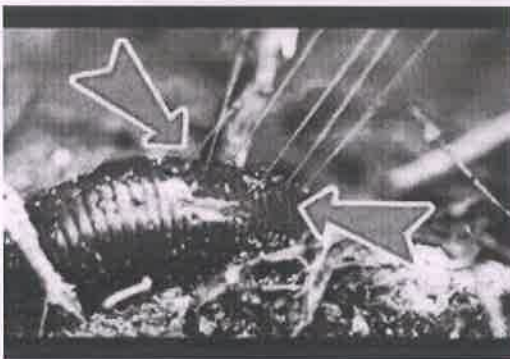
The only previous explanations were for 'protection from predators' or 'prevention of freezing', but with the extra explanation of 'communication', we can now also understand that the worms are deciding where to go next to move away from the immediate danger, and then move together.



HOW THEY RESPOND TO ENVIRONMENTAL STRESSES?

Earthworm populations depend on both physical and chemical properties of the soil, such as temperature, moisture, pH, salts, aeration and texture, as well as availability of food, and the ability of the species to reproduce and disperse. Some of the general ways to respond environmental stresses and stimuli are mentioned below:

- Earthworms respond to a single stimulus with a single, rapid withdrawal of the part stimulated. This is often called the 'escape response', reflecting the likely survival value of the reflex.
- Earthworms' main defence is hiding in their burrows in the soil. They will quickly crawl down into the ground if they detect a predator.
- Some can secrete bad-tasting chemicals.
- Some can also grow a new tail if damaged in mechanical accidents.
- Many earthworms can eject coelomic fluid through pores in the back in response to stress.
- Secretion of antibacterial fluids are also seen that protect them from infectious agents.
- Herd behaviour



LIGHT

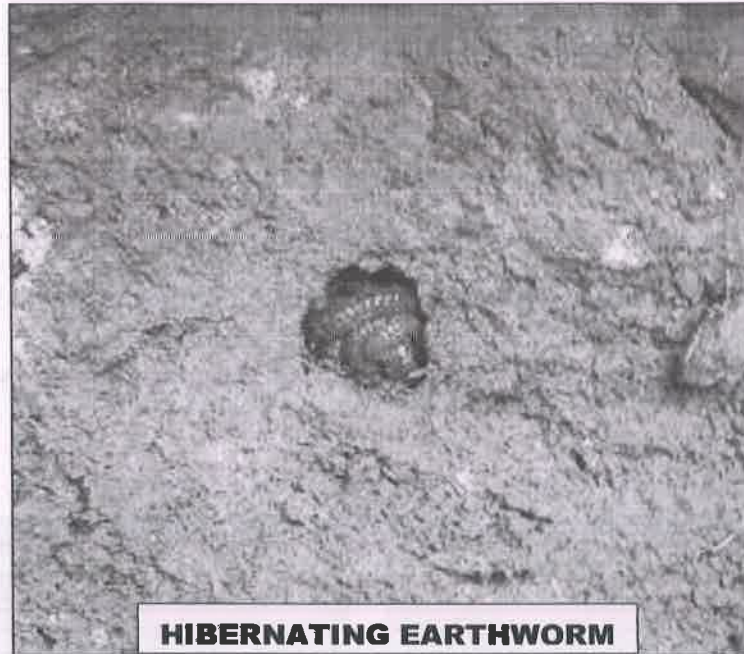
Earthworms are negatively phototropic to strong light and positive to weak light. Since sunlight is dangerous and can dry out their skin so they burrow deep in the soil to avoid excessive sunlight which is very important for their survival. They have receptor cells in their skin that are sensitive to light and touch. They will move away from light because heat from the sun or a light source will dry out their skin and kill them.

HEAT AND COLD

Heat-sensing neurons in earthworms enable them to detect higher temperatures and slow down body functions despite the heat so they can live longer. Earthworms don't just hide to avoid extreme hot or cold weather, they

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perform summer hibernation in some areas as well to keep away from hot temperatures, which can quickly dehydrate them. During summer hibernation or estivation, an earthworm buries himself in a similar manner to winter hibernation and curls himself into a ball or knot to conserve moisture. They coat themselves in a layer of mucus, another method of keeping moisture inside their body during sleep.



pH

One of the most important environmental factors is pH, but earthworms vary in their preferences. Most favour neutral to slightly acidic soils. *Lumbricus terrestris* is still present in a pH of 5.4, *Dendrobaena octaedra* at a pH of 4.3 and some Megascolecidae are present in extremely acidic humic soils. Soil pH may also influence the numbers of worms that go into diapause. The more acidic the soil, the sooner worms go into diapause and the longer they remain in diapause at a pH of 6.4.

FERTILIZERS AND BIOCIDES

Nitrogenous fertilizers tend to create acidic conditions, which are fatal to the worms and dead specimens are often found on the surface following the application of substances such as DDT, lime sulphur and lead arsenate. Globally, certain earthworm's populations have been devastated by deviation from organic production and the spraying of synthetic fertilizers and biocides, with at least three species now listed as extinct but many more endangered.

CHEMICALS

The entire body surface of the earthworm is sensitive to the addition of sodium chloride solutions. Adaptation to touch is rapid, but to salt is very slow. The prostomial region is sensitive to tactile and mechanical stimuli and also to sucrose, glycerol and quinine.

OTHER UNHEALTHY CONDITIONS

Although other environmental conditions might not drive the worms into hibernation, they can still be unhealthy. When there's a drought and the worms can't find enough moist soil near the surface, they tend to burrow deeper into safer soils, sometimes aestivating until the drought passes. Too much water also is a problem, but only if it persists long term. Worms can survive underwater and in soggy soils for weeks, but if the conditions persist to the point that worms no longer have oxygen available in the immediate area and they die because of suffocation.

LEARNING ABILITY

Experiments prove that earthworms have some learning ability. They have been taught to make right and left turns and burrow intersections by giving mild electric shocks when they make a mistake. Darwin credited worms with some intelligence in pulling leaves into burrows. However other scientists consider that the process is mainly one of trial and error.

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- "Invertebrates" by R.L. Kotpal

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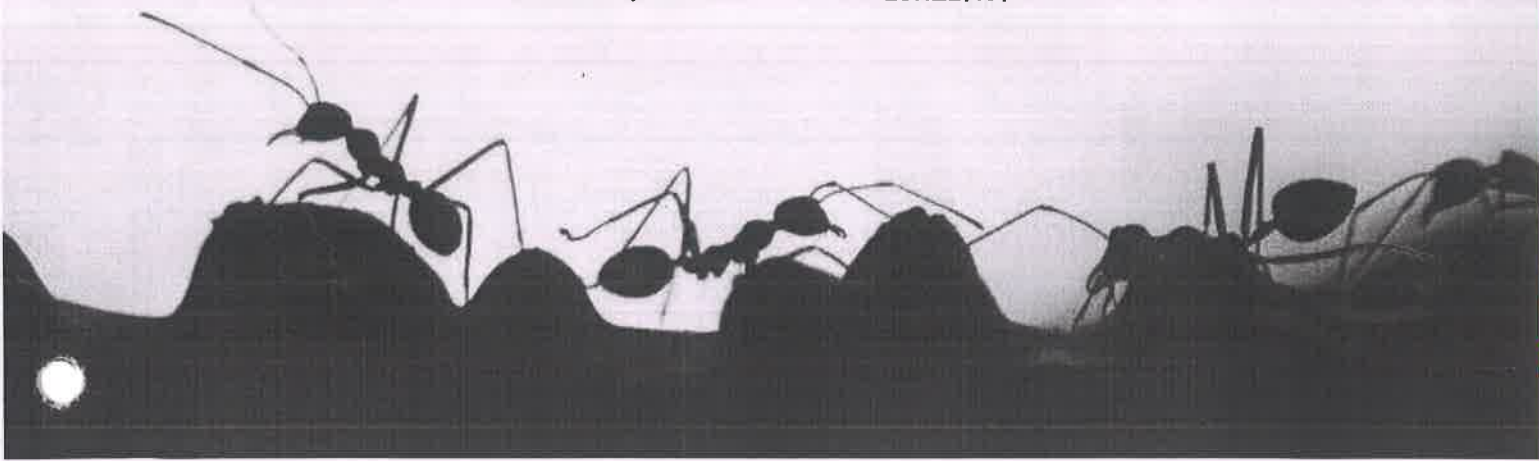
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20/08/21

SOCIAL BEHAVIOUR OF ANTS

Submitted to:
Dr. Lathika Nair
Dr. Anina James

Submitted by:
Deepalaxmi Brahma
20H2L7107



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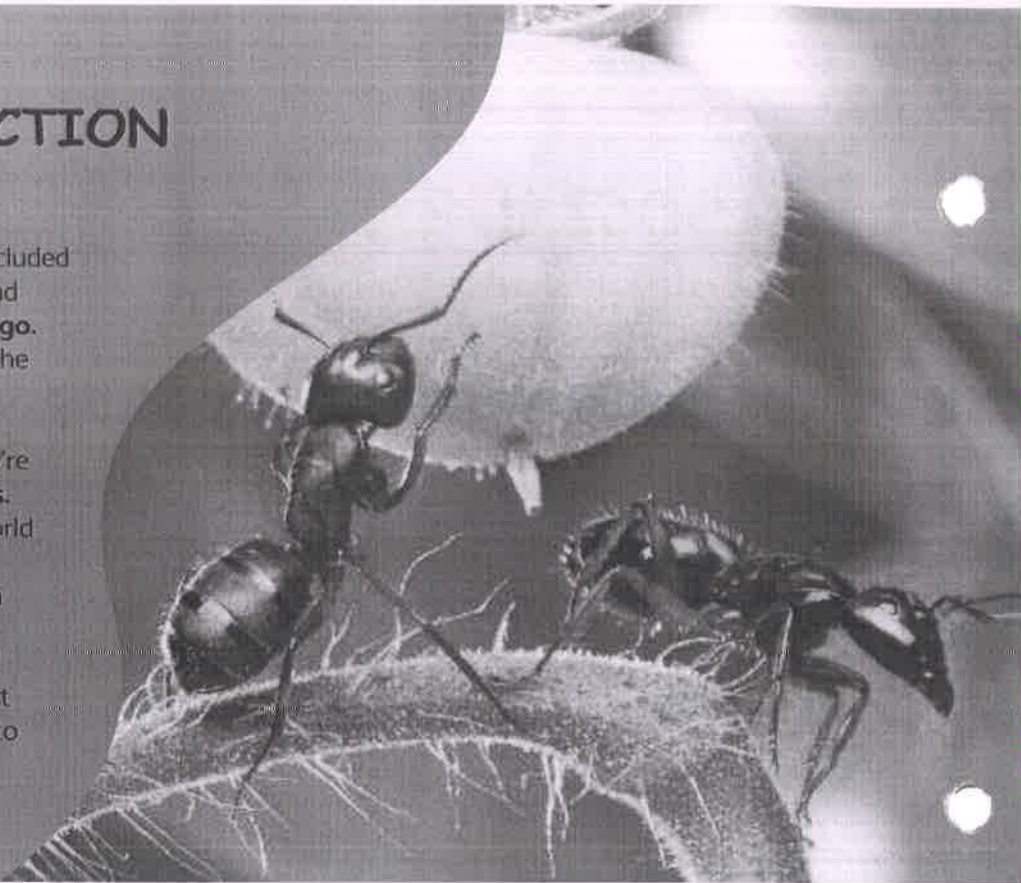
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INTRODUCTION

- Ants are one of the oldest species. Harvard conducted a study that concluded that ants are older than dinosaurs and originated about **130 million years ago**. They have survived the ice age and the extinction.
- They form closely knit colonies that communicate so efficiently that they're often referred to as **superorganisms**. They are so prevalent around the world that some estimates indicate the combined weight of all ants on earth might exceed that of humans.
- It is estimated that there are around **22,000 species** of ants, although just around **12,500** have been classified to date.



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Ants

Ants

Ants

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GENERAL CHARACTERISTICS:

Body Formation:

- Six legs with three joints each and a hooked claw for climbing.
- Large heads with compound eyes.
- Elbowed antennae.
- A narrow constriction called a petiole between the abdomen and thorax.
- A hard exoskeleton covering the body.
- Powerful mandibles.
- Metapleural glands that secrete an antibiotic fluid.
- Worker ants have 2 stomachs.
- They have the ability to carry between 10 and 50 times their own body weight.

Size:

- Ants usually range from around 0.08-inch to 1 inch in length.

Color:

- Most ants are black, brown, or red in color. However, a few species have a metallic luster and green hue.



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THE ANT COLONY

- The ant colony goes as deep as 30ft.
- The ant colony shows how the ants live physically.
- All the ants follow certain rules and regulations.
- Different types of ants have a specific function to do, and they have a hierarchy in the place.
- The destiny of an ant depends on the moment of its birth; i.e., each ant has an inborn function and never changes into other roles.



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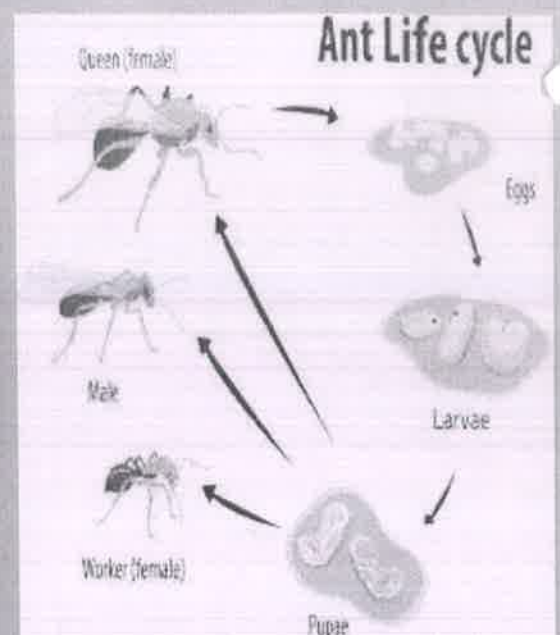
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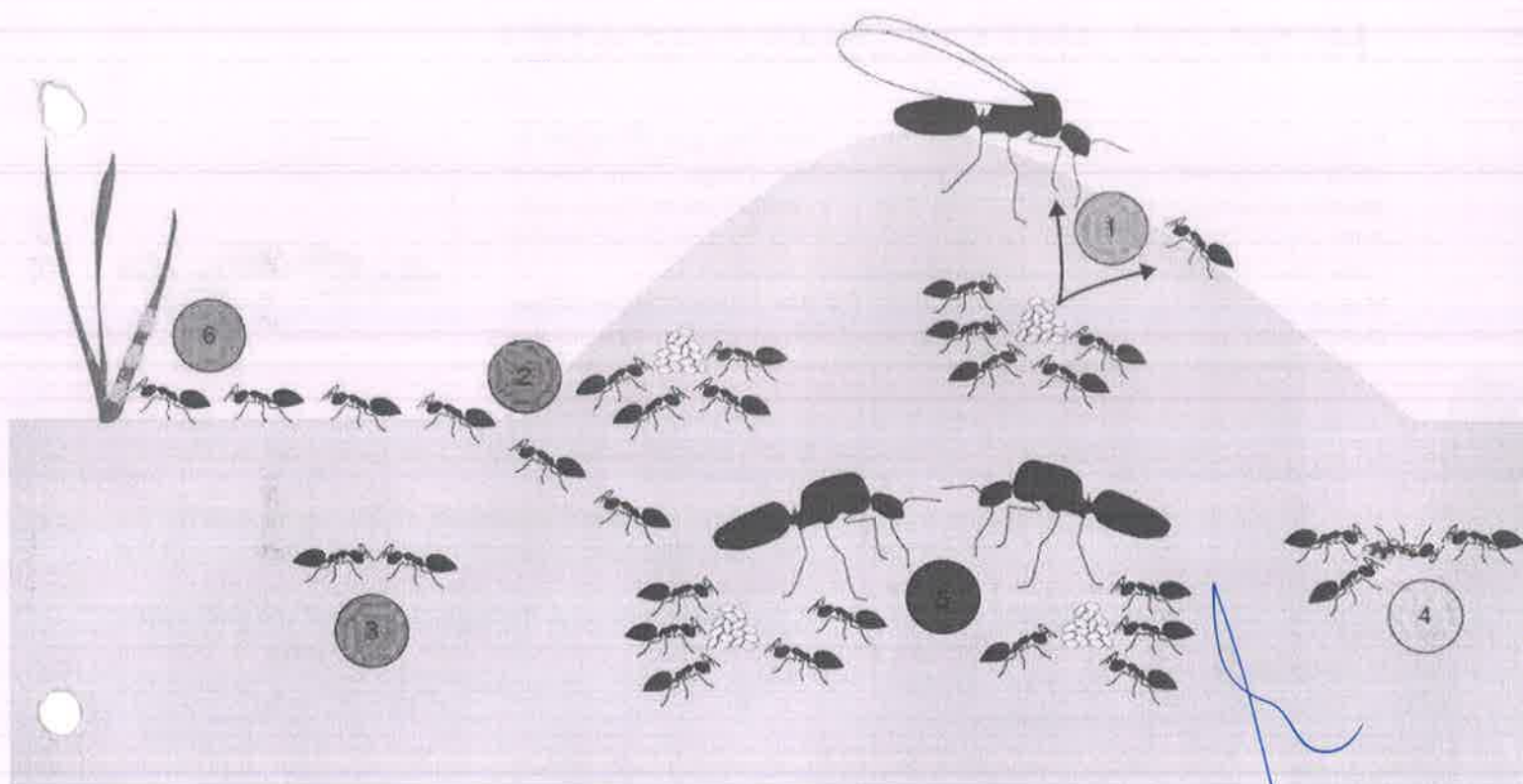
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There are 3 castes of ants that perform different roles in the colony:

1. **Queens** are females who were fed more when they were larvae, so they're bigger than the workers. The queens lay all the eggs in the colony. They have wings and fly to find a mate. They tear their wings off before forming a new colony. After mating, the queen starts a new nest and raises her first worker offspring.
2. **Workers** are females who were fed less when they were larvae. Workers are wingless and don't reproduce. They do all the other jobs in the colony, including gathering food, building the nest and taking care of the young.
3. **Males** have wings and fly to mate with queens. The males don't do any chores in the colony. Their only job is to mate with the queens. They die shortly after mating, so the only time they are seen is during this act.



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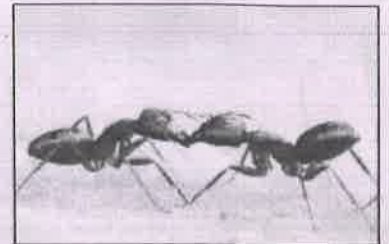
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HOW DO ANTS COMMUNICATE?

- Ants in a colony can synchronize their moves, and they use **vibration** to communicate with each other or sense food and danger. They have a **special organ near their knee** that help them sense vibration in the ground.
- Ants exhibit **Swarm Intelligence (SI)** i.e. artificial intelligence based on the collective behavior of decentralized, self-organized systems.
- **Marco Dorigo** introduced the system called the **Ant Colony Optimization (ACO)** which was inspired by the concept of self-organization of swarms and is derived from swarm intelligence.



The two important properties of ACO that basically simulate the real ant system are as follows:

- **Stigmergy:** This is a property that plays in collective behavior of the social insects. The stimulatory factor pheromone trail is secreted from an ant, the amount of which decides the preference for the next ant to choose a path.
- **Autocatalysis:** According to this property, the shorter the path, the sooner the pheromone is deposited by the ants, and the more ants use the shorter path. This ensures the fact that the algorithm introduces the chance of rapid convergence while heading towards the optimal solution.

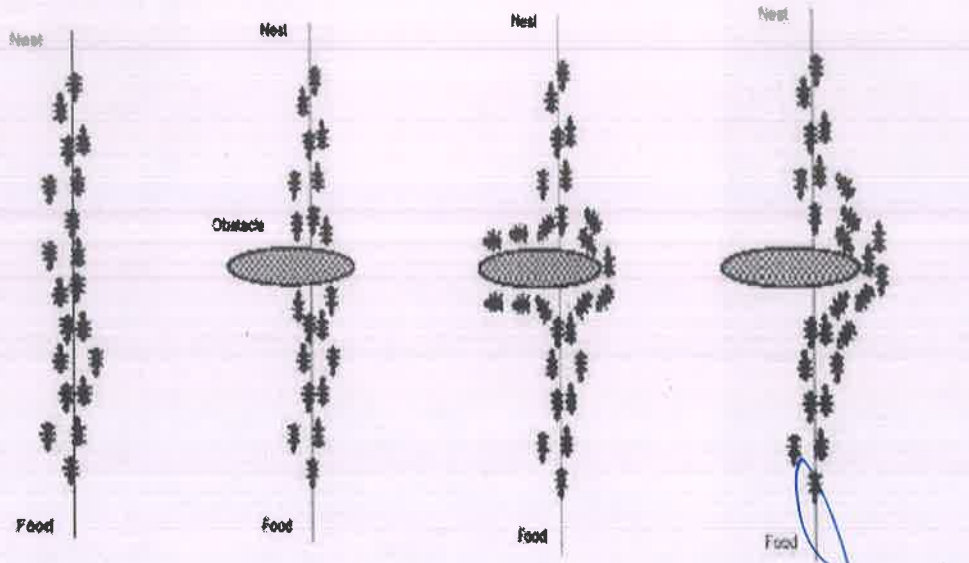
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NATURAL BEHAVIOR OF ANT



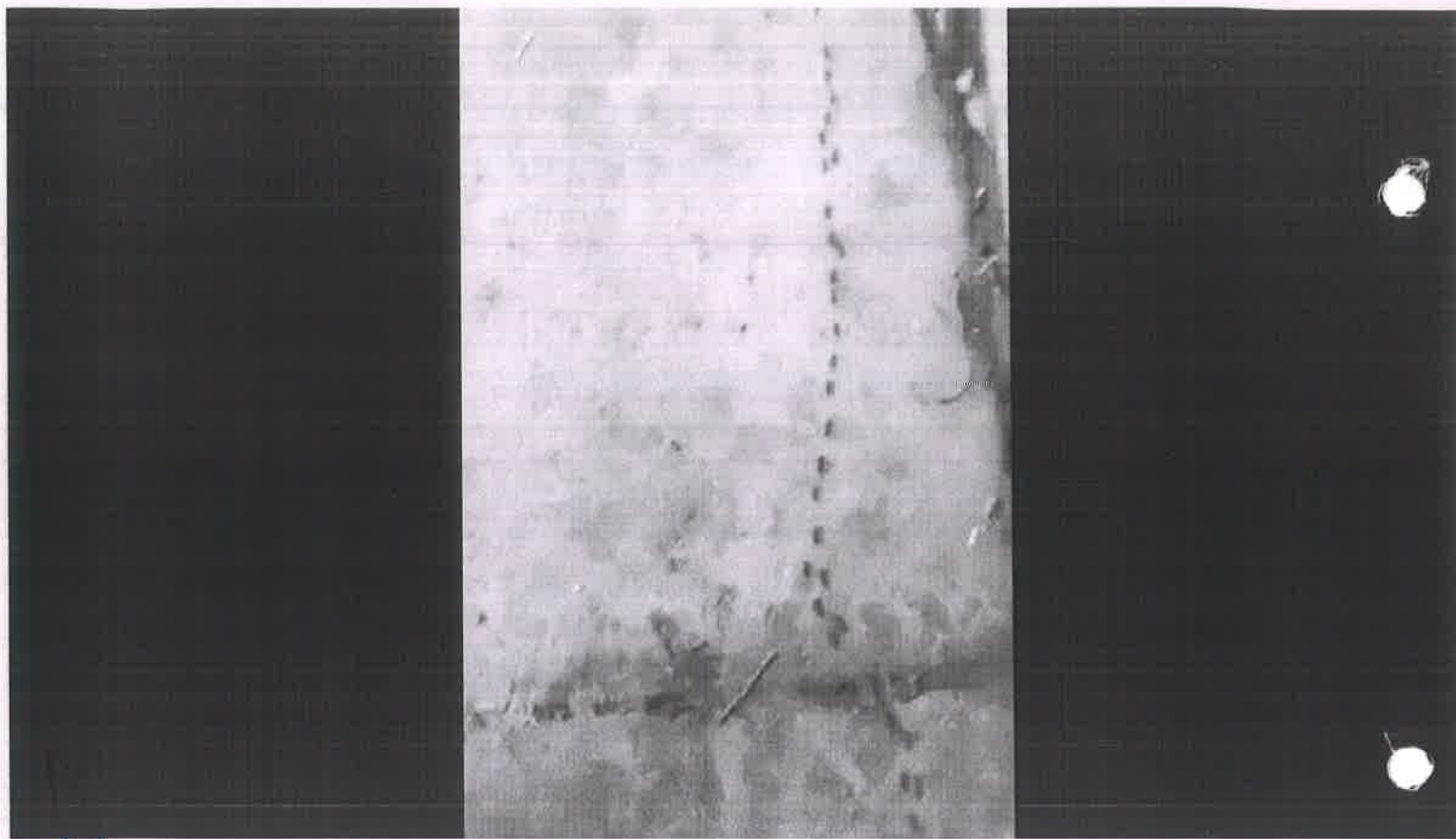
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To prove that ants counted their steps scientists took a few out of a line and attached tiny stilts to their legs. Since they took bigger steps the ants totally walked right by the food and got confused when they walked the correct number of steps but there was no food. Here is a picture.



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- One of the most striking behaviors seen in fire ants is their ability to form a living raft when springtime rains flood their domiciles.
- Large workers and matriarchs survived equally well as solitary swimmers or rafters.
- In contrast, small workers drowned whether they were solitary swimmers or rafters.
- However, when rafting with large workers or matriarchs, the mortality of small workers declined three-fold.



Fire ants (*Solenopsis invicta*)

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One of the biggest enemies of ants is other ants. Different ant species and colonies are always in competition with one another. For that reason, they will harass, raid, kill, or even enslave members of nearby colonies. While it may seem counterproductive to replace one ant colony with another, native ants can replace invasive species and less painful varieties can help drive fire ants out.



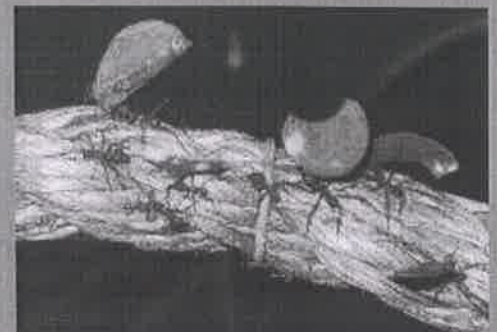
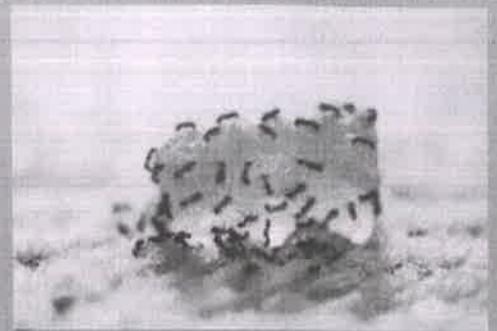
If their antennae do not work properly, they may live with their enemies. The accurate procession of ants also depends on their sense of smell. They can circulate between their nest and food without straggling.

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WHAT DO ANTS EAT?

- **Sugar and honeydew:** Ants often seek out sugary nectar or the liquid that plants make. They also devour honeydew—a substance made by insects called aphids. The ants are so fond of honeydew that they're often observed to take the aphids back to their nests.
- **Seeds and fungus:** Other ants go out in search of vegan options, such as seeds, corns, grains, leaves etc. The **Leaf-cutter ant** is a quirky variety of ant that has a propensity for cutting leaves into small pieces. However, they don't eat these leaves for nourishment. After cutting leaves into small parts, they take them to their burrows, chew them into a pulp and store the pulp with their excrement. This mixture stimulates the growth of fungus, which is what the leaf-cutter ants ultimately eat for nourishment.



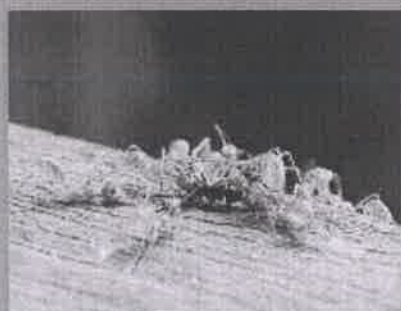
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- **Termites and insects:** Carpenter ants burrow into wood and make their nests. As they nest inside the wood, they make it increasingly hollow. Although carpenter ants—just like usual sugar-loving ants—devour honeydew, they are also known to eat termites and the flesh of other dead insects.
- **Ant eating ants:** Some ant varieties are even cannibalistic. For instance, army ants often invade the nests of other ant colonies and dine on the eggs or even the youngest of the colony. When things get truly dire, such as in the case of famine or the non-availability of food, queen ants have even been observed to feed on their own offspring!

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DEFENCE MECHANISMS

- Ants are equipped with a nasty sting/bite that secretes **formic acid**, which is highly irritant.
- Some ants block the entrance to their nest with their head in a process called **phragmosis**. This prevents enemies from infiltrating the nest.
- Ants use their powerful mandibles to throw small intruders out of the nest and these mandibles can also snap shut when they are in defense mode.



The **fishhook ant** can use its sharp spikes on its back to penetrate their enemies. It can also use these hooks to interlock with other ants in the nest. This means that the ants will form a sort of lattice which will prevent the ant from being dragged away by a predator.

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Ants have three main types of suicidal defense mechanisms.

Firstly, the ants can essentially 'blow' themselves up in a process called autothysis. This is where an ant will contract its abdominal muscle that surrounds a gland. This gland will then burst, spraying a toxic, sticky substance everywhere that can kill and/or immobilize its predator.

The **second** defense mechanism is where one to eight worker ants, will shut themselves out of the nest at night. This will prevent nocturnal predators from infiltrating the nest and it basically means that the ants are committing suicide because they rarely ever survive outside through the night.

SUICIDAL DEFENCE MECHANISMS



The **third** suicide defense mechanism is a preventative strategy. When an ant can feel itself getting ill from some type of pathogenic disease, it will leave the nest and go and die in isolation, in order to prevent the rest of the colony getting ill.

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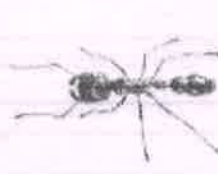
Types of Ants



Black Carpenter Ant



Red Carpenter Ant



Bullet Ant



Pharaoh Ant



Fire Ant



Bonded Sugar Ant



Argentine Ant



Bull Ant



Pavement Ant



Red Wood Ant



Dracule Ant



Green-Head Ant



Electric Ant



Saharan Silver Ant



Yellow Meadow Ant



Raspberry Crazy Ant



Black Garden Ant



Dinosaur Ant



Cornfield Ant



Meek Ant



Little Black Ant



African Driver Ant

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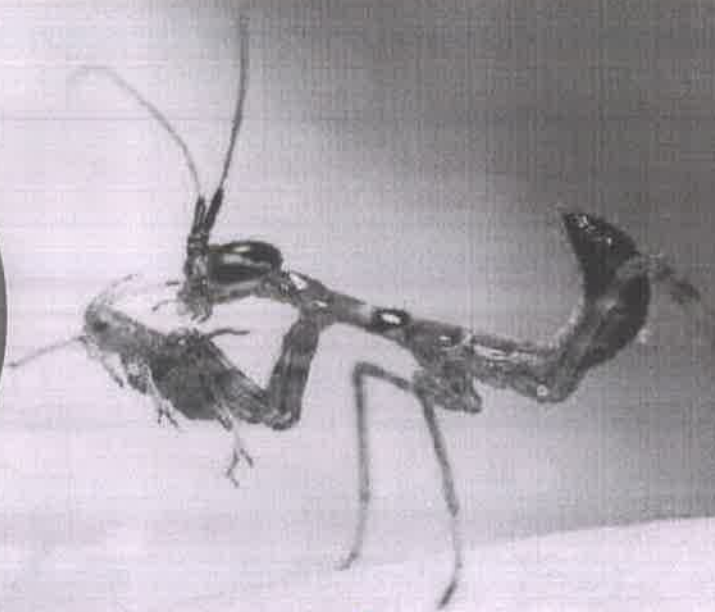
[Handwritten mark]

REFERENCES:

1. What Ant Behavior Can Teach Us | Terminix
2. Social Behavior of Ants: 10 Important Facts About Ant Behavior (germanydaily.de)
3. The Ants: Social Behavior (mit.edu)
4. Types of Ants Based On Their Body Characteristics And Behavior (denresidence.com)
5. Raid® What are all the different types of ants?
6. 12 (tru.ca)
7. What Are Social Insects? Definition and Examples (thoughtco.com)
8. Ant Diet: What Do Ants Eat? (scienceabc.com)
9. Ant Life Cycle & Reproduction Facts (orkin.com)
10. Types of Ants - Characteristics and Photos - Top 10 (animalwised.com)
11. The Life of Ants: Defense mechanisms (antsandtheplanet.blogspot.com)
12. The Most Common Natural Predators of Ants | INSECT COP
13. What can ants tell us about collective behavior during a natural catastrophe? | SpringerLink

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ZH Core-I: Non-Chordates I: Protists to Pseudocoelomates

Course Learning Objective:

The course would provide an insight to the learner about the existence of different life forms on the Earth, and appreciate the diversity of animal life. It will help the student to understand the features of Kingdom Animalia and systematic organisation of the animals based on their evolutionary relationships, structural and functional affinities. The course will also make the students aware about the characteristic morphological and anatomical features of diverse animals; economic, ecological and medical significance of various animals in human life; and will create interest among them to explore the animal diversity in nature.

Course Learning Outcome:

Upon completion of the course, students should be able to:

- Learn about the importance of systematics, taxonomy and structural organization of animals.
- Appreciate the diversity of non-chordates living in varied habit and habitats.
- Understand evolutionary history and relationships of different non-chordates through functional and structural affinities.
- Critically analyse the organization, complexity and characteristic features of non-chordates making them familiarize with the morphology and anatomy of representatives of various animal phyla.
- Comprehend the economic importance of non-chordates, their interaction with the environment and role in the ecosystem.
- Enhance collaborative learning and communication skills through practical sessions, team work, group discussions, assignments and projects.

Course Content:

Theory [Credits: 4]

Unit 1: Introduction to Animalia

General Characteristics of Kingdom Animalia and Basis of Classification
(Chapter 1, 4, 6 and 9: Barnes, R.D.; Chapter 2: Pechenik, J. A.)

Unit 2: Protista

General characteristics and Classification up to classes; Study of *Euglena* and *Paramecium*
Life cycle and pathogenicity of *Plasmodium vivax*; Locomotion and Reproduction in Protista
(Chapter 3: Barnes, R.D.; Chapter 3: Pechenik, J. A.)

Unit 3: Porifera

Introduction to Parazoa; General characteristics and Classification up to classes; Study of *Sycon*; Canal system in sponges
(Chapter 5: Barnes, R.D.; Chapter 4: Pechenik, J. A.)
Flagellar apparatus structure of choanocyte in Sycon sp. and its significance for phylogeny of Porifera. Pozdnyakov, I.R. & Karpov, S.A. *Zoomorphology* (2013) 132: 351

Unit 4: Cnidaria

Introduction to Metazoa; General characteristics and Classification up to classes; Metagenesis in *Obelia*; Polymorphism in Cnidaria; Corals and coral reefs
(Chapter 6, 7 and 9: Barnes, R.D.; Chapter 6: Pechenik, J. A.)

60 hrs

3 hrs

Coordinator

17 hrs

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7 hrs

12 hrs

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Unit 5: Ctenophora

3 hrs

General characteristics and evolutionary significance
(Chapter 8: Barnes, R.D.; Chapter 7: Pechenik, J. A.)

Unit 6: Platyhelminthes

10 hrs

General characteristics and Classification up to classes; Life cycle and pathogenicity of *Fasciola hepatica* and *Taenia solium*; Parasitic adaptations in Platyhelminthes
(Chapter 10: Barnes, R.D.; Chapter 8: Pechenik, J. A.)

Unit 7: Nematelminthes

7 hrs

General characteristics and Classification up to classes; Life cycle, and pathogenicity of *Ascaris lumbricoides*; Parasitic adaptations in Nematelminthes
(Chapter 11: Barnes, R.D.; Chapter 16: Pechenik, J. A.)

Practical[Credits 2]

1. Study of whole mount of *Euglena*, *Amoeba*, *Noctiluca*, *Paramecium*, Binary fission in *Paramecium* and Conjugation in *Paramecium*
2. Examination of pond water collected from different places to observe diversity in Protista
3. Study of *Sycon*, *Hyalonema*, *Euplectella*, *Spongilla*, T.S. of *Sycon*, L.S. of *Sycon*
4. Study of *Obelia*, *Physalia*, *Millepora*, *Aurelia*, *Tubipora*, *Corallium*, *Alcyonium*, *Gorgonia*, *Metridium/Adamsia*, *Pennatula*, *Fungia*, *Meandrina*, *Madrepora*, T.S. of *Metridium/Adamsia*
5. One specimen/slide of any Ctenophore
6. Study of adult *Fasciola hepatica*, *Taenia solium* and their life stages (Slides/micro-photographs)
7. Study of adult *Ascaris lumbricoides* and its life stages (Slides/micro-photographs)
8. To submit a Project Report on any related topic on life cycle of any one parasite or pathogen/corals/coral reefs.
9. Examination of soil samples collected from different places to observe diversity in nematodes

Note: Classification to be followed from "Barnes, R.D. (2006). *Invertebrate Zoology*, VII Edition, Cengage Learning, India"

Teaching and Learning Process:

Information and concepts about morphology, anatomy and physiology of non-chordates will be imparted through classroom lectures to inculcate a conceptual base among the students about the subject and through observations in nature through real animals/preserved specimens/models. Hands-on exposure would be provided to the students leading to more comprehensive learning. Blended learning using chalk-n-talk method and e-learning using presentations, animations, simple animal model systems, etc. would be used to enhance their conceptual understanding. Inquiry-based collaborative learning environment through presentations, debates, group discussions, and round tables on the various aspects of non-chordate biology would be created to ensure effective learning and understanding of the concepts. Field-based project activities have been included to create interest among the students to study and explore the biology and behaviour of non-chordates inculcating research aptitude. In addition, study of animals in their natural habitat will improve the observation skills, data collection skills, critical thinking and analytical skills of students. Furthermore, museology will give them a comprehensive idea of structural features of non-chordates and the basis of

classification. Curriculum-related assignments would improve the reading, writing and abstracting skills and enhance the critical thinking of the students.

Assessment Methods:

Various measures adopted will be as follows.

- **Class Tests:** Regular class tests will judge the grasp of the topics by the students. It includes practice sessions as well as the ones during which students will be evaluated.
- **Projects and Assignments:** Individual/group projects will inculcate independent thinking as well as the team work skills among the students.
- **Regular Presentations:** Presentations by the students on a particular topic will enhance student's learning and confidence. The presentations will be assessed based on the content, novelty, explanation and response to queries raised by peers.
- **Viva-voce:** *Viva-voce* is another critical component of assessment of the practical component of a course. Inquiry-based learning blended with hands on learning will develop critical thinking and competencies among students.
- **Semester-end Examination:** Semester-end examination and grading of students based on their performance in the exams is an indicator of student's learning throughout the semester. A comparative assessment of students through final exams, analyses comprehensive knowledge gained by each student.

Keywords:

Acoelomates, Classification, Cnidaria, Ctenophora, Diploblastic, Helminths, Metazoa, Parazoa, Porifera, Protista, Protostomia, Pseudocoelomates, Structural organization, Symmetry, Triploblastic

Recommended Books:

- Barnes, R.D. (2006). Invertebrate Zoology, VII Edition, Cengage Learning, India.
 - Pechenik, J. A. (2015). Biology of the Invertebrates. VII Edition, McGraw-Hill Education
- *Note: Classification to be followed from "Barnes, R.D. (2006). Invertebrate Zoology, VII Edition, Cengage Learning, India"

Suggested Readings:

- Ruppert, E.E., Fox, R.S., Barnes, R. D. (2003). Invertebrate Zoology: A Functional Evolutionary Approach. VII Edition, Cengage Learning, India
- Barnes, R.S.K., Calow, P., Olive, P.J.W., Golding, D.W. and Spicer, J.I. (2002). The Invertebrates: A New Synthesis. III Edition, Blackwell Science
- Barrington, E.J.W. (2012). Invertebrate Structure and Functions. II Edition, EWP Publishers

Online Tools and Web Resources:

- Swayam (MHRD) Portal
- Animal Diversity (<https://swayam.gov.in/courses/5686-animal-diversity>)
- Advances in Animal Diversity, Systematics and Evolution (<https://swayam.gov.in/courses/5300-zoology>)
- ePG Pathshala (MHRD) Module 10, 18, 19 of the paper P-08 (Biology of Parasitism) <https://epgp.inflibnet.ac.in/ahl.php?csrno=35>

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DEEN DAYAL UPADHYAYA COLLEGE

University of Delhi

Course Name : B.Sc.(H) Zoology Sem. 1

Academic year : 2020-2021

Subject Name : [32231101] CBCS-Non-chordates I: Protista to Pseudocoelomates(Lab)

Faculty Name : KAMLESH KUMARI, LATHIKA NAIR, Rashmi Kumari, SHAILLY ANAND

Sr. No	Roll No	Student Name	Total (Class Test/Pres entation)	Class Test/Pres entation Marks	Lect. Att.	Tut. Att.	Total (L+T)	Eca Benefit Given (L+T)	Adj Att	Adj Att(%)	Att Marks	Ass	Total(Ass ign Marks)	Assign Marks	Class Test	Attendan ce	Total Marks
1	20HZL7101	ABHIRUPA BARMAN	0.00/0	0.00/10	0/0	0/0	0/0	0	0/0	0.00	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
2	20HZL7153	ANCHAL JHA	0.00/0	0.00/10	0/0	0/0	0/0	0	0/0	0.00	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
3	20HZL7142	ANJALI	0.00/0	0.00/10	0/0	0/0	0/0	0	0/0	0.00	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
4	20HZL7143	ANKUSH SINGH	0.00/0	0.00/10	0/0	0/0	0/0	0	0/0	0.00	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
5	20HZL7102	ARJUN RAM	0.00/0	0.00/10	0/0	0/0	0/0	0	0/0	0.00	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
6	20HZL7103	ARKA KUMAR CHOWDHURY	0.00/0	0.00/10	0/0	0/0	0/0	0	0/0	0.00	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
7	20HZL7104	ASHISH KUMAR SINGH	0.00/0	0.00/10	0/0	0/0	0/0	0	0/0	0.00	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
8	20HZL7154	Balwant singh solanki	0.00/0	0.00/10	0/0	0/0	0/0	0	0/0	0.00	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
9	20HZL7106	BHAVYA	0.00/0	0.00/10	0/0	0/0	0/0	0	0/0	0.00	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
10	20HZL7107	DEEPALAXMI BRAHMA	0.00/0	0.00/10	0/0	0/0	0/0	0	0/0	0.00	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
11	20HZL7108	GANESH KUMAR	0.00/0	0.00/10	0/0	0/0	0/0	0	0/0	0.00	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
12	20HZL7109	GAURAV YADAV	0.00/0	0.00/10	0/0	0/0	0/0	0	0/0	0.00	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
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14	20HZL7112	JAYA	0.00/0	0.00/10	0/0	0/0	0/0	0	0/0	0.00	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
15	20HZL7113	JYOTI YADAV	0.00/0	0.00/10	0/0	0/0	0/0	0	0/0	0.00	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
16	20HZL7114	KALYANI SINHA	0.00/0	0.00/10	0/0	0/0	0/0	0	0/0	0.00	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
17	20HZL7115	KANIKA GHUGTIYAL	0.00/0	0.00/10	0/0	0/0	0/0	0	0/0	0.00	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
18	20HZL7116	KHUSHI PATEL	0.00/0	0.00/10	0/0	0/0	0/0	0	0/0	0.00	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
19	20HZL7145	KHUSHI KUMARI	0.00/0	0.00/10	0/0	0/0	0/0	0	0/0	0.00	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
20	20HZL7117	KUMARI HONEY	0.00/0	0.00/10	0/0	0/0	0/0	0	0/0	0.00	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25

21	20HSL7119	MAHAK TICKOO	0.00/0	0.00/10	0	0/0	0/0	0	0/0	0.00	0	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
22	20HSL7120	MANISH KUMAR	0.00/0	0.00/10	0/0	0/0	0/0	0	0/0	0.00	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
23	20HSL7122	NAMAN KUMAR PATODIA	0.00/0	0.00/10	0/0	0/0	0/0	0	0/0	0.00	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
24	20HSL7155	Neeraj Yadav	0.00/0	0.00/10	0/0	0/0	0/0	0	0/0	0.00	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
25	20HSL7123	NIKITA	0.00/0	0.00/10	0/0	0/0	0/0	0	0/0	0.00	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
26	20HSL7124	NIKITA ROHILLA	0.00/0	0.00/10	0/0	0/0	0/0	0	0/0	0.00	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
27	20HSL7150	NISHA MEENA	0.00/0	0.00/10	0/0	0/0	0/0	0	0/0	0.00	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
28	20HSL7125	PIYUSH DADHICH	0.00/0	0.00/10	0/0	0/0	0/0	0	0/0	0.00	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
29	20HSL7146	PRIYANSHI	0.00/0	0.00/10	0/0	0/0	0/0	0	0/0	0.00	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
30	20HSL7141	RANJITA	0.00/0	0.00/10	0/0	0/0	0/0	0	0/0	0.00	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
31	20HSL7128	RITIK YADAV	0.00/0	0.00/10	0/0	0/0	0/0	0	0/0	0.00	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
32	20HSL7129	RITU THAKUR	0.00/0	0.00/10	0/0	0/0	0/0	0	0/0	0.00	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
33	20HSL7130	RIYA SHARMA	0.00/0	0.00/10	0/0	0/0	0/0	0	0/0	0.00	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
34	20HSL7132	SANDHYA KUMARI	0.00/0	0.00/10	0/0	0/0	0/0	0	0/0	0.00	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
35	20HSL7147	SHRUTI AGARWAL	0.00/0	0.00/10	0/0	0/0	0/0	0	0/0	0.00	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
36	20HSL7134	SIMRAN	0.00/0	0.00/10	0/0	0/0	0/0	0	0/0	0.00	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
37	20HSL7148	SONALI PHOGAT	0.00/0	0.00/10	0/0	0/0	0/0	0	0/0	0.00	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
38	20HSL7135	SONIKA SETH	0.00/0	0.00/10	0/0	0/0	0/0	0	0/0	0.00	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
39	20HSL7151	SUBHI PANDEY	0.00/0	0.00/10	0/0	0/0	0/0	0	0/0	0.00	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
40	20HSL7136	TANYA MISHRA	0.00/0	0.00/10	0/0	0/0	0/0	0	0/0	0.00	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
41	20HSL7138	TULSIMAYEE TUDU	0.00/0	0.00/10	0/0	0/0	0/0	0	0/0	0.00	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
42	20HSL7139	TUSHANT KUMAR SAINI	0.00/0	0.00/10	0/0	0/0	0/0	0	0/0	0.00	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
43	20HSL7149	VIJAY KUMAR SHARMA	0.00/0	0.00/10	0/0	0/0	0/0	0	0/0	0.00	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25
44	20HSL7140	YOGITA	0.00/0	0.00/10	0/0	0/0	0/0	0	0/0	0.00	0/5	0/0	0.00/10	0.00/10	0.00/10	0/5	0/25

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 University of Delhi

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Non – Chordata I

List of topics for project Submission

Student list required

1. Life Cycle and pathogenicity of the following parasites :

Giardia

Trypanosoma –

Ascaris lumbricoides

Ancylostoma duodenale

Fasciola hepatica

Entamoeba histolytica

Leishmania

Taenia solium

Trichuris trichiura

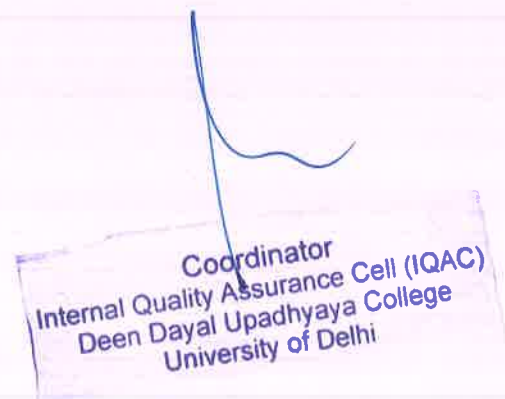
Trichinella spiralis

Plasmodium falciparum

Necator americanus

2. Coral reefs

3. Geographical distribution of corals



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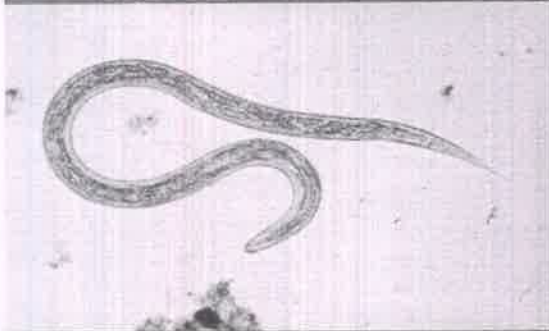
Naresh

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Zoology Non-Chordate - I

2020-21

Internal Cell (IQAC)
Deen Dayal Upadhyaya College
University of Delhi



ANCYLOSTOMA DUODENALE

Submitted By- Deepalaxmi Brahma
Roll No.- 20HZL7107



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CLASSIFICATION

Kingdom - Animalia

Phylum - Nematoda

Class - Chromadorea

Order - Rabditida

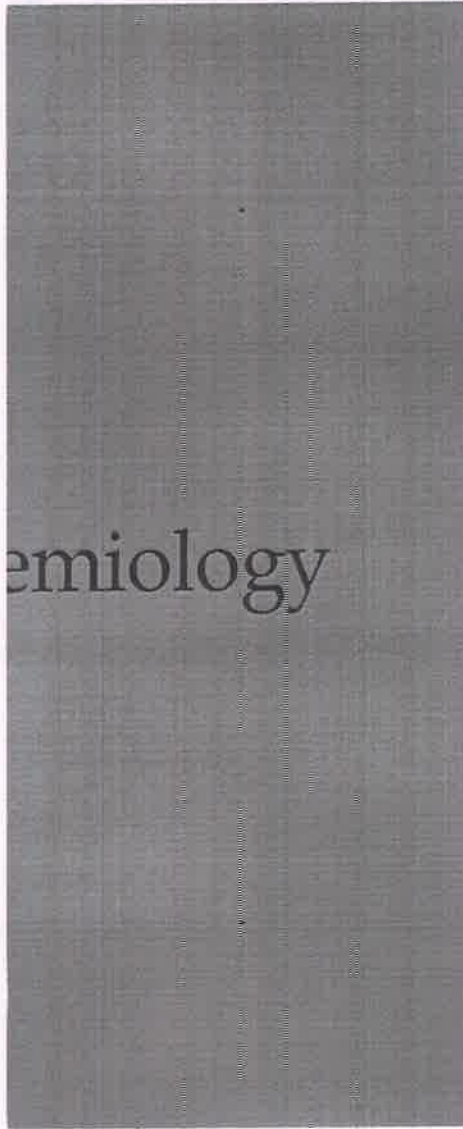
Genus - *Ancylostoma*

Species - *A. duodenale*

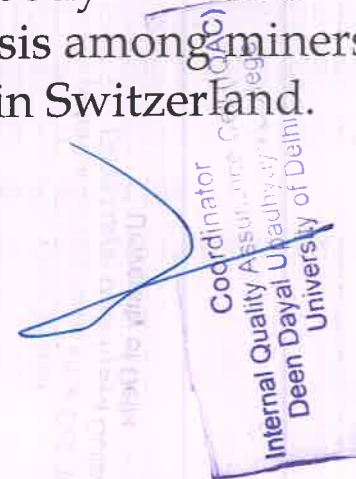
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Discovery of *Ancylostoma duodenale*

- *Ancylostoma Duodenale* is a parasitic nematode worm and commonly known as the **Old World hookworm**.
- It causes **Ancylostomiasis**, also known as **Aminers' Anaemia**, **Tunn disease**, **Brickmaker's anaemia** and **Egyptian Chlorosis**.
- It was first discovered by an Italian physician, **Angelo Dubini Looss**.
- He first noticed the parasite in **1838** during an autopsy of a peasant woman who died of croupous pneumonia. He rediscovered the parasite in the course of other autopsies in ensuing years. In **1843** published his findings in his book "**Annali universali di medicina**".
- **Looss** described the pathogenesis and mode of entrance of the larvae in the intestine of the man in **1898**.
- The pathogenicity of the parasite was eventually confirmed by work of research of Egyptian chlorosis conducted by **Wilhelm Griesing**, **Theodor Maximilian Bilharz** and **Franz Ignaz Pruner**, as well as **Otto Eduard Heinrich Wucherer's** study of tropical chlorosis.
- **Perroncito** in **1881** described the development of free-living larvae in the soil.



- *A. duodenale* is prevalent in **Southern Europe, North Africa, India, China, Southeast Asia**, small areas of **United States**, the **Caribbean islands**, and **South America**.
- This hookworm is well known in mines because of the consistency temperature and humidity that provides an ideal habitat for egg and juvenile development.
- An estimated 1 billion people are infected with hookworms.
- Transmission of *A. duodenale* is by **contact of skin with soil contaminated with larvae**.
- The way it enters the human body was understood in the 1880s, after an epidemic of Ancylostomiasis among miners working in the hot and humid Gotthard Tunnel in Switzerland.



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- The adult worms are **endoparasitic** and live in the **small intestines** infected persons, **mostly** in the **jejunum**, **less often** in the **duodenum** and **infrequently** in the **ileum**.
- It has been found on **rare occasions in pigs**. The adult worms anchor the wall of the small intestine by their anterior ends.
- The infective juveniles enter the human host percutaneously from the soil contaminated by the feces in which they abound.
- It can also be transmitted, orally, and probably transplacentally.
- They flourish under primitive conditions where people go barefoot and modern sanitary conditions do not exist and human feces are deposited on the ground.

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Adult worms

- They are small and cylindrical in shape.
- They are pale pink or greyish white but may appear reddish-brown due to ingested blood.
- The body is curved with the dorsal aspect concave and the ventral aspect convex.
- The anterior end is somewhat narrow and bent dorsally in the same direction of general body curvature. This cervical curvature gave it the name hookworm.
- The mouth is not at the tip but directed dorsally. The prominent buccal capsule, reinforced with a hard chitin-like substance carries **6 teeth**; **4 hook-like** teeth ventrally, and **2 knob-like** (triangular plates) **or sharp lancets** with a median cleft dorsally.

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Male Worm

The male worm is **smaller than the female** worm **8-11 mm** in length and **0.4 mm** thick. The posterior end of the male is expanded in an umbrella-like known as copulatory bursa which surrounds the cloaca. The copulatory bursa consists of 3 lobes; 1 dorsal and 2 lateral. Each lobe is supported by fleshy chitinous rays, 5 each in lateral lobes and 3 in dorsal lobe: one dorsal and two transdorsal rays. The dorsal ray is partially divided at the tip and each division is partite. The pattern of the rays helps in distinguishing between different species. There are 2 long retractile bristle-like copulatory spicules, the tips of which project from the bursa.

Female worm

- The female worm is larger, **10 to 13 mm** long and **0.6 mm** thick.
- Its hind end tapers bluntly in a short posterior anal tail.
 - The vulva opens ventrally at the junction of the middle and posterior thirds of the body.
 - The vagina leads to two intricately coiled ovarian tubes which occupy the hind and middle parts of the worm.
 - During copulation, the male attaches its copulatory bursa to the vulva.
 - The copulating pair, therefore, presents a dumb-bell shaped appearance.
 - Sexes are easily differentiated by their size, the shape of the posterior end, and the position of the genital opening.

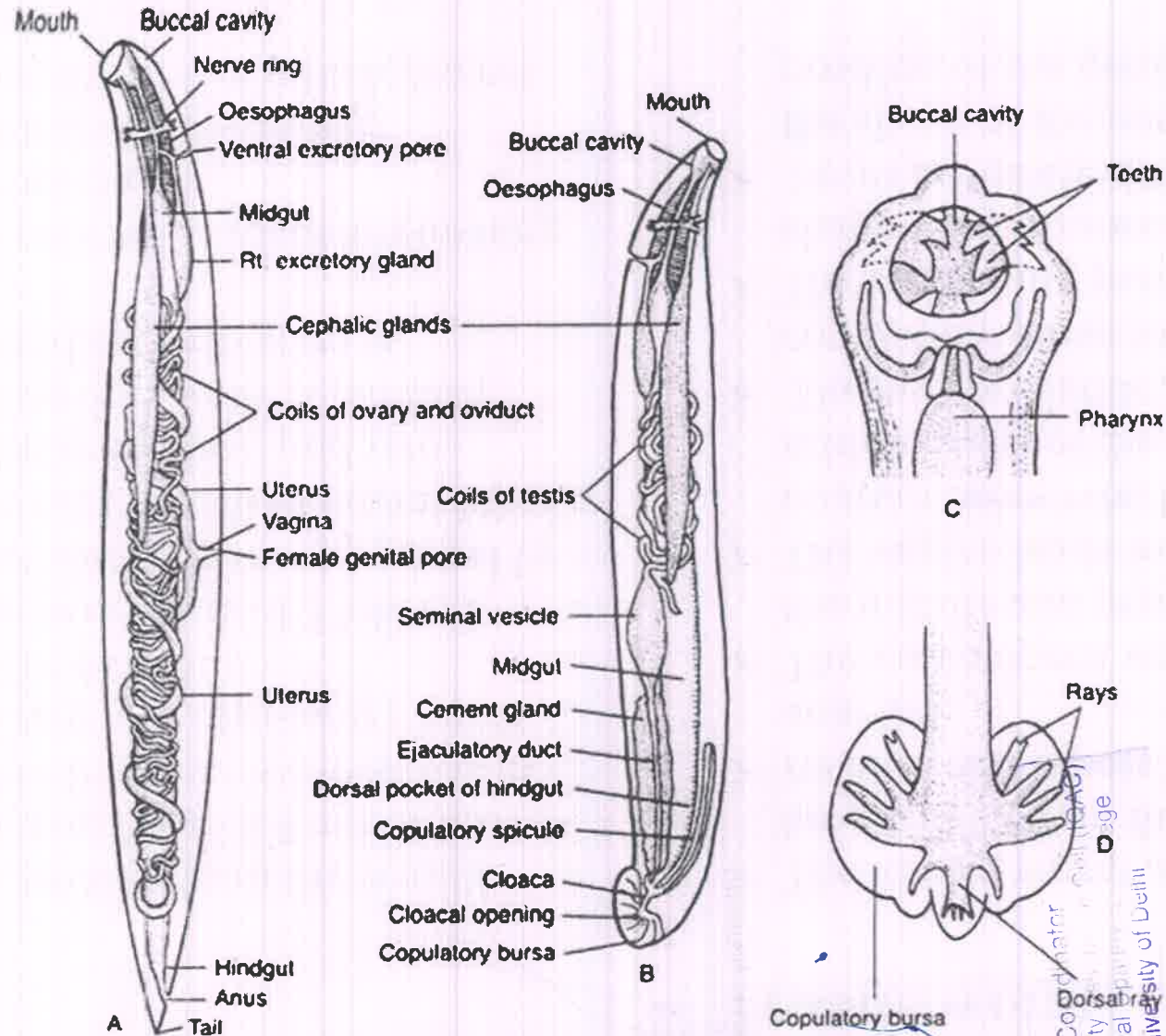


Fig. 12.1: *Ancylostoma duodenale*. A. Adult ♀. B. Adult ♂. C. Anterior end. D. Posterior end of ♂

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Eggs

- Oval or elliptical, measuring $60\text{ }\mu\text{m}$ by $40\text{ }\mu\text{m}$.
- Colorless, not bile stained.
- Surrounded by a thin transparent hyaline shell membrane.
- Floats in a saturated salt solution.
- When released by the worm in the intestine, the egg contains an unsegmented ovum.
- Freshly-excreted eggs contain a developing embryo in the early stages of cleavage (2-8 cells).
- There is a clear space between the segmented ovum and eggshell.



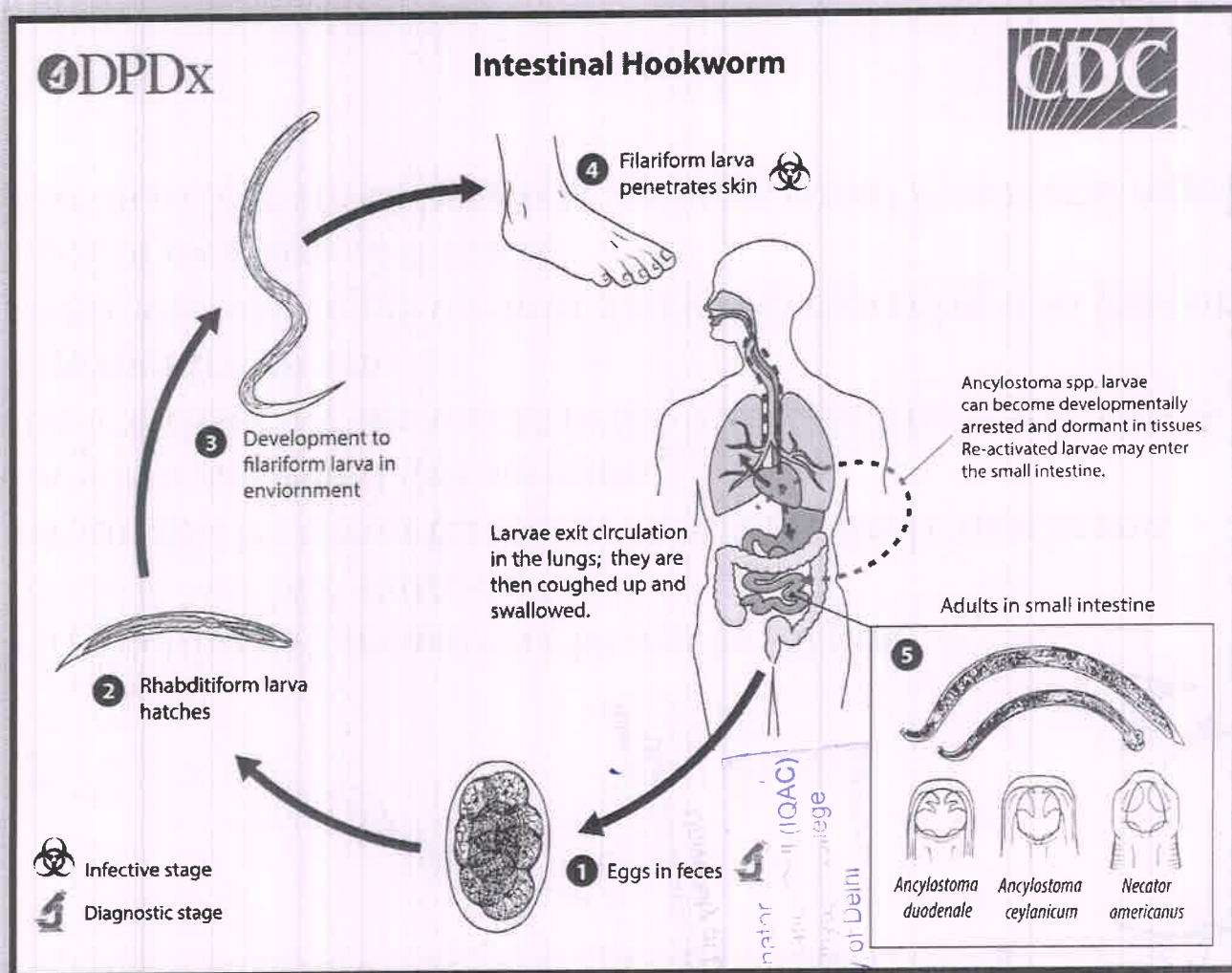
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Life cycle of *Ancylostoma duodenale*



The life cycle of *Ancylostoma duodenale* is completed in a single host, hence it is called **monogenetic**.

Definitive host: Humans are the only natural host.

No intermediate host is required like other helminths.

Infective form: Third stage filariform larva.

Copulation and fertilization

Copulation occurs in the host's intestine. During the process of copulation, the copulatory brusa of males is applied to the vulva of females, and sperms are transferred.

Fertilization occurs in seminal receptacles.

b) Egg laying

- The female worm lays eggs in the intestine of host with approximately 28,000 eggs daily.
- The eggs containing segmented ova with 4 blastomeres are passed out in the feces of the infected person.
- Eggs freshly passed in feces are not infective humans.

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c) Development in soil

- *A. duodenale* hookworm eggs hatch in a warm, moist and shady environment in about 48 hours, giving rise to **first-stage juvenile** or **rhabditiform larvae** which are about 250µm in length and feeds on organic material and bacteria.
- After about seven days, the larvae cease feeding and **moult** **twice** to become infective **third-stage juvenile** or **filariform larvae**.
- Filariform larva is about 500–600 µm long, with a sharp-pointed tail. The filariform larva are non-feeding. They can live in the soil for 5–6 weeks, with their heads waving in the air, waiting for their hosts. They can also ascend on blades of grass or other vegetation, being carried in capillary water films on their surface. Direct sunlight, drying, or saltwater can kill the larva.
- The time taken for the development from eggs to filiform larvae is on average 8 to 10 days.



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d) Mode of infection

- The transmission occurs when third-stage infective filariform larvae come into contact with **skin**.
- The anterior end of larvae is equipped with oral spears which enable it to penetrate the skin of a potential human host.
- The larvae generally penetrate the **cutaneous tissues**, most often those of the hands, feet, arms, and legs due to exposure and usually through hair follicles or abraded skin. Their penetration is generally accompanied by severe dermatitis called 'Ground itch' characterized by ulceration of skin about wounds.
- Rarely, an infection may take place by the oral route, the filariform larva being carried on contaminated vegetables or fruits. The larvae may penetrate the buccal mucosa to reach the venous circulation and complete their migration via the lungs.
- Transmammary and transplacental transmission has been also reported for *Ancylostoma*.

e) Larval migration

- Following skin penetration, the larvae enter subcutaneous venules and lymphatics to gain access to the host's afferent circulation.
- Ultimately, they enter the pulmonary capillaries where they penetrate into the alveolar spaces, ascend the brachial tree to the trachea, traverse the epiglottis into the pharynx, and are swallowed into the gastrointestinal tract.
- During migration or on reaching the esophagus, they undergo third **molting**.
- They feed, grow in size, and undergo a **fourth** and **final moulting** in the small intestine and develop the buccal capsule, by which they attach themselves to the small intestine and grow into adults.
- Adult worms exhibit considerable variation in size, and female worms are usually larger than males.
- In about 3 to 4 weeks they become sexually mature to repeat the life history again.
- The normal life span of adult worms in the human intestine has been estimated differently by different workers; generally believed to be 3 to 4 years.



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- Pathogenicity is fairly extensive involving the skin, lungs, and small intestine.
- Some people can develop an *Ancylostoma* infection without any symptoms, while others may have mild to severe symptoms. There are 3 phases: **invasion**, **migration**, and **establishment in the intestine**.
- During the invasion stage, the filariform larvae penetrate the skin, results in a hypersensitivity reaction causing local irritation, intense itchiness, and vesicular rash lesions that are called **ground itch**.
- One to two weeks following skin invasion, hookworm larvae travel through the vasculature and enter the lungs, where they can uncommonly result in pneumonitis.
- The pulmonary symptoms that may develop are usually mild and transient, consisting of a dry cough, sore throat, wheezing and slight fever. The pulmonary symptoms are more pronounced and of longer duration.
- The acute symptomatic disease may also result from oral ingestion of *A. duodenale* larvae, referred to as the **Wakana syndrome**, which is characterized by nausea, vomiting, pharyngeal irritation, cough, dyspnea, and hoarseness.

There is an appearance of eosinophilia with the development of adult hookworms in the intestine. The major pathology of infection, however, results from the intestinal blood loss that results from adult parasite invasion and attachment to the mucosa and submucosa of the small intestine.

Usually, only moderate and high-intensity infections in the gastrointestinal tract produce clinical manifestations, with the highest intensity infections occurring most often in children, although even in low-intensity infections, initial symptoms may include dyspepsia, nausea, and epigastric distress.

A. duodenale may also result in acute enteritis with uncontrollable diarrhea and foul stools that may last indefinitely.

Chronic infection in the intestine results in iron-deficiency anemia, accompanied by the loss of appetite, abdominal discomfort, and malnutrition due to protein deficiency. This can cause physical and cognitive impairment.

Uncommonly, there may be constipation or diarrhea with occult blood in the stools or frank melena, especially in children; there may also be an urge to eat soil (pica).

Overwhelming infection may cause listlessness, coma, and even death, especially in infants under one year of age.

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Direct methods:

- Demonstration of characteristic oval segmented eggs in feces by **direct wet microscopy** or by **formalin-ether concentration** methods is the best method of diagnosis. In stool samples examined 24 hours or more after collection, the eggs may have hatched and rhabditiform larvae may be present. These have to be differentiated from *Strongyloides* larvae.
- **Egg counts** give a measure of the intensity of infection. **Modified Kato-Katz smear technique** is a useful method for quantitative estimation of eggs in the stool.
- **Stool cultures** (fecal sample smear on moistened filter paper in a closed tube for a few days) (**Harada-Mori technique**) to demonstrate third-stage filariform larvae. *A. duodenale* larvae have long buccal cavities and smaller genital primordium, whereas *Strongyloides* have short buccal cavities.

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Indirect methods:

- **Blood examination** reveals microcytic, hypochromic anemia, and eosinophilia.
- **Stool examination** may show occult blood and Charcot -Leyden crystals
- Chest **radiography** will usually be negative during the pulmonary phase of larval migration, although **sputum examination** may reveal erythrocytes, eosinophils, and rarely migrating larvae.
- **Radiographic findings** include intestinal hypermotility, proximal jejunal dilatation, and coarsening of the mucosal folds.
- Several **immunoserological tests** have been developed to detect host antibodies against *A. duodenale* antigens, but they generally do not discriminate between patent or previous infections.
- Recent research has focused on the development of DNA-based tools for diagnosis of infection, specific identification of hookworm, and analysis of genetic variability within hookworm populations because hookworm eggs are often indistinguishable from other parasitic eggs, PCR assays could serve as a molecular approach for accurate diagnosis of hookworm in the feces.

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Effective drugs:

- A single dose of albendazole (400mg) or mebendazole (500mg) or a 3-day dose of albendazole, mebendazole, or pyrantel pamoate (11 mg/kg × 3 days).
- For kids, pregnant women, or others who develop anemia as a result of hookworm infection, health care providers will often prescribe an **iron supplement** to overcome hemoglobin due to anemia.
- Prevention of soil pollution with feces and proper use of sanitary latrines.
- Use of footwear to prevent entry of larva through the skin of the foot. Gloves give similar protection to the hands of farm workers.
- Treatment of patients and carriers, preferably all at the same time, limits the source of infection.

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Thank You!