

### Third Semester: Electronics Circuits

Topic	For Reading		For Problems
	Chapter	Book	Reference [6]
<b>Unit 1</b> <b>Diode Circuits:</b> Ideal diode, piecewise linear equivalent circuit, dc load line analysis, Quiescent (Q) point. Positive, negative and biased clipper circuits, clamping circuits.	<b>1.1 – 1.8</b>  <b>Chapter-01</b>	[1]  [2]	2.38-2.105 3.43-3.84
<b>Unit 1</b> Half wave rectifier, center tapped and bridge fullwave rectifiers, calculation of efficiency and ripple factor. Filters: types, circuit diagram and explanation of shunt capacitor filter with waveforms.	<b>2.1 – 2.11</b> <b>Appendix B</b> <b>Chapter-01</b>	[1] [1] [2]	
<b>Unit 1</b> <b>DC power supply:</b> Block diagram of a power supply, qualitative description of shunt capacitor filter, Zener diode as voltage regulator, temperature coefficient of Zener diode.	<b>19.1 – 19.4</b> <b>Chapter-01</b>	[1] [2]	
<b>Unit 2</b> <b>The BJT:</b> Transistor current components and amplification. Transistor configurations: Common Base (CB), Common Emitter (CE) and Common Collector (CC) configuration, I-V characteristics and hybrid parameters, regions of operation, dc load line, Q point.	<b>3.1 – 3.8</b>  <b>Chapter -02</b>	[1]  [2]	4.1-4.78 4.86-4.112 6.36-6.89 7.1-7.123 10.1-10.84 11.1-11.51
<b>Unit 2</b> <b>CE amplifier:</b> Self bias arrangement of CE, dc and ac load line analysis. Hybrid equivalent of CE, Quantitative study of the frequency response of CE amplifier, effect on gain and bandwidth for cascaded CE amplifier (RC coupled).	<b>4.1 – 4.12</b> <b>7.1 – 7.8</b> <b>8.1 – 8.11</b> <b>11.1-11.10</b> <b>6.1-6.6</b> <b>9.1 and 9.3</b>	[1] [1] [1] [1] [2] [2]	
<b>Unit 4</b> <b>Power Amplifiers:</b> Heat sink, Classification of power amplifiers: A, B, C and AB, analysis of Class B push pull amplifiers (efficiency, power dissipation). Single tuned amplifiers.	<b>16.1-16.7</b> <b>5.1-5.5</b> <b>9.5</b>	[1] [2] [2]	
<b>Unit 3</b> <b>Feedback Amplifiers:</b> Concept of feedback, negative and positive feedback, Negative feedback: advantages and disadvantages of negative feedback, voltage (series and shunt), current (series and shunt) feedback amplifiers, derivation of gain, input and output impedances for feedback amplifiers. <b>Positive feedback:</b> Barkhausen criteria for oscillations, Study of phase shift oscillator and Colpitts oscillator. Colpitts Crystal oscillator.	<b>18.1-18.9</b>	[1]	
<b>Unit 4</b> <b>The MOSFET:</b> The three configurations: Common Gate (CG), Common Source (CS) and Common Drain (CD), I-V characteristics, regions of operation, small signal equivalent circuit, dc load line, Q point. <b>CS amplifier:</b> CS amplifier circuit analysis, Qualitative study of frequency response of CS amplifier.	<b>5.1-5.8</b> <b>6.5-6.7</b> <b>9.1-9.11</b> <b>11.1-11.10</b> <b>3.1-3.6</b> <b>6.7-6.10</b> <b>9.2 and 9.4</b>	[1] [1] [1] [1] [2] [2] [2]	

#### Suggested Text Books:

1. R. L. Boylestad, L. Nashelsky, K. L. Kishore, Electronic Devices and Circuit Theory, Pearson Education (2006)
2. D. L. Schilling, C. Belove, Tuvia Apelewicz and Raymond J Saccardi, Electronic Circuits: Discrete and Integrated, Tata McGraw Hill (2002)

#### Suggested Reference Books:

3. J. R. C. Jaegar and T. N. Blalock, Microelectronic Circuit Design, Tata McGraw Hill (2010)
4. J. Millman and C. C. Halkias, Integrated Electronics, Tata McGraw Hill (2001)
5. Donald A. Neamen, Electronic Circuit Analysis and Design, Tata McGraw Hill (2002)

#### Suggested Book for Problem Solving:

6. J. J. Cathey, 2000 Solved Problems in Electronics, Schaum's outline Series, Tata McGraw Hill (1991)