Code No: R203104O **R20** SET - 1

III B. Tech I Semester Supplementary Examinations, May/June -2024
BASIC ELECTRONICS
(Com to EEE,ME,CSE,IT,CSE(AI),CSE(AIML),CSE(CS),CSE(IOT),CSE(DS),AIML,AIDS,CS)
Time: 3 hours Max. Marks: 70

Answer any **FIVE** Questions **ONE** Question from **Each unit**
All Questions Carry Equal Marks
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UNIT-I

1.	a)	Explain the formation of the depletion layer in a pn junction diode.	[6M]
	b)	Write the block diagram of a complete power supply and describe the function of each block.	[8M]
		(OR)	
2.	a)	Explain the conduction of current through a pn junction diode under forward and reverse bias conditions	[7M]
	b)	Draw the block diagram of series voltage regulator and explain its operation.	[7M]

UNIT-II

3.	a)	Briefly explain about avalanche and zener breakdown.	[7M]
	b)	What is the optical diode? What are the different types of optical diodes? Explain any one.	[7M]
		(OR)	
4.	a)	Explain the characteristics of zener diode.	[7M]
	b)	Explain the characteristics and applications of varactor diode.	[7M]

UNIT-III

5.	a)	Draw and explain the input and output characteristics of a transistor in CB configuration.	[7M]
	b)	Describe how switching achieved by a BJT.	[7M]
		(OR)	
6.	a)	Explain the working of NPN transistor.	[7M]
	b)	What are the bias conditions of base-emitter and base-collector junction to operate a transistor in cut off region? Explain.	[7M]

UNIT-IV

7.	a)	Explain with the help of neat diagrams, the structure of an N-channel FET and its Volt-ampere characteristics.	[9M]
	b)	Compare N-with P-channel MOSFETS.	[5M]
		(OR)	
8.	a)	Define and explain the three parameters of a JFET give the relation between them.	[9M]
	b)	Draw output and transfer characteristics of MOSFET and explain the terms (i) pinch off voltage (ii) threshold voltage and (iii) trans-conductance.	[5M]

UNIT-V

9.	a)	Sketch static V-I characteristics of IGBT and mark the region in which the device is operated as a switch.	[7M]
	b)	Discuss the applications of SCR.	[7M]
		(OR)	
10.	a)	Give the constructional details of SCR with the help of schematic diagram and circuit symbol.	[7M]
	b)	Write about optical couplers.	[7M]

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