SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech III Year I Semester Supplementary Examinations June-2024
ELECTRONIC DEVICES AND CIRUITS
(Electronics & Communicationd Engineering)

Time: 3 Hours **Max. Marks: 60**

(Answer all Five Units 5 x 12 = 60 Marks)

UNIT-I

1	a	Elaborate the action of PN junction diode under forward bias and reverse bias and sketch its V-I Characteristics.	CO1	L6	6M
	b	List the applications of PN junction and Zener diodes.	CO1	L1	6M

OR

2	a	Draw and explain the V-I characteristics of Zener diode	CO1	L2	6M
	b	Show that the Zener diode can act as a voltage regulator with a neat diagram.	CO1	L1	6M

UNIT-II

3	a	Draw the circuit diagram of a Full wave rectifier and with the help of waveforms describe its operation.	CO1	L1	6M
	b	A full wave rectifier circuit is fed from a transformer having a center-tapped secondary winding. The rms voltage from either end of secondary to center tap is 30V. If the diode forward resistance is 2Ω and that of the half secondary is 8Ω, for a load of 1 KΩ. Solve DC power delivered to the load, efficiency of rectification.	CO2	L3	6M

OR

4	a	Explain the working and characteristics of SCR in Forward and Reverse Blocking Mode.	CO1	L2	6M
	b	Explain working principle and characteristics of LED with neat diagram. Also list the applications of LED.	CO2	L2	6M

UNIT-III

5	a	Explain the Input and Output characteristics of a BJT in CE Configuration. Indicate the regions of operations in the output characteristics and list the applications in those regions.	CO5	L2	6M
	b	Define α, β and Υ of a Transistor and Evaluate the relation between them.	CO1	L5	6M

OR

6	a	With the help of neat diagram, Explain the operation and characteristics of n-channel enhancement type MOSFET.	CO5	L2	6M
	b	List difference between depletion and enhancement MOSFET.	CO1	L1	6M

UNIT-IV

7	a	Estimate the stability factors S, S' and S'' of a BJT Voltage Divider bias.	CO6	L5	6M
	b	Explain the concept of DC and AC Load lines and discuss the criteria for fixing the Q-point.	CO3	L2	6M

OR

8	a	Explain Thermal Runaway and Thermal Resistance.	CO3	L2	6M
	b	Explain Sensistor Compensation Technique.	CO3	L2	6M

UNIT-V

9	a	Discuss about the frequency response of an amplifier.	CO1	L6	6M
	b	Determine the parameters Ai, Ri, Av and R0 of Common Collector Amplifier using simplified hybrid model analysis.	CO3	L5	6M

10	a	Develop the expression for current gain, voltage gain, input impedance and output impedance for Common Emitter Amplifier with Emitter Resistor using simplified hybrid model.	CO3	L3	6M
	b	A CE amplifier is driven by a voltage source of internal resistance Rs = 1000Ω and the load impedance of RC=$2k\Omega$. The h-parameters are hie=1.3k, hfe=55, hoe = $22\mu A/V$ and hre = $2 \times 10-4$. Neglecting biasing resistors, Estimate the value of current gain, voltage gain, input impedance, output impedance for the value of Emitter Resistor RE = 200Ω inserted in the emitter circuit.	CO2	L5	6M

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