Course Code: 1930411 Roll No: MLRS- R19

MARRI LAXMAN REDDY
INSTITUTE OF TECHNOLOGY AND MANAGEMENT
(AN AUTONOMOUS INSTITUTION)
(Approved by AICTE, New Delhi & Affiliated to JNTUH, Hyderabad)
Accredited by NBA and NAAC with 'A' Grade & Recognized Under Section2(f) & 12(B)of the UGC act,1956

II B.Tech I Sem Supplementary Examination, July-2022

Electronic Devices and Circuits

(ECE)

Time: 3 Hours. **Max. Marks: 70**

Note: 1. Answer any FIVE questions.
2. Each question carries 14 marks and may have a, b as sub questions.

1	a)	Explain the following terms (i) Static resistance (ii) Dynamic resistance (iii) Junction resistance (iv) Reverse resistance of a Diode with suitable figures.	7M	CO1	BL4
	b)	Draw the circuit diagram of Full-wave rectifier and derive the expressions for average value, R.M.S value and voltage drop across diode.	7M	CO1	BL6
2	a)	A half wave rectifier has a load of 5.5 KΩ. If the diode resistance and the secondary coil resistance together have a resistance of 500Ω and the input voltage has a signal voltage of 240 V, calculate i) Peak, average and rms value of current flowing. ii) dc power output. iii) ac power input iv) Efficiency of the rectifier.	7M	CO1	BL3
	b)	Define diffusion and transition capacitance of p-n junction diode. Prove that diffusion capacitance is proportional to current I.	7M	CO1	BL3
3	a)	Sketch a family of CB input and output characteristics of for a transistor? Indicate the cutoff, active and saturation regions?	7M	CO2	BL3
	b)	A transistor with $\beta = 100$ is to be used in Common Emitter Configuration with collector to base bias. The collector circuit resistance is $R_C = 1k\Omega$ and $V_{CC} = 10V$. Assume $V_{BE} = 0$. i) Choose R_B so that the quiescent collector to emitter voltage is 4V. ii) Find the stability factor.	7M	CO2	BL3
4	a)	List out different types of biasing methods. Derive the equation for stability factor for fixed bias.	7M	CO2	BL6
	b)	Determine the quiescent currents and the collector to emitter voltage for a Ge transistor with $\beta = 50$ in the self biasing arrangements. The circuit component values are $V_{CC} = 20V$, $R_C = 2k\Omega$, $R_e = 0.1\ k\Omega$, $R_1 = 100\ k\Omega$ and $R_2 = 5\ k\Omega$. Find the stability factor S.	7M	CO2	BL3
5	a)	Explain the working of Zener diode as voltage regulator.	7M	CO3	BL4
	b)	Discuss the characteristics and applications of UJT.	7M	CO3	BL2

6	a)	Explain the construction and operation of JFET and draw its characteristics.	7M	CO3	BL4
	b)	Explain how a FET is used as a voltage variable resistor.	7M	CO3	BL4
7		Draw the circuit diagram of CC amplifier using hybrid parameters and derive the expression for A_I , A_V, R_i and R_O.	14M	CO4	BL
8		Explain the working of a n-channel depletion MOSFET. Discuss its characteristics.	14M	CO5	BL

---oo0oo---