Final 21-02-2022

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, February-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)	With necessary waveforms, explain the operation of bridge rectifier.	7M	CO1	BL4
	b)	A sinusoidal voltage whose V_m=26V is applied to half-wave rectifier. The diode may be considered to be ideal and R_L=1.2 KΩ is connected as load. Find out peak value of current, RMS value of Current, DC value of current and Ripple factor.	7M	CO1	BL3
2	a)	Derive the expression for diffusion capacitance.	7M	CO1	BL6
	b)	Sketch the piecewise linear characteristics of a diode. What are the approximate cut-in voltages for silicon and germanium?	7M	CO1	BL2
3	a)	Draw the self bias circuit and derive the stability factor for it along with explanation.	7M	CO2	BL6
	b)	Calculate the α_{dc} and β_{dc} for the given transistor for which I_C=5mA, I_B=50μA and I_{CO} = 1μA.	7M	CO2	BL3
4	a)	Tabulate the comparison of CB, CE and CC configuration with examples.	7M	CO2	BL2
	b)	An NPN transistor if β=50 is used in common emitter circuit with V_{cc}=10V and R_c=2 kΩ. The bias is obtained by connecting 100 kΩ resistor from collector to base. Find the quiescent point and stability factor.	7M	CO2	BL3
5	a)	Draw the circuit diagram of SCR and explain its operation along with its characteristics.	7M	CO3	BL1
	b)	Define and explain the parameters trans-conductance g_m. Drain resistance r_d and amplification factor μ of a JFET. Establish a relation between them.	7M	CO3	BL4
6	a)	Explain the operation of FET. Derive an expression for pinch off voltage of a FET.	7M	CO3	BL4
	b)	What is tunneling phenomena? Explain the principle of operation of tunnel diode with its characteristics.	7M	CO3	BL4
7	a)	Draw the Common emitter amplifier with Emitter resistor and explain its operation.	7M	CO4	BL2
	b)	Explain about CC amplifier and derive the expression for h parameters of the same. In addition, derive the expression for gain, input impedance and output impedance of CC amplifier.	7M	CO4	BL4
8		Briefly discuss about the construction, working and static drain characteristics of enhancement MOSFET?	14M	CO5	BL2

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