Course Code: 1930411 | MLRS- R19

MARRI LAXMAN REDDY
INSTITUTE OF TECHNOLOGY AND MANAGEMENT
(AN AUTONOMOUS INSTITUTION)
(Approved by AICTE, New Delhi & Affiliated to JNTUH, Hyderabad)
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II B.Tech I Sem Regular End Examination, March 2021

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)	Discuss switching characteristics of P-N junction diode? Explain load line?	7M	CO1	BL
	b)	Define diffusion and transition capacitance? Explain about junction capacitance?	7M	CO1	BL
2	a)	Sketch neat diagram of V-I characteristics of P-N junction diode for forward and reverse bias and explain?	7M	CO1	BL
	b)	What is a step graded junction? Derive the expression for $C_T=\varepsilon A/w$	7M	CO1	BL
3	a)	Discuss current components of BJT in detail.	7M	CO2	BL
	b)	Explain early effect or Base width modulation. Define punch through.	7M	CO2	BL
4	a)	Explain operation field effected transistor with neat diagram.	7M	CO2	BL
	b)	Sketch drain and transfer characteristics of JFET and explain.	7M	CO3	BL
5	a)	Sketch neat diagram of I/P & O/P of V-I characteristics of common Base configuration and explain.	7M	CO3	BL
	b)	What are the advantages of JFET over BJT?	7M	CO3	BL
6	a)	Why hybrid parameters are used for the analysis of BJT Amplifier and draw the h-parameter model for CE and CC configuration.	7M	CO4	BL
	b)	Derive the expressions for current gain (A_I), voltage gain (A_V), Input Impedance (Z_i) and output Impedance (Z_0) using h-parameter model.	7M	CO4	BL
7	a)	A CE amplifier is driven by a voltage source of internal resistance R_S=1KΩ and load resistance is R_L=1.2KΩ.The h-parameters are h_{ie}= 1KΩ, $h_{re}=2\times 10^{-4}$, h_{fe}=50 and h_{oe}=25M A/V. Determine A_I, A_V, Z_I and Z_O.	7M	CO4	BL
	b)	Explain the small signal model of FET.	7M	CO5	BL
8	a)	Derive expression for voltage gain (A_V), input impedance (Z_i) and output impedance (Z_o) of common source FET Amplifier.	7M	CO5	BL
	b)	In CS Amplifier R_D =5KΩ, R_G =11MΩ, μ=50, and r_d=30KΩ. Find A_v, Z_i and Z_o.	7M	CO5	BL