Course Code: 23HM5E01

BONAM VENKATA CHALAMAYYA INSTITUTE OF TECHNOLOGY & SCIENCE

(AUTONOMOUS)

III - B.Tech I-Semester Regular Examinations (BR23), NOVEMBER - 2025

ELECTRONIC DEVICES AND CIRCUITS (EEE)

Time: 3 hours Max. Marks: 70

Question Paper consists of Part-A and Part-B
*Answer **ALL** the question in **Part-A and Part-B***

PART–A (10X2 = 20M)

		Marks	CO	BL
1. a)	Define drift and diffusion current.	(2M)	CO1	BL1
b)	Define the terms Mobility and Conductivity.	(2M)	CO1	BL2
c)	Define ripple factor.	(2M)	CO2	BL2
d)	Draw the V-I characteristics of zener diode.	(2M)	CO2	BL1
e)	Define punch through voltage.	(2M)	CO3	BL1
f)	Classify the different types of FETs.	(2M)	CO3	BL1
g)	Define self-biasing.	(2M)	CO4	BL1
h)	Explain about thermal stability.	(2M)	CO4	BL2
i)	Draw the equivalent hybrid model for CE amplifier.	(2M)	CO5	BL1
j)	Draw the symbol for n-channel J FET.	(2M)	CO5	BL1

PART–B (5X10 = 50M)

2a.	Discuss about the charge densities and Fermi level in a semiconductor having Impurities	5(M)	CO1	BL1
b.	Discuss about the V-I characteristics of a p-n junction diode	5(M)	CO1	BL2
	(OR)			
3a.	Discuss about the charge densities and Fermi level in a semiconductor having impurities	4(M)	CO1	BL2
b.	State and explain the Hall Effect. Mention its applications.	6(M)	CO1	BL3

4a.	What is photo diode? Explain its construction and operation	5(M)	CO2	BL1
b.	Explain principle of operation of LED.	5(M)	CO2	BL3
	(OR)			
5a.	Draw the circuit diagram for full-wave bridge rectifier and explain its principle of operation	5(M)	CO2	BL2
b.	Discuss about L –section filter and derive the expression for the ripple factor.	5(M)	CO2	BL2

6a.	With the help of the CE configuration circuit, explain input, output characteristics and various regions of the configuration in detail.	5(M)	CO3	BL2
b	Discuss about the CB configuration and its input, output characteristics in detail.	5(M)	CO3	BL3
	(OR)			
7a.	Sketch a p-channel enhancement type MOSFET with proper biasing applied and indicates the channel, the direction of electron, and the resulting depletion region.	5(M)	CO3	BL2
b.	What is the significant difference between the construction of an enhancement type MOSFET and a depletion type MOSFET?	5(M)	CO3	BL3

8a.	Explain about dc load line analysis of BJT	5(M)	CO4	BL2
b.	Explain about self-biasing technique	5(M)	CO4	BL3
	(OR)			
9a.	Explain Stabilization against variations in VBE, Ic, and β	5(M)	CO4	BL1
b.	Write about FET Biasing- methods	5(M)	CO4	BL3

10a	Derive the expression for current gain ,voltage gain, input impedance and output admittance with respective source and current gain w.r.t source for generalized transistor amplifier at low frequencies.	10(M)	CO5	BL2 BL2
11	Give the comparison of CE ,CB, CC Amplifier With Respect To Voltage Gain Current gain input impedance and out put admittance.	10(M)	CO5	BL2 BL2

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HEAD OF THE DEPARTMENT
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