O.P.Code: 18EC0401	R18	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)

B.Tech II Year I Semester Supplementary Examinations June-2024

ELECTRONIC DEVICES

(Electronics and Communications Engineering)

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

PART-A

(Answer all the Questions **5 x 2 = 10** Marks)

1	a	What is depletion region?	CO1	L1	2M
	b	Compare half wave rectifier and Full wave rectifier.	CO2	L2	2M
	c	What do you mean by Punch through Effect?	CO3	L3	2M
	d	Draw the generalized hybrid model for BJT amplifier.	CO4	L2	2M
	e	What is transconductance of JFET?	CO5	L1	2M

PART-B

(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

2	a	What is a PN Junction? Explain the formation of depletion layer in a PN junction.	CO1	L2	5M
	b	Discuss the differences between Ideal Diode and Practical Diode.	CO1	L2	5M
		OR			
3	a	Write notes on Breakdown in PN Junction diodes.	CO1	L2	5M
	b	Find the factor by which the reverse saturation current of a silicon diode will get Multiplied when the temperature is increased from 27^0C to 82^0C.	CO1	L3	5M

UNIT-II

4	a	Draw the circuit diagram of half wave rectifier and explain its operation with the help Of waveforms.	CO2	L2	5M
	b	Derive the expressions for Ripple Factor and Efficiency of Half Wave Rectifier.	CO2	L1	5M
		OR			
5	a	Explain the working of capacitor filter and derive the expression for ripple factor of capacitor filter.	CO2	L3	5M
	b	Derive the expression for ripple factor of inductor filter.	CO2	L3	5M

UNIT-III

6		Discuss the Input and Output characteristics of a BJT in CE Configuration. Indicate the regions of operations in the output characteristics.	CO3	L2	10M
		OR			
7		Derive the stability factors S, S' and S'' of a Transistor Voltage Divider bias.	CO3	L3	10M

UNIT-IV

8		Using low frequency h-parameter model, derive the expressions for voltage gain, current gain, input impedance and output admittance for a BJT Amplifier in CE configuration.	CO4	L3	10M

OR

9	A CE amplifier is driven by a voltage source of internal resistance Rs = 800Ω and the load impedance of RL=1000Ω. The h-parameters are hie=1k, hfe=50, hoe = 25μA/V and hre = 2×10^{-4} . Calculate current gain, voltage gain, input impedance and output impedance using exact analysis and approximate analysis.	**CO4**	**L3**	**10M**

UNIT-V

10	Discuss the operation and characteristics of n-channel depletion type MOSFET with diagram.	**CO5**	**L2**	**10M**

OR

11	Derive input impedance, output impedance and voltage gain of JFET Common Drain amplifier with neat diagram.	**CO5**	**L2**	**10M**

***** END *****