Reg. No:

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech II Year I Semester Supplementary Examinations Feb-2021
ELECTRONIC DEVICES
(Electronics and Communication Engineering)

Time: 3 hours   Max. Marks: 60

PART-A
(Answer all the Questions 5 x 2 = 10 Marks)

1	a	Define Breakdown Voltage of a PN junction diode.	2M
	b	List applications of Zener Diode.	2M
	c	In a BJT, if a transistor has $\alpha = 0.97$, find the value of β	2M
	d	Draw the simplified hybrid model for CC amplifier.	2M
	e	Define Pinch off Voltage.	2M

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

UNIT-I

2	a	Draw and explain forward and reverse biasing of a PN Junction diode with V-I Characteristics.	5M
	b	Derive the Diode Current Equation.	5M

OR

3	a	Discuss the importance of Diode Clipper and explain the Positive and Negative Diode clippers.	5M
	b	Determine the value of forward current in the case of a PN junction diode, with Io = 10μA, Vf = 0.8V at T = 3000K. Assume Silicon Diode	5M

UNIT-II

4	a	Derive the expressions for Ripple Factor and Efficiency of Half Wave Rectifier.	5M
	b	Draw and describe VI characteristics of Tunnel Diode.	5M

OR

5	a	Draw and explain Bridge Rectifier.	5M
	b	Explain the construction and applications of Solar Cell.	5M

UNIT-III

6	a	Define Transistor Biasing and explain the need for Biasing?	5M
	b	Explain the concept of DC and AC Load lines and discuss the criteria for fixing the Q-point.	5M

OR

7	a	Discuss the Input and Output characteristics of a BJT in CE Configuration. Indicate the regions of operations in the output characteristics.	6M
	b	If the base current in a transistor is 20μA when the emitter current is 6.4mA, what are the values of α and β? also calculate the collector current.	4M

UNIT-IV

|			
8	a	Determine the parameters AI, Ri, Av and R0 of Emitter Follower using simplified hybrid model analysis.	6M
	b	A voltage source of internal resistance Rs = 900Ω drives a CC amplifier using load resistance RL=2000Ω. The CE h parameters are hfe=60, hie=1200Ω, hoe = 25μA/V and hre = 2 x 10-4. Compute AI, Ri, Av and R0 using approximate analysis.	4M

OR

9 a Draw the circuit diagram of a single stage RC coupled Amplifier and discuss the 5M
      steps used for designing it.
   b Determine Voltage Gain, Current Gain, Input resistance and Output resistance for a CE 5M
      amplifier using NPN transistor with hie = 1200Ω, hre = 0, hfe = 36 and hoe = 2 x 10-6
      mhos, R_L = 2.5kΩ and R_S = 500Ω (neglect the effect of biasing circuit).

UNIT-V

10 a Define the JFET Volt-Ampere Characteristics and determine FET parameters.   5M
   b Compare the performance of BJT with FET.   5M

OR

11 a For Common Drain Amplifier as shown in the Figure, gm = 2.5mS, rd = 25KΩ. 5M
      Calculate Input impedance, Output impedance and Voltage gain.
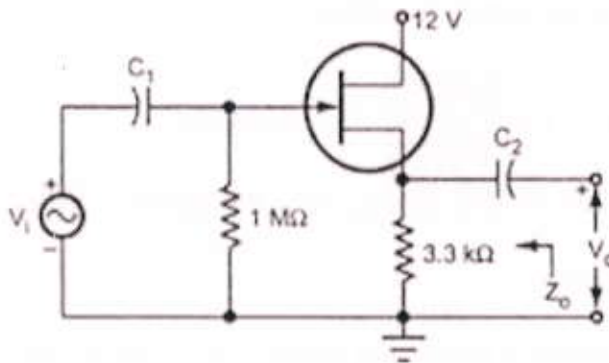
   b List and explain the steps involved in the manufacturing process of monolithic ICs. 5M

END