Q.P. Code: 18EC0401 **R18**

Reg. No: | | | | | | | | | | |

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech II Year I Semester Regular Examinations Nov/Dec 2019

ELECTRONIC DEVICES

(ECE)

Time: 3 hours Max. Marks: 60

PART-A

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

1	**a**	Draw the ac equivalent circuit of a diode and mention any two applications of a PN junction diode.	**2M**
	b	Define Ripple Factor and Efficiency of Half Wave Rectifier.	**2M**
	c	In a common base connection, I_C = 0.95 mA and I_B = 0.05 mA. Find the value of α.	**2M**
	d	What are the salient features of hybrid parameters?	**2M**
	e	Compare BJT and FET.	**2M**

PART-B

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

UNIT-I

2	**a**	Illustrate the formation of a p-n junction diode and explain the V- I characteristics.	**5M**
	b	A silicon diode at Room temperature conducts 5 mA at 0.7 Volts. If the voltage increases to 0.8 Volts. Find forward, reverse saturation currents, and interpret the results.	**5M**

OR

3		Draw the basic circuit diagram of a clamper and explain different types of clampers with the help of input and output waveforms.	**10M**

UNIT-II

4	**a**	Draw the circuit diagram of FWR with inductor filter and explain	**5M**
	b	Design a bridge rectifier circuit, with the following specifications: The transformer is connected to 220 Volts, 60 Hz mains and the turns ratio of the step down transformer is 11:1. Assume the diodes to be ideal, R_L=300kΩ.Calculate (i) Voltage across the load (ii)Load current (iii) PIV	**5M**

OR

5	**a**	With a simple circuit, explain how Zener diode will act as a regulator.	**5M**
	b	Discuss the principle of operation of a Varactor diode with suitable diagrams.	**5M**

UNIT-III

6		Describe a set up to obtain the Input the Output characteristics of a transistor in CE configuration. Indicate and explain various regions of operation of the transistor.	**10M**

OR

7	**a**	List the various techniques of biasing a Transistor and explain any one technique.	**5M**
	b	What is thermal runaway? Explain necessary conditions for a transistor to be in stable condition.	**5M**

UNIT-IV

8	**a**	Why hybrid model is used for the analysis of BJT amplifier at low frequencies? Draw hybrid model for CE transistor and derive the parameters.	**6M**
	b	A voltage source of internal resistance Rs = 900Ω drives a CC amplifier using load resistance R_L =2000Ω. The CE h parameters are h_{fe} =60, h_{ie} =1200Ω, h_{oe} = 25μA/V and $h_{re} = 2 \times 10^{-4}$ .Compute A_I , R_i , A_v and R_0 using approximate analysis.	**4M**

OR

9	**a**	Determine the parameters A_I, R_i, A_v and R_0 of Emitter Follower using simplified. hybrid model analysis.	**5M**
	b	Construct the circuit diagram of a single stage RC coupled Amplifier and discuss the steps used for designing it.	**5M**

UNIT-V

10	**a**	Explain the Drain & Transfer characteristics of a JFET.	**5M**
	b	Draw the circuit diagram of common source amplifier and derive equation for gain of the amplifier.	**5M**

OR

11		List and explain the steps involved in the manufacturing process of monolithic ICs.	**10M**

END