Q.P. Code: 20EC0402 **R20**

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

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech II Year I Semester Regular & Supplementary Examinations March-2023

ELECTRONIC DEVICES AND CIRCUITS

(Electronics and Communication Engineering)

Time: 3 hours Max. Marks: 60

(Answer all Five Units 5 x 12 = 60 Marks)

UNIT-I

1	a	Analyze the current components of a PN Junction Diode and derive the diode current equation.	CO2	L4	6M
	b	A PN junction germanium diode has a reverse saturation current of 10 μA at the room temperature of 270C. It is observed to be 30μA, when the room temperature is increased. Calculate the new room temperature.	CO2	L3	6M
		OR			
2	a	Define Zener Diode and Show that the Zener Diode can act as a voltage regulator with a neat circuit diagram.	CO4	L2	6M
	b	Sketch and explain the V-I characteristics of Zener Diode and mention its application.	CO3	L3	6M

UNIT-II

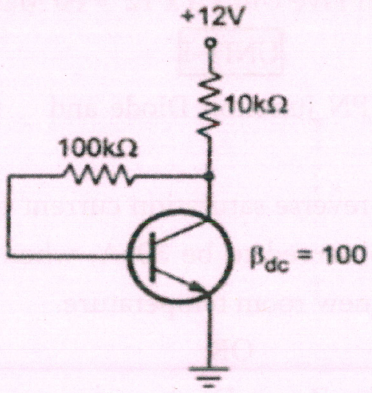
3	a	Classify and Explain different types of LCD based on construction. List the advantages and applications of LCD.	CO1	L2	6M
	b	Explain the construction, working and applications of Solar Cell.	CO3	L2	6M
		OR			
4	a	Demonstrate the working principle of LC filter with neat circuit diagram and derive the expression for its ripple factor. List its advantages and disadvantages.	CO3	L4	6M
	b	Draw the circuit symbol of UJT and its characteristics with neat diagram and list its applications.	CO1	L1	6M

UNIT-III

5	a	Explain the construction of NPN transistor with a neat diagram.	CO1	L2	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.	CO2	L2	6M
		OR			
6	a	Explain the operation of N-Channel depletion type MOSFET with a neat diagram.	CO3	L2	6M
	b	Compare the performance of JFET with MOSFET.	CO1	L1	6M

UNIT-IV

7	a	Define Transistor biasing Derive the expression for Stability Factor, Sf. from Collector current equation.	CO3	L4	6M
	b	Explain the concept of DC and AC Load lines and discuss the criteria for fixing the Q-point.	CO3	L2	6M
		OR			
8	a	Define and Explain Thermal Runaway and Thermal Resistance.	CO2	L2	6M
	b	Determine the Q-point for the circuit shown in the Figure.	CO6	L3	6M



UNIT-V

9	a	With neat diagram, summarize the parameters of CE amplifier using approximate analysis.	CO5	L2	6M
	b	Examine the expressions for current gain, voltage gain, input hybrid model.	CO5	L2	6M
		OR			
10	a	Draw the circuit diagram of JFET Common Source amplifier with voltage divider bias for bypassed Rs and determine the expression for input impedance, output impedance and voltage gain.	CO5	L3	6M
	b	Summarize the expressions for input impedance, output impedance and voltage gain of JFET Common Drain amplifier with neat diagram.	CO5	L2	6M

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