Enrolment No./Seat No_____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER–I&II EXAMINATION – SUMMER 2025

Subject Code:3110016 Date:17-06-2025

Subject Name:Basic Electronics

Time:10:30 AM TO 01:00 PM Total Marks:70

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**
4. **Simple and non-programmable scientific calculators are allowed.**

			MARKS
Q.1	**(a)**	Draw and explain constructional details and symbols for BJT.	**03**
	(b)	Draw and explain the V/I characteristics of a practical diode.	**04**
	(c)	Draw Common Base configuration and discuss its input and output characteristics with I_{CBO}, r_i, r_o, and current gain α.	**07**
Q.2	**(a)**	Define: clipper, Clamper, PIV of a Diode.	**03**
	(b)	Compare different rectifier circuits.	**04**
	(c)	Discuss diode approximations.	**07**
		OR	
	(c)	Explain full wave center-tape rectifier in detail with waveforms and derivation of average output voltage.	**07**
Q.3	**(a)**	Draw circuit diagram of positive clamper and explain the operation.	**03**
	(b)	Draw and explain circuit of AND gate using diodes.	**04**
	(c)	Explain thermal stability of BJT with stability factors S, S', S''.	**07**
		OR	
Q.3	**(a)**	Draw Hybrid equivalent model of transistor for CB, CE, CC configurations.	**03**
	(b)	Describe LED with its applications.	**04**
	(c)	Discuss operation and applications of PIN Photo diode and Solar cell.	**07**
Q.4	**(a)**	State the difference between Avalanche breakdown and Zener breakdown.	**03**
	(b)	Discuss seven segment display with its types.	**04**
	(c)	Explain biased positive and negative clipper circuits in detail.	**07**
		OR	
Q.4	**(a)**	For a BJT, α_{dc} is 0.98 and base current is 50 μA, then find β_{dc} , I_C & I_E.	**03**
	(b)	Compare CB, CE, CC configurations.	**04**
	(c)	Draw Emitter follower circuit and discuss its input and output characteristics.	**07**
Q.5	**(a)**	Compare BJT & FET.	**03**
	(b)	Explain OR gate using diodes.	**04**
	(c)	Describe MOSFET operation and draw the structures for D-MOSFET & E-MOSFET.	**07**
		OR	
Q.5	**(a)**	Discuss FET as an amplifier.	**03**
	(b)	Compare different logic families.	**04**
	(c)	Explain Drain characteristics and Transfer characteristics of JFET in detail with all related terms as Transconductance, drain resistance and amplification factor.	**07**

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