Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER– III (New) EXAMINATION – WINTER 2019

Subject Code: 3132003 Date: 30/11/2019

Subject Name: Design Concepts in Basic Electronics

Time: 02:30 PM TO 05:00 PM Total Marks: 70

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

			Marks
Q.1	**(a)**	State and explain De-Morgan's theorems.	**03**
	(b)	Explain the Combination Clipper Circuits with example.	**04**
	(c)	Explain with neat diagram Voltage Divider Bias.	**07**
Q.2	**(a)**	Implement Full Adder using 3 to 8 Decoder.	**03**
	(b)	Design 3- bit up synchronous counter.	**04**
	(c)	Compare in detail RTL, DTL, TTL, ECL and CMOS.	**07**
		OR	
	(c)	Show that NAND and NOR are universal gate.	**07**
Q.3	**(a)**	Explain the load line for diode.	**03**
	(b)	Explain the Positive Biased Clipper Circuit with output waveform.	**04**
	(c)	Make a Half and full wave Voltage Doubler Circuits and explain.	**07**
		OR	
Q.3	**(a)**	Define: (1) DC Resistance of diode, (2) Bulk Resistance and (3) PIV.	**03**
	(b)	Explain the Capacitor input filter with half-wave rectifier.	**04**
	(c)	Draw and Explain the working of clocked RS flip-flop.	**07**
Q.4	**(a)**	Explain the ripple counter.	**03**
	(b)	Draw the logic diagram and state truth table of 4x1 multiplexer.	**04**
	(c)	Explain Master Slave J-K Flip Flop. List the advantages of edge triggered flip flops.	**07**
		OR	
Q.4	**(a)**	Comparison between 1's and 2's compliments.	**03**
	(b)	Explain in detail bidirectional shift register with parallel load.	**04**
	(c)	Explain the operation of different types of shift registers.	**07**
Q.5	**(a)**	Explain the Negative Clamper circuit.	**03**
	(b)	Write the difference between Half wave and Full wave Rectifier.	**04**
	(c)	Drive the equation of I_{DC}, V_{DC}, I_{RMS}, V_{RMS}, Ripple Factor (γ) and PIV for Half-Wave rectifier.	**07**
		OR	
Q.5	**(a)**	What are the factors affecting the stability of Q Points.	**03**
	(b)	Comparison of Piecewise liner equivalent circuit, Constant Voltage Drop circuit and Ideal equivalent circuit for diode.	**04**
	(c)	Explain the output Characteristics of CE Configuration for transistor with neat sketch. Also indicate different regions and explain.	**07**

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