

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-III (NEW) EXAMINATION – SUMMER 2021****Subject Code:3132003****Date:11/09/2021****Subject Name:Design Concepts in 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) Explain the Negative Biased Clamper circuit with figure.	03
	(b) Explain 8×1 Multiplexer with circuit diagram.	04
	(c) Explain the advantages of Digital System over Analog System.	07
Q.2	(a) Explain the Positive Biased Clipper circuit with figure.	03
	(b) Explain the capacitor input filter with half-wave rectifier.	04
	(c) Show that both NAND and NOR gate are universal gate.	07
OR		
	(c) Explain with neat diagram working of 4-bit bidirectional shift register with parallel load.	07
Q.3	(a) Draw the logic diagram and state truth table for D-flip flop.	03
	(b) Construct and explain working of 3-bit decoder.	04
	(c) Design 3bit up-down synchronous counters with help of T-flip flop.	07
OR		
Q.3	(a) State the truth table of full adder and half adder.	03
	(b) Explain J-K flip-flop with example and wave forms.	04
	(c) Explain working of Serial-in to Serial-out (SISO) shift registers.	07
Q.4	(a) Explain the intrinsic and extrinsic semiconductor materials.	03
	(b) Explain the input output characteristics of N-P-N transistor in CE configuration.	04
	(c) Explain the voltage Doubler, Tripler and Quadrupler circuits in details.	07
OR		
Q.4	(a) Explain the Collector Feedback Biasing circuit with figure.	03
	(b) Explain the combination clipper circuit with figure.	04
	(c) Derive the following parameter for full wave bridge rectifier. 1) RMS load current, 2) RMS load Voltage, 3) Average load Current, 4) PIV 5) Average load Voltage, 6) Ripple Factor.	07
Q.5	(a) Explain with neat diagram 8x1 multiplexer.	03
	(b) Explain the load line analysis for diode.	04
	(c) Compare the Ideal, Second and Third approximation for diode in detail with example.	07
OR		
Q.5	(a) Comparison between 1's and 2's compliments.	03
	(b) Explain the full-wave voltage doubler circuit with figure.	04
	(c) Explain Voltage-Divider Bias Configuration with its advantage.	07
