GUJARAT TECHNOLOGICAL UNIVERSITY
BE- SEMESTER–IV (NEW) EXAMINATION – WINTER 2020

Subject Code:2140910   **Date:11/02/2021**

Subject Name:Digital Electronics

Time:02:30 PM TO 04:30 PM   **Total Marks:56**

Instructions:
1. **Attempt any FOUR questions out of EIGHT questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

			MARKS
Q.1	**(a)**	Explain Octal to Binary encoder.	**03**
	(b)	Explain Minterm and Maxterm.	**04**
	(c)	State and prove De Morgan's theorems.	**07**
Q.2	**(a)**	Define the following general characteristics of logic families. (i) Propagation delay time (ii) Fan-in (iii) Fan - out	**03**
	(b)	Draw and explain with truth table Ex-OR and Ex-NOR gates.	**04**
	(c)	Prove that NAND and NOR gates are universal gates.	**07**
Q.3	**(a)**	Explain full- subtractor in brief.	**03**
	(b)	Do as directed:- I. Add the following decimal numbers using 8421 BCD equivalent codes 679.6 + 536.8 II. Multiply the binary numbers (1011.01) X (10.1)	**04**
	(c)	Write a short note on XS-3 code.	**07**
Q.4	**(a)**	Solve: (1) $(105.15)_{10} = ($_____$)_2$ (2) $(378.93)_8 = ($_____$)_2$ (3) $(B9F.AE)_{16} = ($_____$)_8$	**03**
	(b)	Explain Binary addition & subtraction with Example.	**04**
	(c)	Explain Hamming codes. A seven bit Hamming code is received as 1110101. What is the correct code for even parity?	**07**
Q.5	**(a)**	Differentiate between sequential circuit and combinational circuit.	**03**
	(b)	Describe the operation of R-2R ladder D/A converter in brief	**04**
	(c)	Minimize using K-map $f(A,B,C,D) = \Sigma(1,2,7,8,10,12,15) + d(0,5,6)$ also draw MSI circuit for the output.	**07**
Q.6	**(a)**	What are Preset and Clear inputs with flipflop? Why are they provided with flipflop?	**03**
	(b)	Explain operation of clocked S-R Flip-Flop.	**04**
	(c)	Describe the working of look-ahead-carry adder.	**07**
Q.7	**(a)**	Design a full adder circuit using decoder and multiplexer (4:1 MUX).	**03**
	(b)	Compare between various types of ROM.	**04**
	(c)	Explain working of Successive-Approximation-Register A/D converter. Compare it with Flash A/D converter.	**07**
Q.8	**(a)**	State the applications of A to D converters	**03**
	(b)	Explain concept of shift registers	**04**
	(c)	Explain the concept of RAM. Explain working of any one type of RAM.	**07**

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