Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER– III(OLD) EXAMINATION – SUMMER 2019

Subject Code: 130701 Date: 01/06/2019

Subject Name: Digital Logic Design

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.**

Q.1	**(a)**	$(ADD)_{16}=(\quad)_{10}=(\quad)_{8}=(\quad)_{4}=(\quad)_{2}=(\quad)_{binary}=(\quad)_{gray}$	**07**
	(b)	What is the significance of a Karnaugh map for solving combinational circuits? Solve f(a,b,c,d) = (5,7,12,13,14,15) using a K map	**07**
Q.2	**(a)**	Explain the (r-1)'s complement method of operation using example	**07**
	(b)	Discuss canonical and standard form of representation.	**07**
		OR	
	(b)	What is positive and negative logic? Give one example of each.	**07**
Q.3	**(a)**	Use NOR gate as a universal gate and construct all basic gates from it.	**07**
	(b)	Construct a Full Adder from a Half Adder.	**07**
		OR	
Q.3	**(a)**	Use NAND gate as a universal gate and construct all basic gates from it.	**07**
	(b)	Implement a binary to Gray converter. State its significance.	**07**
Q.4	**(a)**	How does an encoder circuit work? Explain in terms of symbol, block diagram and truth table.	**07**
	(b)	Write a short note on Arithmetic, Logic and Shift operations.	**07**
		OR	
Q.4	**(a)**	How does a multiplexer circuit work? Explain in terms of symbol, block diagram and truth table.	**07**
	(b)	Show the working of Shift Register using symbol, block diagram and truth table.	**07**
Q.5	**(a)**	What is a PLA circuit? Explain in details about it.	**07**
	(b)	Explain about any one Flip Flop circuit using its symbol, block diagram, truth table and characteristics equation.	**07**
		OR	
Q.5	**(a)**	Explain about a synchronous counter using 3 bits.	**07**
	(b)	Classify memories. Describe in details about any one type.	**07**

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