Seat No.: _____   Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–IV(NEW) – EXAMINATION – SUMMER 2019

Subject Code:2142406   **Date:17/05/2019**
Subject Name: Digital Electronics and its applications
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)**	Explain D'Morgans theorem with truth table.	**03**
	(b)	Fill in the blanks	**04**
		(1) $(101101)_2 = ($ $)_{10}$	
		(2) $(55)_{10} = ($ $)_2$	
	(c)	Minimize the following Boolean function using sum of products (SOP): $f(a,b,c,d) = \sum m(3,7,11,12,13,14,15)$	**07**
Q.2	**(a)**	What is universal logic gate? Give the name of universal logic gates.	**03**
	(b)	Define Boolean Algebra? Explain Duality Principles with example.	**04**
	(c)	Explain two input (i) AND (ii) OR and (iii) EX-OR gates.	**07**
		OR	
	(c)	Explain NAND as universal logic gate in detail.	**07**
Q.3	**(a)**	What is K-map? What is disadvantage of K-map method?	**03**
	(b)	Compare Combinational logic and Sequential logic in tabular form.	**04**
	(c)	Design and explain full adder using 3 X 8 decoder.	**07**
		OR	
Q.3	**(a)**	Design full adder using two half adder.	**03**
	(b)	Write a note on Binary Ripple Counter.	**04**
	(c)	Explain edge-triggered D Flip-flop and SR Flip-flop in detail.	**07**
Q.4	**(a)**	Give the difference between Latch and Flip Flop.	**03**
	(b)	What is race around condition?	**04**
	(c)	Design & explain the block diagram of a 4:1 Multiplexer using 2:1 Multiplexer.	**07**
		OR	
Q.4	**(a)**	Explain with necessary sketches PLA control.	**03**
	(b)	Design synchronous BCD counter.	**04**
	(c)	Design a circuit for 4-bit bidirectional shift register.	**07**
Q.5	**(a)**	Define state and state diagram.	**03**
	(b)	Compare SRAM & DRAM in all aspects.	**04**
	(c)	Design and explain 3 bit data comparator circuit.	**07**
		OR	
Q.5	**(a)**	Explain in brief Scratchpad memory.	**03**
	(b)	Explain Accumulator and ALU status register in brief.	**04**
	(c)	Discuss Hardwired vs. Micro-programmed control unit.	**07**

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