Seat No.: Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

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

Subject Code: 2131704 Date: 11/06/2019

Subject Name: Digital Logic Circuits

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)	Perform subtraction using 2's compliment of 10010 – 10011	03
	(b)	Explain Associative Laws and De Morgan's theorems with necessary diagram, truth table.	04
	(c)	Design a combinational circuit for full adder and full subtractor.	07
Q.2	(a)	Show that AB'C+B+BD'+ABD'+A'C=B+C	03
	(b)	Convert SR flip-flop into T flip-flop.	04
	(c)	Simplify the following equation using K-map and implement using logic gates: $F(A,B,C,D) = \sum(0,1,2,3,5,7,8,9,11,14)$	07
		OR	
	(c)	Simplify the following Boolean function by using Tabulation method. $F = \Sigma (0,1,2,8,10,11,14,15)$	07
Q.3	(a)	Convert the following number (110011.011)2to decimal and octal.	03
	(b)	Design 3 – bit Gray code to binary code converter.	04
	(c)	Compare various Logic Families.	07
		OR	
Q.3	(a)	List out different types of memories used in digital logic circuits and define them.	03
	(b)	What is canonical form and standard form of equation? Give examples	04
	(c)	Design a 3-bit binary counter using T flip-flop	07
Q.4	(a)	What is state diagram? Explain with example.	03
	(b)	Design two inputs Ex-OR gate using 4 X 1 Multiplexer.	04
	(c)	State the characteristics and disadvantages of Emitter Coupled Logic family.	07
		OR	
Q.4	(a)	Explain D flip flop	03
	(b)	Explain 4-bit Magnitude Comparator in detail with necessary Boolean expression	04
	(c)	What is meant by demultiplexer? Give any Example of demultiplexer.	07
Q.5	(a)	Draw the diagram of 2 to 4 line decoder.	03
	(b)	Compare ROM and PLA.	04
	(c)	Draw the block diagram of Successive Approximation type ADC and explain its operation.	07
		OR	
Q.5	(a)	Draw the diagram of 3 to 8 line decoder	03
	(b)	Explain arithmetic, logic and shift micro operations	04
	(c)	Explain R-2R ladder type DAC	07

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