Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER– III (NEW) EXAMINATION – SUMMER 2022

Subject Code:3130704 **Date:18-07-2022**

Subject Name:Digital Fundamentals

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.**
4. **Simple and non-programmable scientific calculators are allowed.**

			MARKS
Q.1	(a)	List out various logic families. Also list characteristics of digital IC.	03
	(b)	What is signal? Explain different types of signal.	04
	(c)	Implement the following Boolean function using MUX a) $F(A,B,C) = \sum(1,3,6)$ b) $F(A,B,C) = \pi(2,3,5)$	07
Q.2	(a)	Perform the binary subtraction using 2's complement $(0111)_2 - (1101)_2$	03
	(b)	Convert the decimal Number 250.5 to base 4 and base 8.	04
	(c)	Design a Combinational circuit that convert 8- 4 -2 -1 code to BCD	07
		OR	
	(c)	Explain various logic gates.	07
Q.3	(a)	Compare Half adder and Full adder.	03
	(b)	Explain NAND gate as a Universal Gate.	04
	(c)	Implement 2-bit Magnitude comparator.	07
		OR	
Q.3	(a)	Simplify Boolean function using K-MAP F(A, B, C, D)=ABC'D' + ABC'D + ABCD' + AB'CD'	03
	(b)	Explain 4 bit Binary Parallel Adder.	04
	(c)	Explain Minterm and Maxterm.	07
Q.4	(a)	Give the difference between sequential circuit and combinational circuit.	03
	(b)	Explain Look-ahead Carry generator.	04
	(c)	Explain JK Flip-Flop.	07
		OR	
Q.4	(a)	Explain NAND SR Latch.	03
	(b)	Explain clock triggering mechanism.	04
	(c)	What is race around condition (racing)? How to solve it?	07
Q.5	(a)	Classify different types of digital to analog converters.	03
	(b)	Compare static RAM and dynamic RAM.	04
	(c)	List out different types of ROM. Also explain ROM.	07
		OR	
Q.5	(a)	Discuss the application of shift registers.	03
	(b)	Explain working of counter.	04
	(c)	Describe operation of D/A converter with binary-weighted resisters.	07

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