

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER– IV(NEW) EXAMINATION – SUMMER 2023

Subject Code:2140910**Date:11-07-2023****Subject Name:Digital Electronics****Time:10:30 AM TO 01:00 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) Convert decimal 61.3 to binary Perform $(B02)_{16} - (98F)_{16}$	03
	(b) Implement EX-NOR using only NOR gates.	04
	(c) Draw the circuit diagram and explain the operation of 2 input TTL NAND gate with open collector output.	07
Q.2	(a) Define the following parameters concerning logic circuits: (i) Fan-out (ii) Noise margin (iii) Speed power product	03
	(b) State and prove De Morgan's theorems.	04
	(c) Using K-map find the minimized expression for the following and implement using basic gates $F(W,X,Y,Z) = \sum m(0,7,8,9,10,12) + \sum d(2,5,13)$	07
	OR	
	(c) Draw and explain the logic circuit of a Full Adder and Full Subtractor along with their truth table and equations.	07
Q.3	(a) Explain 2 bit comparator.	03
	(b) Explain the difference between decoder and demultiplexer.	04
	(c) Explain the conversion of D Flip-Flop to SR Flip-Flop with the help of the necessary logic diagram, logic equations and conversion table.	07
	OR	
Q.3	(a) Write a short note on the priority encoder.	03
	(b) Explain the method of fast addition using Look ahead carry generation.	04
	(c) Explain the working of negative level triggered S-R flip-flop.	07
Q.4	(a) Give classification of memory.	03
	(b) Differentiate between synchronous and asynchronous counter.	04
	(c) Draw the logic diagram of a 4-bit shift register. Explain how shift left and shift right operations are performed.	07
	OR	
Q.4	(a) Give classification of registers.	03
	(b) What is a race around condition in a flip flop? How can it be overcome?	04
	(c) Explain with the help of a neat diagram the operation of the 4-bit universal shift register.	07
Q.5	(a) Draw a mod-10 counter.	03
	(b) Explain terms Accuracy and settling time for DAC.	04
	(c) What is an Analog digital converter? List out the types of Analog to Digital Converters and explain them to anyone.	07
	OR	
Q.5	(a) Draw a ripple 6 counter.	03

- (b) Differentiate between Static and Dynamic RAM. **04**
- (c) What is a Digital Analog converter? List out the types of Digital Analog Converters and explain anyone. **07**
