GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–IV (NEW) - EXAMINATION – SUMMER 2018

Subject Code:2142406   **Date:24/05/2018**

Subject Name:Digital Electronics and its applications

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.**

Q.1	**(a)**	Explain D'Morgans theorem with truth table.	03
	(b)	Fill in the blanks.	04
		(1) $(105.25)_{10}$ = (_____)$_2$	
		(2) $(0111001.010)_8$ = (_____)$_{16}$	
	(c)	Explain NOR as universal gate.	07
Q.2	**(a)**	Minimize following function.	03
		AB + A'C + BC	
	(b)	Draw five variable K-map.	04
	(c)	f(A,B,C,D) = f = Σm(1,2,3,5,7,11,13) Minimize this function using K-map. And draw logic diagram for the function.	07
		OR	
	(c)	Plot the following expression on a Karnaugh map.	07
		Z = (A•B)Θ(C+D).	
Q.3	**(a)**	Define Fan in and Fan out for digital circuits.	03
	(b)	Define ROM, PROM, EPROM, EEPROM.	04
	(c)	Explain full subtractor and derive its digital logic.	07
		OR	
Q.3	**(a)**	Explain encoder with example.	03
	(b)	Explain D-multiplexer as distributor.	04
	(c)	Construct full adder circuit by 3 to 8 decoder.	07
Q.4	**(a)**	What is edge-triggered flip-flop?	03
	(b)	Explain R-S flip flop.	04
	(c)	Explain Master Slave J-K flip flop.	07
		OR	
Q.4	**(a)**	What we mean by don't care condition ?	03
	(b)	Define shift registers. Also list its types.	04
	(c)	Design a logic circuit to convert the BCD code to Excess – 3 code.	07
Q.5	**(a)**	Using 10's complement, subtract : $(72532-3250)_{10}$	03
	(b)	What is race around condition?	04
	(c)	Explain the working of BCD Ripple Counter with the help of state diagram and logic diagram.	07
		OR	
Q.5	**(a)**	Explain D-flip flop in brief.	03
	(b)	Give the comparison between synchronous & Asynchronous counters.	04
	(c)	Design and explain 3 bit data comparator circuit.	07

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