GUJARAT TECHNOLOGICAL UNIVERSITY
MCA – SEMESTER – I • EXAMINATION – SUMMER 2018

Subject Code: 3610004   **Date: 28-May-2018**

Subject Name: Fundamentals of Computer Organization

Time: 02.30 pm to 5.00 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)**	Do as Directed	
		i. Convert (444)10 into Binary and Hexadecimal	**02**
		ii. 1's and 2's Complement	**02**
		iii. Simplify the following expressions using Boolean Algebra rules	**03**
		A(A+B+C) (A'+B+C) (A+B'+C) (A+B+C')	
	(b)	Define following term	**07**
		i. Immediate Addressing	
		ii. Direct Addressing	
		iii. Relative Addressing	
		iv. Indirect Addressing	
		v. De Morgan's Law	
		vi. Instruction Cycle	
		vii. Excess-3	
Q.2	**(a)**	Explain the Full adder with circuit diagram and truth table	**07**
	(b)	What is Flip-flops? Explain type of Flip-Flop	**07**
		OR	
	(b)	Write a note on Key board.	**07**
Q.3	**(a)**	Simplify the Boolean function in sum-of-products form by means of a 4-variable map. Draw the logic diagram with (a) AND-OR gates (b) NAND-NAND gates	**07**
		F(A,B,C,D)=Σm(0,1,2,4,5,8,10,11,14,15)	
	(b)	i. Subtract 111001 from 1110001.	**02**
		ii. Subtract 11100 from 10011 using 2's complement.	**02**
		iii. Add 647 and 482 in BCD.	**03**
		OR	
Q.3	**(a)**	What is a Binary Counter? Write a note on asynchronous Binary counter with necessary figures.	**07**
	(b)	Simplify the Boolean function in product-of-sums form by means of a 4-variable map. Draw the logic diagram with (a) OR-AND gates (b) NOR-NOR gates	**07**
		F(A,B,C,D) = ЛМ(0,2,3,6,7,8,9,10,12,13)	
Q.4	**(a)**	Explain basic working and application of Multiplexer in detail.	**07**
	(b)	Write the codes for decimal numbers with example.	**07**
		OR	

Q.4	(a)	Explain the difference between SRAM and DRAM.	07
	(b)	What is Multiplexer? Explain working of 4 to 1 line multiplexer using appropriate diagram.	07
Q.5	(a)	What is Decoder? Explain working of 3 to 8 decoder with necessary diagram and table.	07
	(b)	Explain Execution unit of 8086 Microprocessor. Draw block Diagram.	07

OR

| Q.5 | (a) | Write short note on basic components of a digital computer. | 07 |
| | (b) | Write a note on various types of Printer. | 07 |

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