Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

MCA – SEMESTER - I • EXAMINATION – WINTER 2012

Subject code: 2610004 **Date: 07/01/2013**

Subject Name: Fundamental of Computer Organization (FCO)

Time: 02:30 pm – 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.**

Q.1	**(a)**	Do as Directed	
		i. Convert $(444)_{10}$ into Binary, Octal and Hexadecimal	**03**
		ii. Define terms Instruction, Assembler, mnemonics	**03**
		iii. List Basic components of a Digital Computer	**01**
	(b)	Do as Directed	
		(i) Write the first 25 numbers in a base 11 number system using the digits 0,1,2,3,4,5,6,7,8,9, and A to express the 25 numbers that you write (Decimal 10 =A, for Instance). Note: Starting number will be 0.	**03**
		(ii) Simplify the following expressions using Boolean Algebra rules A(A+B+C) (A'+B+C) (A+B'+C) (A+B+C')	**02**
		(iii) List out Arithmetic and Logical Instructions of 8086	**02**
Q.2	**(a)**	What type of RAM is DRAM? Explain individual cell Composed of what, Pin-out, and Address timing for 64K dynamic memory.	**07**
	(b)	i. Explain working of MUL Instruction.	**03**
		ii. Why FULL-ADDER is required? Explain with example	**04**
		OR	
	(b)	i. Describe different types of buses.	**03**
		ii. Explain Zero address Instruction with example.	**04**
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 F(A,B,C,D)=∑m(0,1,2,4,5,8,10,11,14,15)	**07**
	(b)	What is Flip-flops? Explain in detail.	**07**
		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 F(A,B,C,D) = JIM(0,2,3,6,7,8,9,10,12,13)	**07**
Q.4	**(a)**	What do you mean by Addressing Techniques? Explain DIRECT and INDIRECT Addressing techniques with an example.	**07**
	(b)	Explain ROM. Construct Diode ROM and with four input lines and four output lines. Also show Combinational network for binary to Gray – Code.	**07**
		OR	
Q.4	**(a)**	What do you mean by Instruction cycle and Execution cycle? Explain organization of control registers for Instruction Cycle and Execution Cycle with diagram.	**07**
	(b)	Draw Timing signal for asynchronous transfer, synchronous transfer.	**07**
Q.5	**(a)**	Explain Execution Unit of 8086 Microprocessor. Draw Block diagram	**07**
	(b)	Write a note on Instruction format of Microprocessor 8086	**07**
		OR	
Q.5	**(a)**	Explain Bus Interface Unit of 8086 Microprocessor. Draw Block Diagram	**07**
	(b)	Write a note on various types of Printer.	**07**

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