Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

MCA - SEMESTER–I • EXAMINATION – SUMMER • 2014

Subject Code: 2610004 **Date: 20-06-2014**

Subject Name: Fundamentals of Computer Organization

Time: 10:30 am - 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)**	1. Prepare a truth table for Boolean expression: (i) A(BC' +B'C) (ii) X+YZ'	**02**
		2. List out first 30 numbers of base 20 number system	**02**
		3. i) Convert $(\mathbf{0.6875})_{10}$ to binary. ii) Convert $(\mathbf{1010.011})_2$ to decimal. iii) iv) Convert $(\mathbf{A87})_{16}$ to its equivalent octal number	**03**
	(b)	Perform the following operations:	
		1. 0001 – 1000 (Using 2's complement system).	**01**
		2. Explain Visual Display Unit.	**04**
		3.. Convert following: $(\mathbf{252})_{10}$=(_____)$_2$=(_____)$_8$=(_____)$_{16}$	**02**
Q.2	**(a)**	State the De Morgan's theorems and Explain. Which are the universal gates? Describe any one.	**07**
	(b)	List various types of printers and explain any one of them..	**07**
		OR	
	(b)	Write a short notes on basic components of a digital computers	**07**
Q-3	**(a)**	Explain RAM? Types of RAM? Which did you select? Why?	**05**
	(b)	Explain characteristics of memory system and explain memory hierarchy.	**05**
	(c)	Explain cache operation, principle of locality and cache hierarchy.	**04**
		OR	
Q-3	**(a)**	Write short notes on instruction cycle and execution cycle organization of control register.	**05**
	(b)	Explain ROM? Types of ROM? Explain their application.	**05**
	(c)	Explain with examples types of complements method's using binary numbers systems	**04**
Q.4	**(a)**	What is a Multiplexer? Explain 4-to-1 line multiplexer.	**07**
	(b)	What is Flip-Flop? Explain how a JK Flip Flop is made from an RS Flip Flop.	**07**
		OR	
Q-4	**(a)**	Explain RS Flip Flop by giving its characteristic table and the circuit diagram.	**04**
	(b)	Explain the working of Half-Adder and Full-Adder along with the circuit diagrams.	**06**
	(c)	What is the purpose of Binary Counter? Explain ripple counter.	**04**
Q.5	**(a)**	Draw the block diagram of 8086 Intel microprocessor and explain queue and segment registers.	**07**
	(b)	Explain instruction format of 8086 microprocessor.	**07**
		OR	
Q-5	**(a)**	a) What do you mean by Addressing Techniques? Explain the direct, relative and indexed addressing techniques with an example.	**07**
	(b)	b) Define following terms: instruction word, instruction cycle, instruction counter, op-code register	**07**

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