Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

MCA - SEMESTER–I • EXAMINATION – SUMMER 2013

Subject Code: 610004 **Date: 13-06-2013**

Subject Name: Fundamentals of Computer Organization

Time: 10:30am to 13:00pm **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: 07

1) Define the terms: Computer, Resolution, Encoder, and Bootstrap Loader.
2) Convert $(46745)_8$ into its binary equivalent.
3) Multiply 11011111 with 111.
4) Convert 11110101 to its gray code equivalent.

(b) Do as directed: 07

1) Add binary equivalent of 234 & 567
2) Subtract 234 from 189 using 1's complement subtraction.
3) Convert $(2ABD)_{16}$ to its decimal equivalent.
4) Convert $(1101001.011)_2$ to its decimal equivalent.

Q.2 (a) Explain Memory Hierarchy with appropriate diagram. 07

(b) What is Decoder? Explain working of 3 to 8 decoder with necessary diagrams & tables. 07

OR

(b) What is Multiplexer? Explain working of 4 to 1 line multiplexer using appropriate diagram. 07

Q.3 (a) Draw block diagram of digital computer & explain its all components. 07

(b) Simplify the following Boolean expressions: 07

1) $\bar{A}.B + \bar{A}.\bar{B}.\bar{C} + A.B.\bar{C} + A.\bar{B}.\bar{C}$

2) $\bar{A}(\bar{B}.C + \bar{B}.\bar{C}) + \bar{A}.B.\bar{C}$

OR

Q.3 (a) What is bistable device? Explain the working of R-S flip flop with appropriate diagram. 07

(b) List various data transfer modes. Explain Programmed I/O method with the help of example. 07

Q.4 (a) What is an Addressing Mode? Explain various addressing Modes with Examples. 07

(b) With help of necessary diagram, waveforms explain the working of Binary counter. 07

OR

Q.4	(a)	Write the Boolean expression (in sum of products form) for a logic circuit that will have a 1 output when X=0, Y=0, Z=1 and X=1, Y=1, Z=0, and a 0 output for all other input states. Also draw the block diagram for the circuit.	07
	(b)	Write note on Magnetic disk as a Storage device.	07
Q.5	(a)	Write short note on: 1) Laser printer 2) OCR	07
	(b)	What is Adder Circuit? Explain the working of Full adder with necessary diagrams & tables.	07

OR

Q.5	(a)	Simplify the following expression using Karnaugh map method: 1) $\bar{A}.B.\bar{C}.D + A.B.C.\bar{D} + A.B.\bar{C}.D + A.B.C.\bar{D} + \bar{A}.\bar{B}.C.D$ 2) $\bar{A}.\bar{B}.\bar{C} + \bar{A}.B.\bar{C} + A.B.\bar{C}$	07
	(b)	Write short note on: 1) Random scan display 2) Bar code Reader	07

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