

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 $(0.6875)_{10}$ to binary. **03**
ii) Convert $(1010.011)_2$ to decimal.
iii) iv) Convert $(A87)_{16}$ to its equivalent octal number
- (b) Perform the following operations:
1. $0001 - 1000$ (Using 2's complement system). **01**
2. Explain Visual Display Unit. **04**
3.. Convert following: $(252)_{10} = (\text{_____})_2 = (\text{_____})_8 = (\text{_____})_{16}$ **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**
