

Nirma University of Science and Technology

Institute of Technology

Semester End Examination (RPR), May-2009
Master of Computer Application, Semester-I(RPR)
3CA1103 Fundamentals of Computer Organization

Roll/
Exam No:

Supervisor's Initial
with date

Time : 3 Hours

Max Marks: 100

Instructions:

1. Attempt all questions
2. Figures to right indicate full marks.
3. Section wise separate answer book to be used.
4. Draw neat sketches wherever necessary.
5. Assume suitable data wherever necessary and mention the same.

SECTION-I

- Q-1 [A] Do as directed:** [12]
1. Explain what is radix minus one complement? [2]
 2. Explain batch processing system? [2]
 3. What is subcube? [2]
 4. Give the dual of the following expression [2]
 $X + \overline{XY}$
 5. Write a truth table of D Flip Flop? [2]
 6. Explain excess 3 Code. [2]
- Q-1[B]** Sometimes the same computer is used by several different companies during the day, and the computer is timeshared between these companies. Discuss the problems which might arise in billing the companies for the computer's services. [4]
- Q-2[A] Answer the following questions** [12]
- 1 Draw the PLA diagram for the following expressions [6]
(i) $ABC + \overline{AC}$
(ii) $\overline{AB} + ABC + \overline{AC}$
 - 2 Write a short note on J-K Flip Flop? [6]
- OR**
- Q-2[A] Answer the following questions** [12]
1. Write a note on shift register. [6]
 2. Write a short note on Master Slave Flip Flop? [6]
- Q-2[B]** Using maps simplify the following expressions in four variables W, X, Y, Z [6]
- (i) $m_1 + m_3 + m_5 + m_7 + m_8 + m_9 + m_{12} + m_{13}$
 - (ii) $m_0 + m_5 + m_7 + m_8 + m_{11} + m_{13} + m_{15}$

- Q-3 Answer the following questions** [16]
1. Design a counter with RS flip flop. [6]
 2. Simplify the following expressions [6]
 - (i) $ABC(\overline{A}\overline{B}\overline{C} + \overline{A}BC + A\overline{B}\overline{C})$
 - (ii) $XY + XY\overline{Z} + X\overline{Y}Z + \overline{X}YZ$
 3. Draw Nand Gate as universal gate. [4]

SECTION-II

- Q-4 [A] Answer the following:** [14]
- I. What do you mean by Interface in Computer System? (2)
 - II. What is Latency Time? (2)
 - III. Discuss Dynamic RAM. (2)
 - IV. Explain Relative Addressing? (2)
 - V. What is BCD Adder? (2)
- Q-4 [B] List the steps for Addition by using 1's Complements.** (4)
- Q-5 Answer the following:** [18]
- (A) Write a short note on Half Adder. (6)
 - (B) Explain Branch instruction in detail. (6)
 - (C) Write a short note on Decoder. (6)
- OR**
- (C) Discuss Read Only Memories. (6)
- Q-6 Answer the following:** [18]
- (A) What is Paging? Why we require it? (6)
 - (B) Discuss instruction word format. (6)
 - (C) Explain the concept of Virtual memory and Cache memory. (6)
- OR**
- (C) Explain IBM- PC AT System. (6)