RAMAKRISHNA MISSION VIDYAMANDIRA

(Residential Autonomous College under University of Calcutta)

B.A./B.SC. SECOND SEMESTER EXAMINATION, MAY 2012

FIRST YEAR

Date : 21/05/2012 **COMPUTER SCIENCE (Honours)**

Time : 11 am – 2 pm Paper : II Full Marks : 75

Answer **any five** :

1. a) Explain geometrical significance of Regula Falsi Method and Newton Raphson Method. [9]
   b) Use any one to find the positive value of sqrt (2). [6]

2. a) Round-off the following numbers correct up to 4 decimal places :
   i) 2·464352, ii) 45·876432, iii) 23·567653, iv) 1·00555 [2]
   b) Find the polynomial and then compute f(2·5) using that polynomial from the given table, using appropriate interpolation formula.

X	:	0	1	3	4
F(x)	:	5	6	50	105

   [5+1]
   c) Compute y(0·2), from the equation dy/dx = x–y, by Runge-Kutta method, correct to five decimal places, taking h = 0·1 and y(0) = 1. [7]

3. a) Write an algorithm to delete the root of a binary search tree. [5]
   b) What is heap? Construct a heap for the following :
   40, 55, 20, 35, 10, 60, 45, 30 [2+4]
   c) Write an algorithm to insert an element into a sorted array. [4]

4. a) Explain the insertion and deletion methods for Binary Search Tree. [3+8]
   b) Write an algorithm to reverse a single linked list. [4]

5. a) Explain the concept of vector interrupt with a suitable example. [4]
   b) What is bus contention problem? Explain how polling technique can be used to avoid this problem. [1+3]
   c) Explain how transceivers can be used for bidirectional bus control. [2]
   d) Write an efficient algorithm to multiply two n-bit unsigned numbers (You should mention the hardware needed to support your algorithm). [5]

6. a) What do you mean by addressing modes? [2]
   b) What is implicit addressing mode? [2]
   c) Give proper example to illustrate Direct and indirect addressing modes for both register and memory. [8]
   d) Distinguish between horizontal vs. vertical microprogramming. [3]

7. Write short notes on **any three** : [3×5]
   a) Bus Arbitration
   b) DMA and interrupt.
   c) Hardwired and Microprogrammed control
   d) Hashing
   e) Infix.Prefix and Postfix notations