RAMAKRISHNA MISSION VIDYAMANDIRA

(A Residential Autonomous College under University of Calcutta)

First Year, Second Semester (January – June), 2011
Mid-Semester Examination, March, 2011

COMPUTER SCIENCE (Honours)

Date : 9 March 2011 Full Marks : 50
Time : 11am – 1PM

Attempt <u>All</u> questions : [5×10 = 50]

1. Explain the working principle of set associative cache mapping with a neat diagram. Derive mapping functions for direct and set associative cache memory. Explain the effect of cache memory to overcome the bottleneck of Von-Neumann architecture. [5 + 2 + 3 = 10]

2. a) What is the importance of memory hierarchy? Distinguish between SARM and DRAM.
   b) Design a memory 2KB module using required numbers of 256 × 8 RAM chips and a decoder chip. Assume the required word length is 16bit. [(2½ + 2½) + 5 = 10]

3. a) Write a procedure (Algorithm / Pseudo code) to delete the duplicate elements from a list.
   b) Write a recursive procedure (Algorithm / Pseudo code) for the modified bubble sort with Illustration upto 2nd pass. [4 + 6 =10]

4. a) Write a procedure to check whether the following expression is valid or invalid : [a+b(c/d-e)*g/{f-u})]
   b) Compare and Contrast between Binary search and Sequential search. What modification can be done on binary search to make a most efficient search technique. [6 + 4 =10]

5. a) Geometrically explain the NR method.
   b) Use Least Square Method to fit a line y = ax + b from the following data set :

x	1	3	4	7
y	4	6	7	10

   (c) When will Trapezoidal rule be error free? Justify. [4+4+2=10]

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