PGDCA/MCA (I YEAR)

02282

Term-End Examination

June, 2010

CS-04 : DATA STRUCTURES THROUGH "C" AND "PASCAL"

Time : 2 hours   *Maximum Marks : 60*

Note :   Question number **1** is **Compulsory**. Answer **any three** questions from the rest. All algorithms should be written nearer to "C" or "Pascal" language.

1.   (a)   Write an algorithm for the creation, insertion   8
             and deletion of elements from a Doubly
             Linked List.

      (b)   Write an algorithm to implement bubble sort,   10
             and sort the following list in ascending order
             by using Bubble Sort algorithm.
             14, 11, 3, 15, 18, 9

      (c)   Write an algorithm to multiply two matrices.   8

      (d)   Explain any four applications of a Stack.   4
             Justify your answer.

2.   (a)   What is a 'heap' ? Write an algorithm for   7
             insertion and deletion from heap.

      (b)   List any three disadvantages of sequential   3
             file organization.

3. (a) Write a recursive algorithm for two way   5
   merge sort.

   (b) Write an algorithm for insertion and   5
   deletion from a circular queue.

4. (a) Write the recursive algorithm for following   6
   traversals of the binary search tree :
   (i) Preorder traversal
   (ii) In order traversal
   (iii) Post order traversal

   (b) Explain the following terms in brief :   4
   (i) Sparse matrix representation.
   (ii) Dynamic memory allocation.

5. Explain any 5 bit wise operators in 'C' language.   **10**

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