MCS-021

MCA (Revised)

Term-End Examination

June, 2013

11399

MCS-021 : DATA AND FILE STRUCTURES

*Time : 3 hours*   *Maximum Marks : 100*
(Weightage 75%)

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

1. (a) Design algorithms for various operations   **10**
        performed on circularly linked list.

    (b) What are the advantages of using lists than   **10**
        arrays while implementing a stack ? Explain.

    (c) Write a procedure to find minimum cost   **10**
        spanning tree for a graph using Prim's
        algorithm.

    (d) Explain the process of creating a Splay Tree   **10**
        using an example.

2. (a) Write a procedure to create, insert and   **10**
        display the content of a singly linked list.

    (b) Propose any two representations for Sparse   **10**
        Matrices and compare them.

3. (a) Write a procedure to create, insert and   **10**
        delete an element in queue.

(b) Explain the all-pairs shortest path problems with algorithm and trace the algorithm for the following digraph : 10
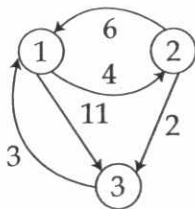
4. (a) Write a procedure to sort the following sequence : 25 57 48 37 12 92 86 33. Use Heap Sort. 10

(b) Write the algorithms for each of the following for binary trees : 10

(i) Inorder traversal

(ii) Preorder traversal

(iii) Postorder traversal

5. (a) Enumerate different file organizations. Explain any two file organizations with examples. 10

(b) Discuss any two applications of red-black trees in detail. 10

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