Roll No…… Total Pages: 3

10004

MBA/M-17

DATA STRUCTURE

Paper: MCA-14-24

Time: Three Hours Maximum Marks: 80

Note: Attempt five questions including No. 1 which is compulsory. All questions carry equal marks.

Compulsory Question

1. (a) What do you mean by Big-O Notation?

   (b) Explain any two operations on strings in brief.
   (c) What do you understand by Hashing?
   (d) What is the purpose of header linked list?
   (e) Discuss one application of stacks in brief.
   (f) What is a 2-3 Tree?
   (g) Define Binary Tree.
   (h) Define Graph.

Unit-I

2. What do you mean by Data Structure? How can you classify data structure? Explain the various data structures along with operations that can be applied in brief.

3. (a) Write algorithms to insert and delete an element from an array.

   (b) What is a sparse matrix? How can you store a sparse matrix in computer memory? Explain using suitable example.

Unit-II

4. (a) Write an algorithms to insert a node in a one-way linked list.

   (b) Write an algorithm to delete a node from a two-way liked list.

5. Explain the various types of queues along with their representation in computer memory. Write the algorithm for inserting and deleting an element from a queue.

Unit-III

6. (a) Write an algorithm for traversing a tree using preorder traversal. Also explain the same with the help of suitable example.

   (b) Comment on the need of threaded binary tree.

7. What is a Binary Search Tree (BST)? Discuss the problems in BST. How AVL can be used to remove these problems? Explain in detail.

Unit-IV

8. Write the Dijkstra's algorithm to find the shortest path. Explain the algorithm using suitable example.

9. (a) Write down the recursive binary search algorithm.

   (b) How radix sort is performed? Explain using suitable example.