

MCA - 203

MCA II Semester Examination, June 2014

Data Structure

Time : Three Hours

Maximum Marks : 70

- Note:** i) Answer five questions. In each question part A, B, C is compulsory and D part has internal choice.
ii) All parts of each question are to be attempted at one place.
iii) All questions carry equal marks, out of which part A and B (Max. 50 words) carry 2 marks, part C (Max. 100 words) carry 3 marks, part D (Max. 400 words) carry 7 marks.
iv) Except numericals, Derivation, Design and Drawing etc.

Unit - I

1. a) What is the difference between pointer to an array and array of pointers?
b) List and explain the application of queue in computers.
c) How a two dimensional array is represented in memory?
d) Implement the push and Pop operation on a stack.

OR

Write down the algorithm to implement two stacks using only one array.

Unit - II

2. a) What are the advantage of linked list over arrays?
b) What is Header linked list?
c) How does a circular header linked list differs than a linear linked list?
d) What is doubly linked list? Compare doubly linked list and singly linked list.

OR

Explain and write an algorithm to insert a node into a linked list (taking all the cases)

Unit - III

3. a) What is forest?
b) What is height balanced binary tree?
c) What is tree traversal?
d) Write an algorithm to insert a node into a binary search tree.

OR

Draw a binary expression tree for the following expression.

$A * B + C - D * E + F * G/H.$

Unit - IV

4. a) What is sorting?
b) Define Hashing.
c) Compare the performance of binary search and sequential search.
d) Write quick-sort Algorithm for sorting.

OR

Explain the working of binary search.

Unit - V

5. a) Define Graph and Multigraph.
b) Define AVL Tree.
c) Explain different representation of graph in memory.
d) Describe depth first search and breadth first search method of traversing a graph.

OR

Describe Kruskal's minimum cost spanning tree algorithm.
