Total No. of Questions :5] *[Total No. of Printed Pages :3*

Roll No .....

MCA - 203

MCA II Semester

Examination, June 2015

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 questions 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 Stack? Why stack is called LIFO data structure?

   b) What is circular queue? What is its advantages?

   c) Convert the following expression into prefix expression.

   A+ (B * C – (D / E ^ F) * G) * H

   d) What is DEQUE? Write various operations on DEQUE.

   OR

   Write a 'C' program to convert infix expression to postfix expression using stack.

Unit - II

2. a) What is linked list? Write its advantages.

   b) What is the requirement of doubly linked list?

c) Write a 'C' program to remove all duplicate elements from a linear list?

d) What are the applications of linked list? Explain in brief.

OR

Write an algorithm to create a circular linked list having insertion deletion and show operations.

Unit - III

3. a) What is binary tree? Mention the properties of a binary tree.

b) Prove that total number of edges in a complete binary tree with n- terminal node is 2(n–1).

c) Define these terms with respect to tree.

i) Degree

ii) Height

iii) Parent - child relation.

d) Draw tree:

Preorder – GBQACKFPDERH

In order – QBKCFAGPEDHR

OR

Write a 'C' program for implementing binary search tree with various traversing techniques.

Unit - IV

4. a) What is Sorting? Define various sorting techniques.

b) Write the differences between linear search and binary search.

c) What is chaining? What are the advantages of chaining?

d) What is Quick sort? Write its algorithm and efficiency.

OR

What is heap sort? Sort given data using heap sort.

46, 25, 35, 49, 10, 92, 83, 32

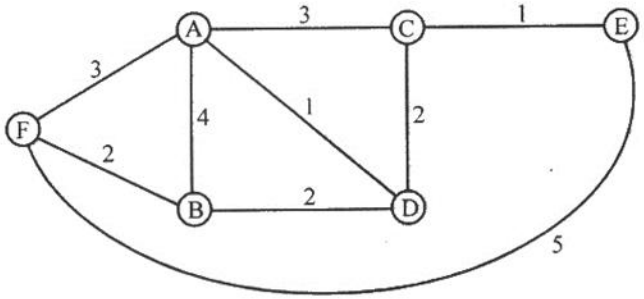
Unit - V

5. a) How can you represent graph?

b) What is AVL tree?

c) What are the traversal techniques using in a graph?

d) Draw minimum cost spanning tree for graph given below and also find its cost.



OR

What is B- tree? Write an algorithm for implementing B- tree.

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