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MSCCS-07

June - Examination 2016

MSCCS (Final) Examination

Data Structure and Algorithm

Paper - MSCCS-07

Time : 3 Hours] **[Max. Marks :- 100**

Note: The question paper is divided into three sections A, B and C. Write answers as per given instructions.

Section - A $10 \times 2 = 20$

(Very Short Answer Type Questions)

Note: Answer **all** questions. As per the nature of the question delimit your answer in one word, one sentence or maximum upto 30 words. Each question carries 2 marks.

1) (i) What is Non Linear data structure?

(ii) What is Recursion?

(iii) What is limitation of linear queue and how to overcome by circular queue?

(iv) Name various methods to traverse a Tree.

(v) Name any two non-homogeneous data structures.

(vi) What is Big O and small o in analysis of algorithms?

(vii) What is the prerequisite for binary search?

(viii) What is pendent node in a graph?

(ix) What is AVL-Tree?

(x) Name various methods to traverse a graph.

Section - B

$4 \times 10 = 40$

(Short Answer Questions)

Note: Answer **any four** questions. Each answer should not exceed 200 words. Each question carries 10 marks.

2) Write algorithm/program segment to check if two arrays (1-Dim) of equal size are identical or not. Where two arrays are said to be identical if corresponding elements are same in both the arrays.

3) Write algorithm/sub-program to check if the given stack is overflow or underflow.

4) Write a program/algorithm to check if the array is already sorted or not. Find its complexity also.

5) For the given tree in Fig. No. 1 write any two traversals.

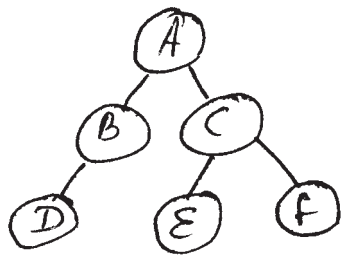

Fig. No. 1

6) Write algorithm/program to search a number in the matrix of MxN using any one technique.

7) Write statements to display the contents of a given doubly linked list.

8) What is spanning tree? For a given graph in Fig. No. 2 obtain any two spanning trees, and their distance.

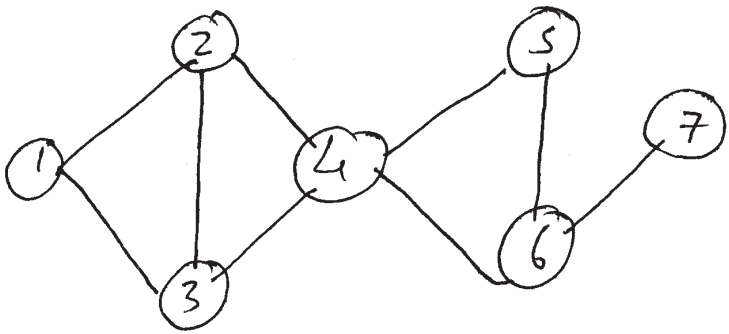

Fig. No. 2

9) Write a program/algorithm to count number of leaf nodes in the tree given in Fig. No. 1.

Section - C $2 \times 20 = 40$

(Long Answer Questions)

Note: Answer **any two** questions. You have to delimit your each answer maximum upto 500 words. Each question carries 20 marks.

10) Generate prime numbers between 5 and 100 using dynamic programming.

11) Write a program/algorithm for test followings in a circular queue:

    (i) Empty or Not

    (ii) Full or Not

    (iii) Only single Elements or more.

12) Write a program/algorithm for simple merge.

13) What is the difference between static and dynamic data structure? Explain using two examples for each of them.