

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 1072

Roll No.

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**B. Tech.**

(SEM. IV) THEORY EXAMINATION 2010-11

**DATA STRUCTURE USING C**

*Time : 3 Hours*

*Total Marks : 100*

**Note : Attempt all the questions.**

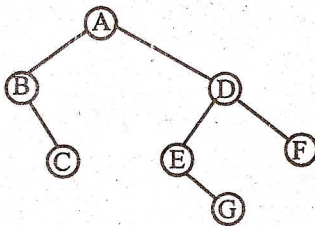
1. Attempt any four parts of the following : (4×5=20)
- (a) What is a data structure ? Differentiate between primitive data structure and non-primitive structure.
  - (b) Explain the following :
    - (i) Space complexity
    - (ii) Time complexity.
  - (c) Explain the memory representation of one-dimensional array.
  - (d) Convert the following infix notation into postfix notation using stack :  
$$A - B - (C * D - F / a) * E$$
  - (e) Write a program in 'C' to find whether a string is palindrome or not.
  - (f) Write a program in 'C' for the Fibonacci series.

2. Attempt any four parts of the following : (4×5=20)

- (a) What is Dequeue ? Discuss various types of dequeues.
- (b) Explain dynamic memory allocation and its advantages.
- (c) Write an algorithm to delete an element from the single linked list.
- (d) What is a doubly linked list ? How is it different from the single linked list ?
- (e) What is a Queue ? What are the different operations which can be applied to a queue ?
- (f) Write a procedure that implements circular queue.

3. Attempt any two parts of the following : (2×10=20)

- (a) What do you mean by function ? Discuss with suitable examples.
- (b) Explain the following :
  - (i) Threaded binary tree
  - (ii) Complete Binary Tree.
- (c) Write pre order, postorder and inorder traversal of the following tree :



4. Attempt any two parts of the following: (2×10=20)

- (a) Write and explain the quick sort algorithm.

(b) What is Binary Search Tree (BST) ? Construct the BST for following insertion in order :

12, 45, 5, 38, 19, 29, 12, 18, 78, 27, 18, 2, 20,

Show the steps.

(c) The following nodes are inserted into the empty AVL tree in the following order :

5, 12, 64, 24, 30, 17, 35, 41, 12, 19

Show the construction of AVL tree.

5. Write short notes on any two :

(2×10=20)

(a) Minimum cost spanning tree

(b) Graph representations

(c) File organisation.