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BACHELOR IN COMPUTER APPLICATIONS

Term-End Examination

December, 2011

CS-62 : 'C' PROGRAMMING AND DATA STRUCTURE

Time : 2 hours

0471

Maximum Marks: 60

- **Note :** Question number 1 is **Compulsory**. Answer **any three** questions from the rest. All Algorithms should be written nearer to **'C' language**.
- (a) Define Data structure and its importance. 8 Differentiate between Array and Linked list data structures. Also write a 'C' program to reverse the content of an array.
 - (b) Write the Algorithm for Bubble sort. Apply 8 this algorithm on the following data :

48, 44, 18, 24, 38, 14, 28.

Show all possible steps.

 (c) What is a Binary Tree ? State its properties.
 6 Differentiate between Full Binary Tree and Complete Binary tree using suitable examples.

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P.T.O.

 (d) Explain the functioning of Stack Data Structure. Write algorithm to implement the following stack operations : 8

- (i) POP
- (ii) PUSH
- (a) What is a doubly linked list ? Write an 6 algorithm to insert a new node at any position in a doubly linked list.
 - (b) Write a program in 'C' to delete a node from 4 a queue.
- 3. (a) What are Post-order and Pre-order traversals 6 of a tree ? Construct the binary tree from the given data :
 INORDER : C E D F B A H I G

PREORDER : A B C D E F G H I

- (b) Write an algorithm for solving the shortest 4 path problem in a graph.
- 4. (a) What is a B S T? Also write an algorithm to 6 delete a node from a BST. Use a proper example to validate your Algorithm.
 - (b) Write a program in 'C' to find a word in a 4 text file containing a paragraph.

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5. Write short notes on the followings :

- (a) Structs and unions
- (b) Insertion sort
- (c) Fragmentation
- (d) DFS graph traversal.
- (e) Height balanced Tree.