

**M.C.A. DEGREE EXAMINATIONS: DECEMBER 2009**

First Semester

**MCA504: DATA STRUCTURES**

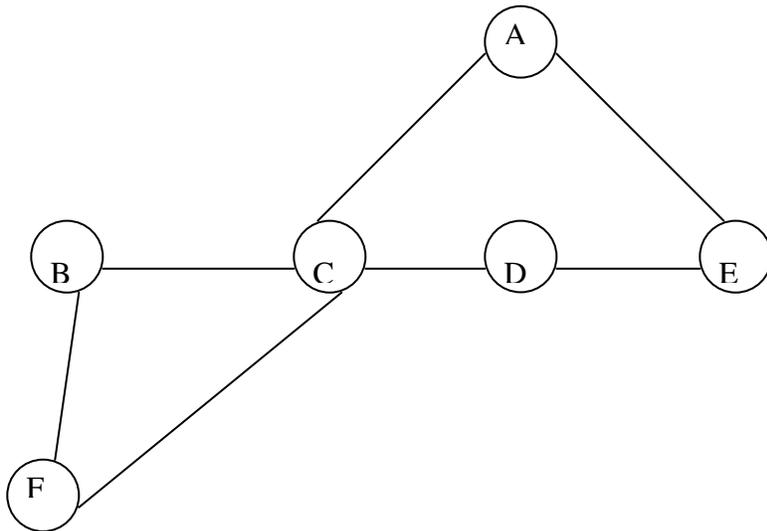
**Time: Three Hours**

**Maximum Marks: 100**

**Answer ALL the Questions:-**

**PART A (10 x 2 = 20 Marks)**

1. What is data structure?
2. What is the data structures used to perform recursion?
3. Define depth in a binary tree.
4. Prove that the number of full nodes plus one is equal to the number of leaves in a nonempty binary tree.
5. Define greedy method.
6. What is insertion sort.
7. List out the order of nodes visited while traversing the following graph in BFS & DFS.



8. What is an adjacent node in a graph?
9. What is Garbage Collection?
10. What is an internal pointer?

**PART B (5 x 16 = 80 Marks)**

11. (a) Write a program to perform insertion and deletion operations in a doubly linked list.

**(OR)**

(b) Write the algorithm to convert an infix expression into a postfix expression.

12. (a) (i) Explain the preorder traversal algorithm of a binary tree with an example. (6)

(ii) Discuss the Huffman algorithm. (10)

**(OR)**

(b) Discuss on threaded binary tree.

13. (a) Write an algorithm and explain with an example, for deletion in a binary search tree.

**(OR)**

(b) Write a C program to implement Quick Sort.

14. (a) Explain the depth first traversal algorithm.

**(OR)**

(b) Write a C program to find the shortest path in a given graph.

15. (a) Discuss on Compaction.

**(OR)**

(b) In detail discuss on reference count method.

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