Register Number: ……

MCA DEGREE EXAMINATIONS: NOV/DEC 2010

First Semester

MASTER OF COMPUTER APPLICATION

MCA504: Data Structures

Time: Three Hours **Maximum Marks: 100**

Answer ALL Questions:-

PART A (10 x 2 = 20 Marks)

1. How do you represent a stack in C?
2. What are the advantages and disadvantages of representing a group of items as an array versus a linear linked list?
3. List the criteria to be held to call a binary tree as almost complete binary tree.
4. Define depth of binary tree.
5. State the difference between external and internal sort.
6. What is the time complexity of merge sort?
7. What is transitive closure?
8. Give any two applications for depth first traversal.
9. How do you implement the addon and tail operations?
10. What are the two phase of garbage collection.

PART B (5x16 =80 Marks)

11. a) What is the Stack ADT? Give any one implementation of Stack and explain clearly the data structure and routine used.

(OR)

b) How does a queue work? Explain the algorithm for inserting and deleting from a Queue.

12. a) Discuss about the traversals in binary tree with examples.

(OR)

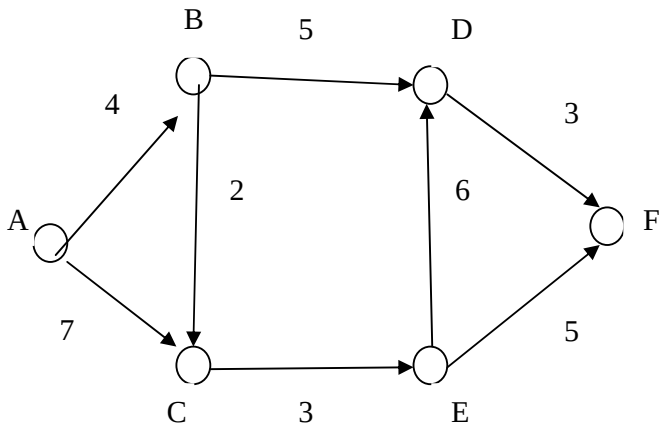
b) Explain Huffman algorithm with an example.

13. a) Write down the complete QUICKSORT algorithm and illustrate its working to sort the list (45,23,11,35,62,87,24,66).

(OR)

b) Describe about the various ways in which an element can be searched within a list of items. Give the implementation for any one method.

14. a) Write a routine to find a shortest path between two given vertices in a weighted directed graph. Use it to find the shortest path between A and F in the graph given below.



(OR)

b) What do you mean by flow problem? Explain in detail.

15. a) How are free nodes reclaimed? Explain the phases involved with an algorithm. Illustrate the explanation with an example.

(OR)

b) Write notes on

(i) Automatic list management. (8)

(ii) Operations on general lists. (8)

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