SUBJECT CODE : CS/PC/AD14

M.Sc. DEGREE EXAMINATION, NOVEMBER 2007
INFORMATION TECHNOLOGY
FIRST SEMESTER

COURSE   : MAJOR CORE
PAPER : ALGORITHM AND DATA STRUCTURES
TIME   : 3 HOURS   MAX. MARKS: 100

SECTION – A

ANSWER ALL THE QUESTIONS   (10X2=20)

1.   Define Recursion.

2.   Distinguish between Arrays and Linked Lists.

3.   What is the maximum number of nodes in the nth level binary tree?

4.   Define heap.

5.   Write a C function for post order traversal of a binary tree.

6.   What are the factors to be considered while choosing a sorting algorithm?

7.   Write the time complexity of Insertion sort.

8.   Define spanning tree.

9.   What is a graph?

10. Define Data Structure.

SECTION – B

ANSWER ANY FIVE QUESTIONS   (5X6=30)

11. Explain about the space and time complexities of Algorithms with examples.

12. Briefly explain about AVL trees.

13. Explain various heap operations.

14. What is the importance of merge sort? Explain the steps involved in merge sort.

15. Write the program for Kruskal's Algorithm and Explain.

16. Define Stack. Describe the stack contents after each operation. Initial content of
the stack is ACDEK.

(i) PUSH P   (ii) POP   (iii) POP   (iv) PUSH S

(v) POP   (vi) POP

..2

SECTION – C

ANSWER ANY FIVE QUESTIONS   **(5X10=50)**

17. Write about the Linked List representation of Stacks

18. Write C functions to implement various binary tree search operations.

19. Define Collision and write in detail about the open hashing method of solving the collision.

20. Explain quick sort with an example.

21. Explain Dijkstra's algorithm for finding the shortest path with an example.

22. Write about the applications of priority queues.

23. How do you insert and delete an element in the middle of the list? Explain with algorithm and example.