ANNA UNIVERSITY COIMBATORE

B.E. / B.Tech. DEGREE EXAMINATIONS – DECEMBER 2008

THIRD SEMESTER - ELECTRICAL & ELECTRONICS ENGINEERING

EE 305 - DATA STRUCTURES AND ALGORITHMS

Time: Three Hours   Maximum: 100 Marks

PART A – (20 x 2 = 40 Marks)

Answer ALL Questions

1. Define ADT.

2. List the various types of data structures.

3. Brief space complexity.

4. State the various asymmetric relations used for denoting Time complexity.

5. State the different applications of stack.

6. List the various types of linked lists.

7. Write a short notes on non-linear data structure.

8. What is ascending priority queue

9. Define the following i) tree ii) binary tree

10. Write a short note on threaded binary tree.

11. What is a binary search tree?

12. Define i) Height ii) Depth of the tree?

13. What is the best case time complexity of quick sort algorithm?

14. State the algorithmic technique used in merge sort?

15. What is the need for external sort? Give an example.

16. Define hash function?

17. Define minimum spanning tree?

18. What are the two representations of a graph?

19 List out the applications of graph?

20. State any two applications of depth first traversal.

PART B (5 x 12 = 60 Marks)

Answer Any FIVE Questions

21. Define efficiency of an algorithm and explain in detail how to measure the efficiency of an algorithm. (12)

22. (a) Convert the following infix expression into equivalent postfix expression using stack.[A+B*C–(D/E ^ F) * G] *H (6)

    (b)Write short notes on top down approach (6)

23. a) What is threaded binary tree? Write an algorithm for inserting a node in a threaded binary tree. (8)

    b) Write short note on AVL tree. (4)

24. Explain the following operations in binary search tree
    a) Insertion   b) Deletion (6+6)

25. Present and explain the algorithm to perform heap sort. Also analyze the time complexity of the algorithm. (12)

26. Explain the Dijkstra's algorithm for finding the shortest path with an example. (12)

27. Explain Prim's algorithm with an example. (12)

28. Explain quick sort with an example. (12)

*********THE END*********