ANNA UNIVERSITY COIMBATORE

B.E. / B.TECH. DEGREE EXAMINATIONS : SEPTEMBER 2009

REGULATIONS – 2007

THIRD SEMESTER : ELECTRICAL & ELECTRONICS ENGG.

070250005 - DATA STRUCTURES AND ALGORITHMS

TIME : 3 Hours **Max.Marks : 100**

PART – A

(20 x 2 = 40 MARKS)

ANSWER ALL QUESTIONS

1. What is meant by problem solving?
2. Write down the definition of data structures?
3. What is program verification?
4. What is O-notations?
5. What is meant by an ADT?
6. What are the different ways to implement list?
7. What are the postfix and prefix form of the expression A+B*(C-D)/ (P-R)?
8. List three examples that use linked list?
9. Define hash function?
10. What is AVL tree?
11. Write down two properties of binary heap?
12. What are the advantages and disadvantages of linear probing?
13. What are the two main classifications of sorting based on the source of data?
14. What is the average efficiency of heap sort?
15. Define Shell sort
16. Define Graph?
17. What is minimum spanning tree?
18. What is DAG? Write its purpose
19. What is an articulation point?
20. What are the two traversal strategies used in traversing a graph?

PART – B

(5 x 12 = 60 MARKS)

ANSWER ANY FIVE QUESTIONS

21. (a) Explain top-down design in detail? 6
    (b) Design an algorithm for reversing the digit of an integer. 6

22. (a) What are the steps taken to improve the efficiency of an algorithm? 8
    (b) List the applications of stack 4

23. (a) Explain the linked list implementation of stack ADT in detail? 8
    (b) Write a procedure to insert an element in to singly linked list 4

24. (a) Define priority queue? Explain the basic heap operation with an example? 8
    (b) Explain separate chaining with an example 4

25. Define binary search tree? Explain the various operations with an example?

26. State and explain algorithm to perform Heap sort with an example

27. State and explain algorithm to perform Merge sort with an example

28. Explain Dijkstra's algorithm with an example?

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