

ANNA UNIVERSITY COIMBATORE
B.E./B.TECH. DEGREE EXAMINATIONS: DECEMBER-2009
REGULATIONS: 2008
THRID SEMESTER: INFORMATION TECHNOLOGY
080250005-DATA STRUCTURES AND ALGORITHMS

TIME: 3 Hours

Max.Marks:100

PART-A

(20*2=40 Marks)

ANSWER ALL QUESTIONS

1. What is time complexity and space complexity?
2. What is a linked list?
3. Give any two applications of stack.
4. What is a circularly linked list?
5. Give any two typical examples of non-linear data structure?
6. What is an expressions tree?
7. How do you define a complete binary tree?
8. What is the height of AVL tree with n elements?
9. What is the advantage of open addressing hashing?
10. What is a quadratic probing?
11. What are the three properties of equivalence relations in a set?
12. What is a union by size?
13. Define the following:
(i) Graph (ii) weakly connected graph.
14. What do you mean by depth first search? What is the precaution to be made?
15. What is a topological sort? Give an example for it.
16. Define spanning tree?
17. What is the principle of Dynamic programming?
18. List out two examples of backtracking algorithms with examples.

19. What is skip test? What are its advantages?
20. What do you mean by NP problems? Give any one example for it.

PART-B

(5*12=60 Marks)

ANSWER ANY FIVE QUESTIONS

21. Explain the various operations performed on a stack. Also explain the various forms of expressions. (12)
22. Explain the add and deletion operation in a doubly linked list. (12)
23. Write and explain the various tree traversal algorithms with examples. (12)
24. What is hash function? What are the two types of it? Write on separate chaining method. (12)
25. What is the prim's algorithm? Explain it with diagram. (12)
26. Explain the concept of Dijkstra's algorithm and show how the data changes during the unweighted shortest-path algorithm. (12)
27. Write short notes on following (i) Euler circuit (ii) Biconnectivity (12)
28. Write short notes on following (i) Randomized algorithms (ii) path compression (12)

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