

III B.Tech I Semester Supplementary Examinations, November 2006
DESIGN AND ANALYSIS OF ALGORITHMS
(Common to Information Technology and Computer Science & Systems
Engineering)

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks

1. (a) Define algorithm. Explain the characteristics of the algorithm. [10]
(b) Write an algorithm to find the largest of N numbers. [6]
2. Explain the strassen's matrix multiplication concept with an example. [16]
3. (a) Explain the control at straction of Greedy method compare this with Dynamic programming. [4]
(b) Applying the Greedy stentegy find the solution for optimal storage on tapes problem instance $n = 3, (l_1, l_2, l_3) = (5, 10, 3)$. [6]
(c) Explain the 0/1 knapsack problem algorithm with Greedy concept. [6]
4. Use an AVL tree as the basis of an algorithm to execute MIN, UNION, and DELETE on sets consisting of integers 1 through n, using $O(\log n)$ steps per operation. . [16]
5. (a) Design a three stage system with device types D1,D2 and D3. The costs are Rs.30, Rs.15 and Rs.20 respectively. The cost of the system is to be no more than Rs.105. the reliability of each device type is 0.9, 0.8 and 0.5 respectively.
(b) Explain in detail the reliability design problem. [8+8]
6. Show that
(a) The inorder and postorder sequences of a binary tree uniquely define the binary tree.
(b) Write a detail note on depth first graph traversal algorithm. [8+8]
7. Define the following terms: state space, explicit constraints, implicit constraints, problem state, solution states, answer states, live node, E-node, dead node, bounding functions. [16]
8. What is interpolation? Explain Lagrange interpolation algorithm & Newtonian Interpolation algorithm. [16]
