

**III B.Tech I Semester Supplementary Examinations, November 2005**  
**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**

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1. What is meant by time complexity? Give and explain different notations used with examples. [16]
2. (a) Write an algorithm of Quick sort and explain in detail.  
 (b) Suggest refinements to Merge sort to make it in-place. [8+8]
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 knap sack problem algorithm with Greedy concept. [6]
4. (a) Write the implementation of DELETE (b,s) in which an element b found at vertex v of a binary Search tree whose elements belong to set S. . [10]  
 (b) Given the following binary search tree. (figure 1) . [6]

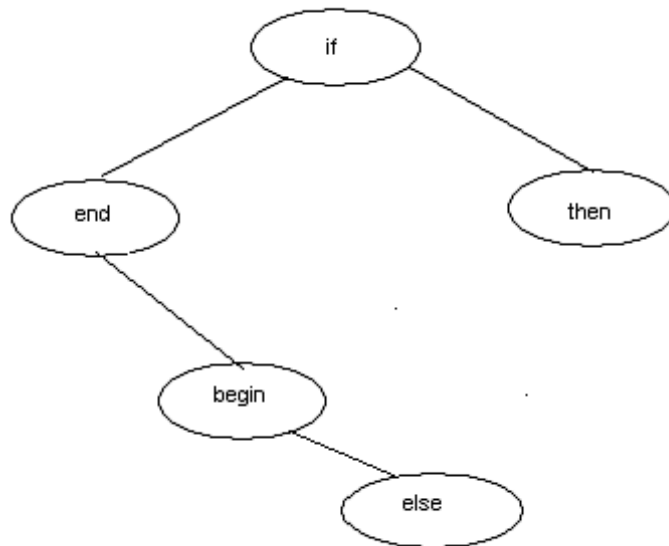


Figure 1:

Write the binary search tree after DELETE of if node. Explain its working

5. (a) What do you mean by forward and backward approach of problem solving in Dynamic Programming?  
(b) What are the differences between Greedy and dynamic programming method of problem solving techniques? [8+8]
6. (a) What are the breadth first spanning trees? Explain.  
(b) Obtain the binary tree form for the following infix expressions.  
i.  $(a + b) / (c * d)$   
ii.  $a + (b + (c + d))$  [8+8]
7. Write a program schema for a LIFO branch and bound search for a Least - cost answer node. [16]
8. What is interpolation? Explain Lagrange interpolation algorithm & Newtonian Interpolation algorithm. [16]

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