D17002041

Registration No: | | | | | | | | | | |

Total Number of Pages : 02 **M.TECH**

M.TECH 1ST SEMESTER REGULAR EXAMINATIONS, DECEMBER 2017
ADVANCED DATA STRUCTURE AND ALGORITHM
Branch: CS, Subject Code:MCSPC1020
Time: 3 Hours
Max Marks : 70
The figures in the right hand margin indicate marks.

PART-A

(2X10=20 MARKS)

1. Answer the following questions .

a) The time complexity of build heap is _____ and heapify is _____ and the time Complexity of heap sort is _____. (Fill up the blanks).
b) T(n)= 9T(n/3)+n, Solve the recurrence using master mathod?
c) What is the basic difference between (0,1) Knapsack problem and Fractional Knapsack problem?
d) What is the difference between devide and conquere method and dynamic programming?
e) What is the disadvantage of greedy algorithm?
f) What is the time Complexity of matix chain multiplication is _____ and the time complexity of strasen's multiplication is _____?
g) What do you mean by trie?
h) What is the advantage of point Quad tree?
i) What is the difference between B tree and B+ tree?
j) State whether the following statements are true or false?
   (i) The worstcase time complexity of AVL tree and binary search tree are same.
   (ii) Graph Isomerphism problem is NP- Complete.

PART-B

(5 X 10=50 MARKS)

Answer any five questions from the following.

2. a) Define balanced binary search tree and its complexity. **5**
   b) Construct binary search tree for the data 8, 10 ,3,2,1,5,4,6, and 11. Insert an element 7 into binary search tree and balance the tree using AVL rotation. **5**

3. a) What is an Ascending Priority Queue with a suitable example? **5**
   b) Explain how to implement this using Binary Heap? Explain the insertion and deletion operation performed on binary heap, with an example. **5**

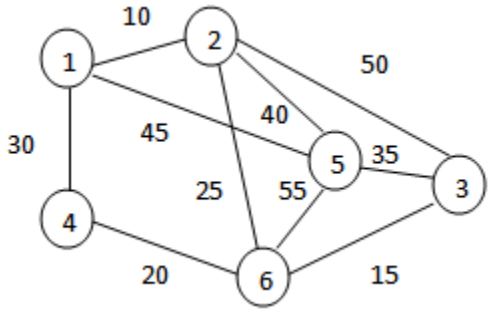
4. a) Write recursive function to find nth Fibonacci number. Show all recursive stacks to find 4th Fibonacci number. **8**
   b) State and explain recursive function. **2**

5. a) Find the prefix and postfix notation for the infix expression, ((A+B)*C-(D-E))$(F+G). Evaluate the obtained postfix expression using Stack, when A=1,B=2,C=1,D=2,E=1,F=1,G=2. **8**

   b) State prefix, postfix and infix notation. **2**

6. a) Define strongly connected graph and strong components. **5**

   b) Find all Strong components for the following graph using Depth First Search method. **5**



7. a) State Cook's theorem? **8**

   b) Prove the Cook's theorem **2**

8. Write Short notes on **5**

   a) Fibonacci heap. **5**

   b) Tv- tree.

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