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

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

P1CSBC04

1st Semester Regular Examination 2016-17
Advanced Data Structure And Algorithm
BRANCH: CSE

Time: 3 Hours

Max Marks: 100

Q.CODE: Y836

Answer Question No.1 which is compulsory and any FOUR from the rest.
The figures in the right hand margin indicate marks.

Q1 Answer the following questions: ***Short answer type*** **(2 x 10)**

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.

Q2 **a)** Discuss heap-Sort algorithm. Do heap-sort with the data given below. 85,76,93,55,57,105,28,115,205,67,85,100,110,125,150,155,70,75,95,160. Also discuss the time complexity of heap-sort. **(10)**

b) What do you mean by binomial heap? Form a binomial heap with the data given below? **(10)**
1,3,14,9,5,7,15,12,11,18.
Also discuss the time complexity of merging, inserting and deleting an element in a binomial heap?

Q3 **a)** What do you mean by leftist heap? What is null-path-length? Discuss the operation of leftist heap briefly? **(10)**

b) What is AVL tree? Discuss L-R, L-L, R-R, R-L rotation briefly? Construct an AVL tree with the given- data-: 55,70,45,105,61,200,90,85,115,117,42,75,88,73,72 **(10)**

Q4 **a)** What is 2-3 tree? What is the advantage of 2-3 tree over normal binary tree? Discuss the time Complexity of inserting, deleting an element in 2-3 tree? **(10)**

b) What is k-d tree? Discuss the different operation of k-d tree briefly? **(10)**

Q5 **a)** Briefly discuss the fractional knapsack algorithm? **(10)**

b) What do you mean by dynamic programming? Discuss the longest common Subsequence problem briefly? **(10)**

Q6 **a)** What is internet Algorithm? Briefly discuss the suffix trie match algorithm? **(10)**

b) State and Prove Cook's theorem? **(10)**

Q7 **a)** Fibonacci heap. **(5x4)**

b) Tv- tree.

c) Numerical Algorithm.

d) Convex-hull problem.

e) 3-SAT problem.