PVP 12

Code: CSCS1T1

I M.Tech-I Semester-Regular Examinations-April 2015

DATA STRUCTURES AND ALGORITHMS
(COMPUTER SCIENCE & ENGINEERING)

Duration: 3 hours Marks: 5x14=70

Answer any FIVE questions. All questions carry equal marks

1 a) Explain different Operations that can be performed on Singly Linked List and Write Algorithm for inserting a new node at a given position. 8 M

b) What are the general rules for running time calculations? 6 M

2 a) Explain Interpolation search with example. 7 M

b) Write an algorithm for quick sort with its time complexity. 7 M

3 a) Given the Inorder and Postorder traversals construct a Binary Tree: 5 M

Inorder: H D B I E A F J C K G L
Postorder: H D I E B J F K L G C A

b) Explain different approaches to represent graphs. 9 M

4 a) What is Hashing? Explain Hash table representation using Hash function. 6 M

b) Explain different Open Addressing Techniques of Collision Resolution with Examples. 8 M

5 a) Construct Heap for the given:44,30,50,22,60,55,77. 4 M

b) Define Priority Queue and Explain its Applications. 6 M

c) Why we need External Sorting? Explain its Model with simple Algorithm. 4 M

6 a) Construct a Binary Tree and Binary Search Tree for the given:
13,3,4,12,14,10,5,1,8,2,7,9 and write the Infix, Prefix and Postfix notations of the constructed tree. 9 M

b) Write Algorithm to Delete a node with two children in a Binary Search Tree. 5 M

7 a) What are the differences between Binary Search Tree and AVL tree? 4 M

b) Construct AVL tree with the given:
50, 25, 10, 5, 7, 3, 30, 20, 8, 15 6 M

c) Explain Single Rotation of AVL tree with Algorithm. 4 M

8 a) Write the properties of red black trees. 4 M

b) Explain the need of B-tree with its Advantages. 4 M

c) Write Insertion and Searching Algorithms of B-tree. 6 M