Code: **CSCS1T1**

**PVP 12**

**I M.Tech-I Semester-Regular Examinations-February 2016**

# DATA STRUCTURES AND ALGORITHMS

## (COMPUTER SCIENCE & ENGINEERING)

Duration: 3 hours Max. Marks: 70

Answer any FIVE questions. All questions carry equal marks

1 a) Explain Operations of Queue using Linked List. 8 M

b) How do we calculate Time Complexity of Searching Algorithms? Explain with Example. 6 M

2 a) Explain Binary Search with example. 6 M

b) Write an algorithm for Merge sort and Explain with Example. 8 M

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

Inorder: D B H E I A F C G

Preorder: A B D E H I C F G

b) Explain Graph Traversing Techniques with Algorithms. 9 M

4 a) Explain different Hash Functions with Examples. 7 M

b) What is Collision? Explain Collision Resolution Techniques with Examples. 7 M

5 a) Explain basic Heap Operations with Example. 4 M

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

c) What is Multiway Merge? Explain with Example. 4 M

6 a) Construct a Binary Tree and Binary Search Tree for the given:
50, 31, 67, 88, 2, 35, 21, 48, 8, 27, 49 and write the Infix, Prefix and Postfix notations of the constructed tree. 9 M

b) Write Algorithm to Insert Element in a Binary Search Tree. 5 M

7 a) Construct AVL tree with the given:
3, 2, 1, 4, 5, 6, 7, 16, 15, 14, 13, 12 5 M

b) Write Algorithm to Search Element in AVL Tree. 5 M

c) State and Prove the Max Height of an AVL tree. 4 M

8 a) Explain Splaying operation of a Splay tree. 5 M

b) Write any 2 advantages and disadvantages of Splay tree. 4 M

c) Explain algorithm for Deletion of an element from B-tree and rebalancing it after deletion. 5 M