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Roll No.....

MCSE/MSE-102**M.E./M.Tech. I Semester**

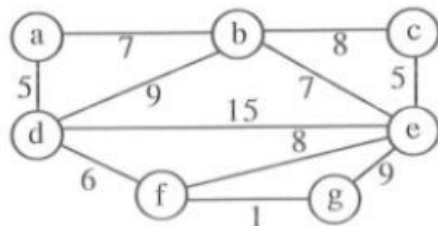
Examination, December 2017

Advanced Data Structure and Algorithm*Time : Three Hours**Maximum Marks : 70**Note:* i) Attempt any five questions.

ii) All questions carry equal marks.

iii) Assume suitable data if missing.

1. a) Explain how time complexity of an algorithm is computed. 7
b) Write an algorithm to search a key k in a $N \times N$ matrix in which each row is sorted in ascending order. What is the time complexity of your algorithm? 7
2. a) Explain insertion and deletion in a circular queue. 7
b) What is priority queue, how is it different from simple queue? 7
3. a) What is binary search tree? Derive an algorithm to search an element in binary search tree? 7
b) Find the Spanning tree using Kruskal's algorithm? 7



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4. a) Construct an AVL tree using the following nodes? 7
70, 80, 90, 10, 5, 40, 20, 50, 30, 60, 100, 110.
b) Explain B-Tree and How is it different from other trees? 7
5. a) Derive an algorithm to evaluate an expression. 7
b) Sort the following elements using Quick Sort? Also, show the intermediate result of Sorting? 7
5, 3, 8, 9, 1, 7, 10, 2, 6, 4
6. a) Write a backtracking algorithm for the sum of subset problem using the state space tree corresponding to the variable tuple size formulation. 7
b) Write an algorithm for insertion and deletion of an element at particular position in a doubly linked list. 7
7. a) Write an algorithm to solve the Knapsack problem with branch and bound. Also, give one example. 7
b) Define Hamilton cycle. Explain with the example how to find a Hamiltonian cycle. 7
8. a) Post order traversal of a given binary search tree, T produces the following sequence and keys. 7
10, 9, 23, 22, 27, 25, 15, 50, 95, 60, 40, 29.
Write sequences for in order and preorder traversal of the tree? 7
b) Sort the following data using heap sort: 7
i) Max Heap
ii) Min Heap
15, 19, 10, 7, 17, 16, 4, 3, 5.

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