AE-817

M.Sc. (Previous)
Term End Examination, 2016-17

COMPUTER SCIENCE

Paper - IV

Data Structure

Time : Three Hours] [*Maximum Marks* : 100
[*Minimum Pass Marks* : 36

Note : Answer **all** questions. All questions carry equal marks.

Unit - I

1. (*a*) Write an algorithm to insert and delete an elment in a queue.

(*b*) Convert the following to post-fix notation :

(x + y) * z – (w/x)

OR

Explain time and space complexity of an algorithm. What are the various asymptotic notations to represent complexity ?

Unit - II

2. Explain the following :

(*a*) Binary Tree

(*b*) Full Binary Tree

(*c*) Complete Binary Tree

(*d*) B-Tree

OR

What is AVL Tree ? Explain insertion and deletion operation in AVL Tree with suitable example.

Unit - III

3. Write algorithm of binary search along with suitable example. Discuss complexity of binary search in best and worst cases.

OR

What are various collision resolution methods ? Explain with suitable examples.

Unit - IV

4. Sort the following list using quick sort and heap sort :

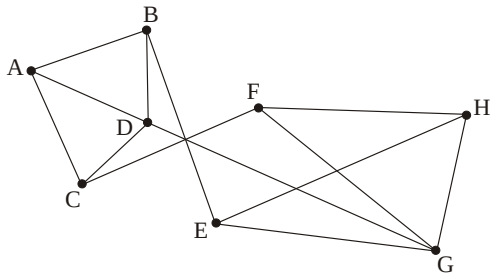
4, 3, 15, 26, 29, 30, 42, 11, 17, 9

OR

Compare among bubble sort, selection sort, radix sort and merge sort.

Unit - V

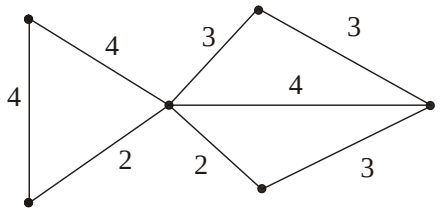
5. (*a*) Write DFS and BFS traversal of the following graph (starting node is A) :



(*b*) How will you represent a graph by adjacency matrix and adjacency list ?

OR

(*c*) Find spanning tree of the following graph using Kruskal algorithm :



(*b*) Write applications of graph.

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