

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 element 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?

(2)

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

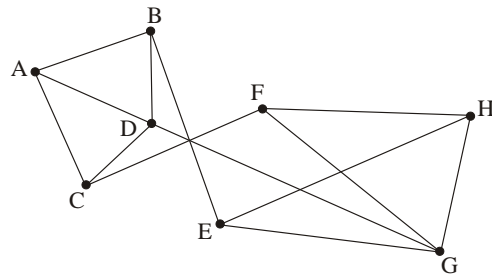
OR

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

(3)

Unit - V

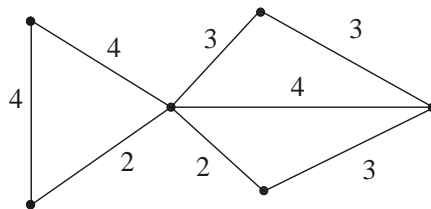
5. (a) Write DFS and BFS traversal of the following graph (starting node is A) :



- (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.
