

MCA (Revised) / BCA (Revised)

Term-End Examination

December, 2018

09633

MCS-021 : DATA AND FILE STRUCTURES

Time : 3 hours

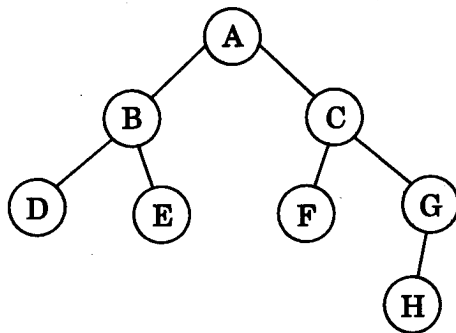
Maximum Marks : 100

(Weightage : 75%)

Note : Question number 1 is compulsory. Attempt any three questions from the rest. All algorithms should be written nearer to 'C' language.

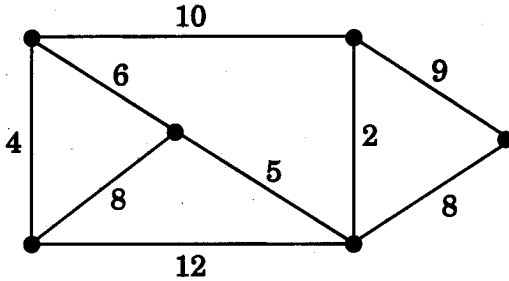
1. (a) Describe big O notation and Ω notation. 10
- (b) Explain the process of converting a tree into a binary tree. 10
- (c) Write an algorithm to implement stack, using array. 10
- (d) What is linear search ? Write linear search algorithm and find its time complexity. 10

2. (a) What is sparse matrix ? Explain 3-tuple representation of a sparse matrix with the help of an example. 10
- (b) Explain Indexed Sequential File Organization. 10
3. (a) Write an algorithm for creation of a *circular queue* and deletion of an element from a *circular queue*. 10
- (b) Traverse the following binary tree in Pre-order and Post-order. 10



4. (a) Explain inserting an element into a heap with the following numbers : 10
- 4, 5, 21, 18, 16, 64, 2

- (b) Find Minimum Cost, Spanning Tree (MCST) of the following graph using Prim's algorithm. Show all the intermediate steps. 10



5. (a) Sort the following set of data using Insertion sort : 10
25, 15, 10, 18, 12, 4, 17
- (b) Write algorithms for the following : 10
- Inserting element in a doubly linked list
 - Deleting element from a doubly linked list
