

Day : Monday
Date : 1/8/2022

S-24138-2022

Time : 10:00 AM-01:00 PM
Max. Marks : 60

N.B.:

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Draw neat labelled diagrams **WHEREVER** necessary.

Q.1 Define Asymptotic notations and explain their significance. (10)

OR

Q.1 Define and discuss algorithms in detail. What are the specifications of algorithms? (10)

Q.2 Describe how to implement stacks using Array and Linked List. (10)

OR

Q.2 What is Doubly Linked List (DLL)? Explain its significance and all types of insertions and deletions in DLL. (10)

Q.3 Define Binary Tree and its properties. Explain with diagram what is skewed binary tree, full binary tree, complete binary tree and perfect binary tree? (10)

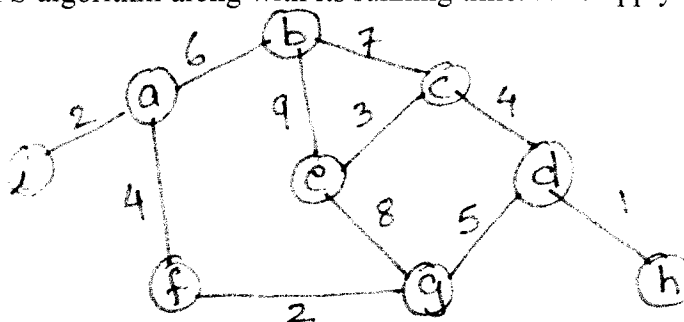
OR

Q.3 Define and explain B tree and its properties. Show the results of inserting 12, 10, 15, 4, 1, 17, 3, 13 and 8 into an initially empty B tree and deleting 12, 13 and 15 where order of the tree m is 3. (10)

Q.4 Define graphs. What are the different representations of graph? Show examples for both directed and undirected graphs. Which representation is better and in which case? Justify your answer. (10)

OR

Q.4 Write BFS algorithm along with its running time. Also apply BFS on the given graph. (10)



Q.5 Explain what is binary search algorithm and how is it efficient than sequential search. Assume suitable example. (10)

OR

Q.5 What is heap data structure? Also explain the procedure of heapify using example. Sort the array using heap sort. Show all intermediate steps clearly. 73, 6, 5, 88, 60, 42, 83, 72, 48, 85. (10)

Q.6 Explain in detail what is indexed sequential file organization? Assume suitable data for file. (10)

OR

Q.6 Explain in detail what is hashed file organization? Assume suitable data for file organization. (10)