

BACHELOR OF TECHNOLOGY (CBCS) (2021-COURSE)
B. Tech. Sem - II Computer Science & Business Systems : WINTER : 2023
SUBJECT : DATA STRUCTURES & ALGORITHMS

Day : Wednesday

Time : 10:00 AM-01:00 PM

Date : 22-11-2023

W-24138-2023

Max. Marks : 60

N.B.:

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.

Q.1 Explain recursive and iterative algorithms in detail with two examples of each. (10)

OR

Q.1 Define asymptotic notations and its significance. (10)

Q.2 Explain in detail Double Linked List (DLL). Also explain all types of insertion and deletions in DLL. (10)

OR

Q.2 Describe in detail how to implement queues using Arrays and Linked List. Also write pseudo code. (10)

Q.3 Create an AVL tree by inserting 45, 36, 76, 23, 89, 115, 98, 39, 41, 56, 69, 48. Show all intermediate tree structures. (10)

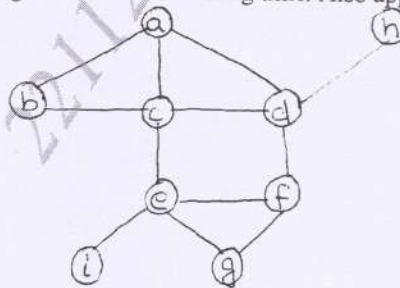
OR

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

Q.4 Describe different representations of graph. Show examples on both directed and undirected graph. (10)

OR

Q.4 Write DFS algorithm and its running time. Also apply on the given graph. (10)



Q.5 Explain any sorting algorithm that uses divide and conquer strategy. Sort the numbers to show all intermediate steps. (10)
70, 50, 30, 10, 20, 60, 40, 90, 80.

OR

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

Q.6 Explain in detail direct file organization. (10)

OR

Q.6 Explain in detail hashed file organization. (10)

* * * *