

BACHELOR OF TECHNOLOGY (CBCS - 2023)
B. Tech. Sem-III Computer Science & Engineering AI & ML : WINTER : 2024
SUBJECT: DATA STRUCTURE

Day : Thursday
Date : 05/12/2024

W-29209-2024

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) Assume suitable data if necessary.

Q.1. Describe about ADT in detail. Explain any one application to stack. (10)

OR

Convert $((A - (B + C)) * D \uparrow (E + F))$ infix expression to postfix form.
Explain the concept in detail.

Q.2 Analyze and write an algorithm to implement queue functions using arrays. (10)

OR

Discuss all types of queue with their advantages and disadvantages.

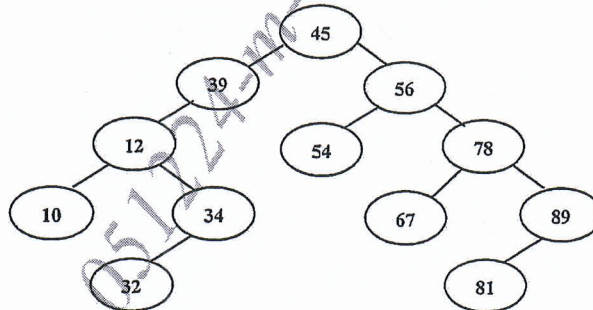
Q.3 What is linked list? Write and explain the algorithm for create and traverse operations in single list with example. (10)

OR

Write algorithm for insert and delete a node from doubly linked list with suitable example.

Q.4 Consider the binary search tree given below: (10)

- i) Find the result of in-order, pre-order and post-order traversals.
- ii) Show the deletion of the root node
- iii) Insert 11, 22, 33, 44, 55, 66 and 77 in the tree



OR

How many rotations are required during construction of an AVL tree if the following elements are added in order given?
35, 50, 40, 25, 30, 60, 78, 20, 28.

Q.5 Explain DFS graph traversal algorithm with example. (10)

OR

Define graph. Explain various operations on graphs.

Q.6 What is searching? Explain linear search algorithm with example. (10)

OR

How does binary search algorithm work?

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