

BACHELOR OF TECHNOLOGY (CBCS - 2023)
B. Tech. Sem-III Computer Science & Engineering AI & ML : SUMMER : 2025
SUBJECT: DATA STRUCTURE

Day : Wednesday
Date : 14/05/2025

S-29209-2025

Time : 02:30 PM-05:30 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 the process of conversion from infix expression to postfix expression using stack. (10)

OR

What are the different types of data structure?

Q.2 Classify the different types of queues. (10)

OR

What is circular queue? Why circular queue is better than standard linear queue?

Q.3 List an algorithm to perform the following operations in a doubly linked list: (10)
i) Insert a node at the end of the list
ii) Delete the last node in the list

OR

Explain the circular linked list in detail.

Q.4 Draw and explain expression tree stepwise for the following expression: (10)
 $a * b / c + e / f * g + k - x * y$

OR

Discuss operations on AVL tree with suitable diagrams.

Q.5 Explain graph application -topological sorting with suitable examples. (10)

OR

Illustrate depth-first search traversal of a graph with suitable examples.

Q.6 How does Hashing in Data Structures Work? (10)

OR

What is searching? Explain binary search algorithm with example.

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