



ST. FRANCIS DE SALES COLLEGE

A FRANSALIAN INSTITUTE OF HIGHER EDUCATION **AUTONOMOUS**

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END SEMESTER EXAMINATION – APRIL/MAY 2026

COMPUTER SCIENCE – II SEMESTER BSC

25BSC24A/C – DATA STRUCTURES

Time: 3 Hours

Max. Marks: 80

Instruction: *Answer should be written completely in English.*

SECTION - A

Answer any **FIVE** questions. Each question carries **TWO** marks.

(5X2=10)

1. What is pattern matching?
2. Define stack.
3. What is an infix expression?
4. Evaluate the postfix expression: $5\ 3\ +\ 8\ 2\ -\ *$.
5. Define circular queue.
6. Define graph.
7. What is a tree in data structure?

SECTION - B

Answer any **SIX** questions. Each question carries **FIVE** marks.

(6X5=30)

8. Define Data Structure. Explain the basic operations performed on data structures.
9. Define an Array. Explain the representation of linear arrays in memory.
10. Evaluate the role of pattern matching algorithms in string processing.
11. Write an algorithm to insert a node in a singly linked list.
12. Evaluate the postfix expression $6\ 2\ 3\ +\ -\ 3\ 8\ 2\ /\ +\ -$ using stack.
13. Design a circular queue and explain its operations.
14. Construct the Binary Search Tree for the following elements **45, 20, 60, 10, 30, 50, 70**.
15. Explain the structure of a Binary Tree with example.

SECTION - C

Answer any **FIVE** questions. Each question carries **EIGHT** marks.

(5X8=40)

16. Explain in detail the classification of Data Structures with example.
17. Explain Bubble Sort algorithm with a suitable example.
18. Write an algorithm to perform the basic string operations with an example.
19. Explain in detail the different types of linked list with examples.
20. Write an algorithm to perform PUSH and POP operations in stack using an array.
21. Explain in detail the different types of queues with examples.
22. Explain different types of rotations in AVL trees with examples.

