



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 (Repeaters)

24BSC24 – 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. Define Data Structure with example.
2. What is an Abstract Data Type (ADT)?
3. What is a Stack? Explain with a suitable example.
4. Define linked list with an example.
5. Define multidimensional array with example.
6. Define Infix expression with example.
7. Define Recursion with example.

SECTION - B

Answer any SIX questions. Each question carries FIVE marks.

(6X5=30)

8. Explain different types of mathematical notations used in analyzing algorithms.
9. Explain the different string operations with example and syntax.
10. Explain in detail the different operation on stack with example.
11. Describe the GetNode() and FreeNode() operations in the context of linked lists.
12. Use **Bubble Sort** to sort the array **6,2,11,7,5**. Show the result after each pass.
13. Write a C Program to implement Towers of Hanoi.
14. Convert the following infix expression into postfix using stack: **(A+B*C)/(D-E)**.
15. Explain all the Basic terminologies of the tree with example of tree structure.

SECTION - C

Answer any FIVE questions. Each question carries EIGHT marks.

(5X8=40)

16. Explain the classification of Data Structures in detail with examples.
17. Explain in detail the different Control Structures used in C.
18. Trace both Insertion Sort and Selection Sort step-by-step for the following array **45, 23, 78, 10, 5, 90**.
19. Define a Linked List and briefly explain the different types of Linked Lists.
20. Explain the different types of queues with suitable examples.
21. Explain tree traversal techniques. Construct a Binary Search Tree (BST) for the following data and write the output of each traversal method (Inorder, Preorder, Postorder): **10, 12, 5, 4, 20, 8, 7, 15 and 13**.
22. What is Hashing? Explain different Hashing Techniques and discuss its applications.

