



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 BCA (F+R)

24BCA23 – 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 an abstract datatype? List any two.
2. List any two applications of linked lists.
3. Define a hash table.
4. Define recursion with example.
5. Define complete binary tree.
6. Differentiate between static & dynamic memory allocation.
7. Define postfix expression with example.

SECTION - B

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

(6X5=30)

8. Explain all asymptotic notations in algorithm with example.
9. Explain the strcat() and strcmp() functions with example program.
10. Write a C program to find the subtraction of two matrices using arrays.
11. Write an algorithm for push() and pop() operations on stack.
12. What is a queue? Explain its basic operations (enqueue and dequeue).
13. Convert the given infix expression $((a+(b*c))+(((d*e)+f)*g))$ to postfix expression using stack.
14. Explain the various methods of choosing a hash function.
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 in detail the classification of data structures with examples.
17. Explain all the string functions in detail with an example program.
18. Write a C program for Matrix Multiplication.
19. Write algorithms to insert a node: 1. At the beginning 2. At the end and 3. At a given position of the Linked List.
20. Explain in detail the different types of queues.
21. Convert the following expression $(10 + 6) * (12 - 4) / (9 \% 5) - 3$ to postfix expression using stack and evaluate the postfix expression using stack.
22. Construct binary search tree for the following example: 50, 38, 10, 65, 72, 44, 55 and perform Inorder, Preorder and Postorder traversal.

