



ST. FRANCIS DE SALES COLLEGE

A FRANSALIAN INSTITUTE OF HIGHER EDUCATION **AUTONOMOUS**

NAAC A GRADE • AFFILIATED TO BANGALORE UNIVERSITY • AICTE APPROVED • 2(F) & 12 (B) RECOGNITION OF UGC • ISO 9001:2015 CERTIFIED
Electronics City P.O., Bengaluru - 560 100, Karnataka, INDIA • (+91) 8088140679 • pro@sfscollege.in • www.sfscollege.in

END SEMESTER EXAMINATION – MAY 2025

COMPUTER SCIENCE – II SEMESTER BSC

24BSC24 A/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. Define data structure with example.
2. What is time complexity?
3. Define linked list with an example.
4. What is a sparse matrix? Give an example.
5. Distinguish between stack and queue.
6. Define prefix notations. Give an example.
7. What is AVL tree?
8. Define a) Directed Graph b) Undirected Graph.

SECTION -B

Answer any SIX questions. Each question carries FIVE marks.

(6X5=30)

9. Give the syntax of switch case with an example program.
10. Describe the operations on data structures with examples.
11. Write a program to perform matrix addition.
12. Explain memory representation of multidimensional arrays with diagram.
13. Explain push and pop operations with example.
14. Define queue. Discuss queue operations in detail.
15. Write a program to sort the numbers using bubble sort.
16. Write an algorithm to add elements in linked list.

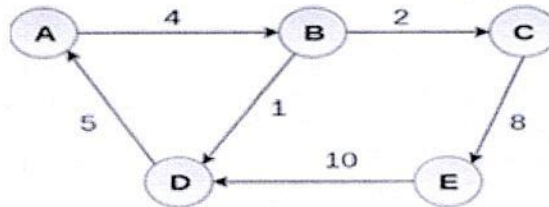


SECTION – C

Answer any FIVE questions. Each question carries EIGHT marks.

(5X8=40)

17. Explain different types of data structure in detail.
18. Compare all types of complexities (Best, Average, Worst) using algorithm.
19. Explain binary search for the following list= {10,21,32,43,54,65,76,87,98}. Element to be searched is 76
20. Represent following graph using adjacency matrix and adjacency list.



21. Construct a binary search tree with the elements {2,5,1,3,9,0,6} and perform in-order, pre-order and post-order traversal.
22. Convert the following infix expression to post-fix expression using stack.
 $[a+(b-c)]*[(d-e)/(f+g-h)]$.

