



II Semester B.C.A./B.C.A. (DS) Degree Examination, June/July - 2025
(SEP Scheme Freshers)

COMPUTER APPLICATIONS

Data Structures Using C

Time : 3 Hours

Maximum Marks : 80

Instructions :

Answer all the Sections.

SECTION - A

I. Answer any Ten questions. Each question carries 2 marks. (10×2=20)

1. Define Data Structures.
2. Define Space and Time Complexity.
3. What is Sparse Matrix? Give an example.
4. Define Sorting.
5. What is Garbage Collection?
6. What is Linked List?
7. Write any two applications of Stack.
8. Define Queue.
9. Convert Infix expression to Prefix and Postfix $(A+B)*C$.
10. Define Tree with an example.
11. Define Cyclic Graph with an example.
12. Define BST.

**SECTION - B**

II. Answer any Six questions. Each question carries 5 marks. (6×5=30)

13. Explain in detail operations on Data Structures.
14. Explain memory representation Linear Array with an example.
15. Sort following numbers using Bubble Sort Algorithm
88, 45, 23, 56, 89, 53, 81, 55, 99.
16. Explain Circular Linked List with a neat diagram.
17. Explain Tower of Hanoi problem with No of disk = 3.
18. What is DQueue explain with a neat diagram.
19. Define Binary Tree. Draw the Binary Tree for the following algebraic expression.
 $[a + (b - c)] * [(d - e) / (f + g - h)]$.
20. Write the DFS Algorithm.

SECTION - C

III. Answer any Three questions. Each question carries 10 marks. (3×10=30)

21. Explain in detail Classification of Data Structures. (10)
 22. a) Write an algorithm for Selection Sort. (5)
b) Write an algorithm to insert a node at the beginning of the linked list. (5)
 23. a) Write an algorithm Evaluation of Postfix expression. (5)
b) Evaluate the following postfix expression.
F: 5 7 5 - * 12 4 * 24 / 6 + + (5)
 24. Write an algorithm, for In-order, Pre-Order and Post-Order Traversals. (10)
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