



**CB – 474**

**II Semester B.C.A. Examination, August/September 2023  
(CBCS) (Repeaters) (2014-15 and Onwards)  
COMPUTER SCIENCE  
BCA203 : Data Structures**

Time : 3 Hours

Max. Marks : 70

***Instruction : Answer all the Sections.***

**SECTION – A**

Answer **any 10** questions.

**(10×2=20)**

1. Define algorithm.
2. What is time complexity ?
3. Write any four string operations.
4. Define array.
5. Define sorting.
6. Define sparse matrix.
7. What are the advantages of linked list over arrays ?
8. Define doubly linked list.
9. What is push operation in stack ?
10. Define recursion.
11. What is undirected graph ?
12. Define binary tree.

**SECTION – B**

Answer **any 5** questions.

**(5×10=50)**

13. a) Explain linear data structures in detail.
- b) Explain mathematical notations and functions.

**5**

**5**

**P.T.O.**



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| 14. a) Explain asymptotic notations in detail.                        | 5  |
| b) Explain control structures.  | 5  |
| 15. a) Explain binary search.   | 5  |
| b) Explain bubble sort with an example.                               | 5  |
| 16. a) Explain circular linked list.                                  | 5  |
| b) Write a C program to find GCD of two numbers using recursion.      | 5  |
| 17. a) Explain queue in detail.                                       | 5  |
| b) Write an algorithm to insert an element to a circular queue.       | 5  |
| 18. a) Explain the array representation of stack.                     | 5  |
| b) Write a C program for Towers of Hanoi problem.                     | 5  |
| 19. a) Write depth first search algorithm to traverse a graph.        | 5  |
| b) Explain adjacency matrix and adjacency list with suitable example. | 5  |
| 20. Explain insertion and deletion operations in Binary search tree.  | 10 |
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