BCA-12

June - Examination 2026
BCA (Part-II) Examination
Data Structure and Algorithms
Paper : BCA-12

[*Time: **3** Hours*] [*Maximum Marks: **70***]

Note :- The question paper is divided into three Sections A, B and C. Write answers as per the given instructions in each section.

Section-A **7×2=14**

(Very Short Answer Type Questions)

Note :- Answer **all** questions. As per the nature of the question delimit your answer in one word, one sentence or maximum up to **30** words. Each question carries **2** marks.

1. (i) Define time complexity of algorithm.
   (ii) What is two-dimensional array?
   (iii) Define stack overflow.
   (iv) What is the use of Recursion?
   (v) What is AVL tree?
   (vi) Define the advantages of divide & conquer strategy.
   (vii) Identify the purpose of sorting.

Section-B **4×7=28**

(Short Answer Type Questions)

Note :- Answer **any four** questions. You have to delimit your each answer maximum up to **200** words. Each question carries **7** marks.

2. Explain the characteristics of an Algorithm.
3. Discuss insertion and deletion operations in Singly Linked Lists.
4. Explain Stack Operations with examples.
5. Describe In-order, Pre-order and Post-order traversal methods in Tree.
6. Explain DFS traversal algorithm in graph.
7. Explain the travelling salesman problem.
8. Discuss quick sort and its complexity.
9. Explain Minimal Spanning Tree (MST) using greedy method.

Section-C

2×14=28

(Long Answer Type Questions)

Note :- Answer **any two** questions. You have to delimit your each answer maximum up to **500** words. Each question carries **14** marks.

10. Explain data structures and its types and identify the advantage of linked list over array.

11. Discuss types of queues and their practical applications with examples.

12. Compare sorting techniques such as bubble, merge, heap and quick sort with examples.

13. Discuss algorithm design, characteristics, complexity analysis and asymptotic notations in detail.
