

**BCA-12**  
**December – Examination 2021**  
**BCA (Part II) Examination**  
**Data Structures and Algorithms**  
**Paper : BCA-12**

*Time : 1½ Hours ]*

*[ Maximum Marks : 70*

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*Note* :- The question paper is divided into two Sections A and B. Write answers as per the given instructions.

**Section-A**

**4×3½=14**

**(Very Short Answer Type Questions)**

*Note* :- Answer any *four* 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 3½ marks.

1. (i) List any *two* advantages of linked list over array.
- (ii) What do you mean by NP-Complete problem?
- (iii) What do you mean by Divide & Conquer strategies? Give an example.
- (iv) Write any *two* applications of the graph.
- (v) State Knapsack problem.
- (vi) Give an example of a Binary Search Tree.
- (vii) What is an Algorithm?
- (viii) What is the linear data structure? Give an example.

**Section-B**

**4×14=56**

**(Short Answer Type Questions)**

**Note** :- Answer any *four* questions. Each answer should not exceed **200** words. Each question carries 14 marks.

2. Write an algorithm to sort 44, 30, 50, 22, 60, 55, 77 using bubble sort algorithm.
3. Write an algorithm to find the Fibonacci sequence of Nth members. Also explain the same algorithm with an example.
4. What is Asymptotic notation? Explain in brief.
5. What is Stack? Describe the various operations on stack with suitable examples.
6. Explain Linear search with the help of suitable examples.
7. Write a short note on the Circular linked list.
8. Construct a tree for given inorder and preorder traversal of the tree.  
Inorder : E A C K F H D B G  
Preorder : F A E K C D H G B
9. Explain Dijkstra's algorithm to find the shortest path and explain.