ASSIGNMENT QUESTION 2024-25

BCA Part – III

DATA STRUCTURE

Time : 3 Hrs

Max.Marks : 50 Min.Marks :20

Note : Section 'A', containing 10 very short-answer-type questions, is compulsory. Section 'B' consists of short answer type questions and Section 'C' consists of long answer type questions. Section 'A' has to be solved first.

Section - 'A'

Answer the following very short-answer-type questions in one or two sentences :

1. Define Data Structure.
2. What is meant by time-space tradeoff in algorithms?
3. Differentiate between static and dynamic arrays.
4. Define a pointer and mention its uses.
5. What is a linked list?
6. What is recursion? Provide an example.
7. What is meant by AVL?
8. What is a binary tree?
9. Define bubble sort.
10. What is linear search?

Section - 'B'

Answer the following short-answer-type questions with word limit 150-200

(3× 5=15)

Q.1 1. Discuss the concept of algorithm complexity with an example.

OR

Explain basic data structure operations.

Q.2 What is a record structure in data organization? Provide an example.

OR

Explain insertion of a linked list.

Q.3 Describe the process of insertion and deletion in a linked list.

OR

Explain how stacks are represented using arrays.

Q.4 Describe the process of traversing a binary tree using the in-order traversal method.

OR

How are binary trees represented in memory?

Q5 Explain the quick sort algorithm.

OR

How does binary search differ from linear search?

Section -'C'

Answer the following long-answer-type questions with word limit 300-350

(5x5=25)

Q.1 Discuss the various types of algorithmic notation used for describing algorithms.

OR

Differentiate between linear and non-linear data structure.

Q.2 Explain in detail the concept of dynamic arrays and their advantages over static arrays.

OR

Explain pointer array with the help of example

Q3 Describe in detail the steps involved in traversing a linked list.

OR

Explain the concept of queues and their applications in data structure.

Q4 What are binary search trees (BST)? Explain the process of insertion and deletion in BST.

OR

Describe the process of deleting a node in a binary search tree with an example.

Q5 Explain the algorithm of selection sort with help of example.

OR

Explain how Binary Search works with an example.