

Roll No.

97674

BCA 3 years 4th Semester
Examination – May - 2025

DATA STRUCTURE - II

Paper : BCA-207

Time : Three hours]

[Maximum Marks : 80

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : There shall be 9 questions. Question Number 1 will be compulsory and in addition to the compulsory question, students have to attempt four more questions selecting one from each Unit. All questions shall carry equal marks.

1. (a) What is General Tree ? 8 × 2 = 16
(b) What is AVL Tree ?

97674-10500-(P-4)(Q-9)(25)

P. T. O.

5. What is a graph in the context of data structures ?
Describe how Dijkstra's algorithm is used to compute the shortest path between nodes in a graph. Illustrate the algorithm with an example. 16

UNIT - III

6. What are the commonly used algorithms for sorting and searching in data structures ? Explain the principles and procedures of Quick Sort, Merge Sort, and Radix Sort, including examples for each. 16
7. What is binary search in data structures ? Describe its working mechanism step by step. In which scenarios is binary search preferred over linear search ? Explain. 16

UNIT - IV

8. What is a file in the context of data storage. What are the different types of files used in computing ? Describe any three file types with appropriate examples. 16

97674-10500-(P-4)(Q-9)(25) (3)

P. T. O.

- (c) What is Topological sorting ?
(d) What is Linear Search ?
(e) What is Complexity ?
(f) What is Sequential Tree ?
(g) What is Fixed Length records ?
(h) What is Heap Sort ?

UNIT - I

2. What is a tree in data structures ? How are searching, insertion, and deletion operations performed in a BST ? Support your explanation with an example. 16
3. What is a B+ Tree in data structures ? Describe how searching, insertion, and deletion operations are performed in a B+ Tree. Explain with an appropriate example. 16

UNIT - II

4. Define a graph in the context of data structures. How is Warshall's algorithm applied to find the shortest paths between nodes ? Illustrate the process with an example. 16

97674-10500-(P-4)(Q-9)(25) (2)

9. (a) What is Hashing and what are its purpose in Data Structures ? Explain the commonly used hashing functions. 12
- (b) Describe any collision resolution technique with a suitable example. 4