A–1301

Total Pages : 3 **Roll No. .....**

BCA(N)–202

(Data Structure and Programm Methodology)

3rd Semester Examination, Session December 2024

Time : 2:00 Hrs. Max. Marks : 70

Note* :–** This paper is of Seventy (70) marks divided into Two (02) Sections 'A' and 'B'. Attempt the questions contained in these Sections according to the detailed instructions given therein. ***Candidates should limit their answers to the questions on the given answer sheet. No additional (B) answer sheet will be issued.

Section–A

(Long Answer Type Questions) 2×19=38

***Note* :–** Section 'A' contains Five (05) Long-answer type questions of Nineteen (19) marks each. Learners are required to answer any *two* (02) questions only.

1. What is a Data Structure ? Discuss the different types of Data Structures with examples.

2. Explain the concept of asymptotic notations in algorithm analysis. Discuss their significance in determining the efficiency of an algorithm.

3. Explain the concept of a stack. Discuss its operations along with their time complexities.

4. Explain the structure of a linked list. Discuss the different types of linked lists with examples.

5. What do you mean by Sorting ? Mention the different type of sorting, give some examples and explain any *one* type of sorting in detail.

Section–B

(Short Answer Type Questions) 4×8=32

***Note* :–** Section 'B' contains Eight (08) Short-answer type questions of Eight (08) marks each. Learners are required to answer any *four* (04) questions only.

1. Explain the key characteristics of Abstract Data Types.

2. Explain the trade-off between time and space complexity with an example.

3. Explain the difference between Linear Search and Binary Search.

4. Distinguish Between Depth First Search and Breadth First Search.

5. Explain the different types of graphs with examples.

6. What is a binary tree ? Discuss its structure.

7. Explain the structure and properties of a B-Tree.

8. Explain the various stages of the software development life cycle (SDLC).

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