A-0844

Total Pages : 4 **Roll No. ----------**

BCA-06

Data Structure Through C Language

Bachelor of Computer Application (BCA)

2nd Semester Examination 2024(Dec.)

Time: 2:00 hrs Max. Marks: 70

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

P.T.O.

Section-A (Long-Answer-Type Questions)

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.

[2x19=38]

Q.1. Define a data structure. Discuss the memory representation and address translation functions for both one-dimensional and two-dimensional arrays with suitable examples.

Q.2. Explain the concepts of time complexity and space complexity in detail with examples. Discuss how complexity affects the performance of an algorithm, and provide examples to demonstrate the difference between O (1), O (n), and O (n^2) complexities.

Q.3. Discuss the time complexity of searching, insertion operation of a Binary Search Tree Also provide examples to demonstrate the process.

Q.4. Explain its representation using both array and linked list structures. Discuss at least three practical applications of stacks, such as expression evaluation, recursion, and backtracking, with examples.

Q.5. Define a queue and explain its operations (enqueue and dequeue) in detail. Compare the array-based and linked list-based implementations of queues.

Section-B (Short-Answer-Type Questions)

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.

[4x8=32]

Q.1. Explain circular queues and their advantages with an example.

Q.2. What is a binary tree? Explain.

Q.3. Discuss the differences between postfix and prefix notations. Explain with help of example.

Q.4. What is a Binary Search Tree (BST)? Explain.

Q.5. What are graphs? Explain.

Q.6. Explain the Depth First Search (DFS) traversal techniques.

P.T.O.

Q.7. Discuss the insertion operations on a singly linked list. Explain with help of examples.

Q.8. What is B Tree? Explain its uses.

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