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| **Program:** | S.Y.B.Sc CS | **Semester:** | III | **Program Code:** | UGCS02 |
| **Course:** | Data Structures | | | **Course Code:** | NUCS303 |

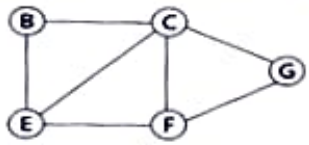
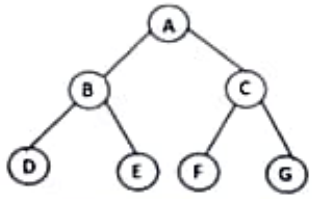
**Duration:** 1 Hour **Examination Pattern:** NEP-Autonomous-External **Max. Marks:** 30

**Instructions:**

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Draw neat diagrams wherever necessary.
4. CO (Course Outcome), KL (Knowledge Level).

**Examination:**

**REGULAR**

| Q. 1 | | **Attempt any TWO of the following.** | [10] | CO's | KL's |
|---|---|---|---|---|---|
| | (a) | Define data structure and classify its types. | | CO1 | L1,L2 |
| | (b) | Demonstrate how to perform a deletion at the end of a doubly linked list using an example with at least four nodes. | | CO2 | L3 |
| | (c) | Design an algorithm or write pseudocode to perform Push and Pop operations in a stack. | | CO2 | L6 |
| | (d) | Explain the concept of a Dequeue with an example. | | CO2 | L2 |
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| **Q. 2** | | **Attempt any TWO of the following.** | [10] | CO's | KL's |
| | (a) | Apply depth-first search (DFS) traversal on the given graph.   | | CO4 | L3 |
| | (b) | Define collision in hashing. Explain how separate chaining helps in resolving collisions in hashing. | | CO4 | L1,L2 |
| | (c) | Construct binary search tree for following elements: 45, 15, 79, 90, 10, 55, 12, 20, 50 | | CO3 | L6 |
| | (d) | Define and describe priority queue with an example. | | CO4 | L1,L2 |
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| **Q. 3** | | **Attempt any TWO of the following.** | [10] | CO's | KL's |
| | (a) | Differentiate between Linear Data Structure and Non-linear Data Structure. | | CO1 | L4 |
| | (b) | Convert the given prefix expression *+AB–CD into its equivalent postfix expression using stack operations. | | CO2 | L3 |
| | (c) | Define tree traversal. Apply in-order, pre-order and post-order traversals on the given tree.   | | CO3 | L1,L3 |
| | (d) | Explain graph representation using adjacency matrix and adjacency list with suitable example. | | CO4 | L2 |

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