

B.C.A Semester - 2 (NEP-2020) Examination**MARCH/APRIL-2026****Data Structure using C (Theory) (Major-3)****Time: 2:00 Hours****Marks: 50****Instructions:**

1. All questions are compulsory.
 2. Figures to the right indicate marks.
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Que. 1 Attempt following questions. (Attempt any Two) (10)

- 1) What is searching? Explain binary search with an example.
- 2) What is Pointer? Explain pointer arithmetic with an example.
- 3) What is sorting? Explain Bubble Sort with an example.
- 4) Explain types of Data Structures in detail.

Que. 2 Attempt following questions. (Attempt any Two) (10)

- 1) What is Stack? Explain Applications of Stack in detail.
- 2) Explain reverse polish expression and their complication in detail.
- 3) Explain Circular Queue in detail.
- 4) What is Queue? Explain Applications of Queue in detail.

Que. 3 Attempt following questions. (Attempt any Two) (10)

- 1) What is linkedlist? Explain applications of linkedlist in detail.
- 2) What is Linked List? Write an algorithm for push() and pop() operation on Dynamic Stack.
- 3) Explain Dynamic Memory allocation functions in detail.
- 4) Write an operation for insert_first, insert_last node in singly linked list.

Que. 4 Attempt following questions. (Attempt any Two) (10)

- 1) Explain Tree Traversal techniques in detail.
- 2) Explain the advantages and applications of tree data structures.
- 3) Write short note on Spanning Trees.
- 4) Explain Depth First Search (DFS) algorithm with an example.

Que. 5 Attempt following questions. (Attempt any Two) (10)

- 1) Explain internal and external fragmentation in disk allocation.
- 2) Explain the architecture of MS-DOS FAT file system.
- 3) Explain directory operations in a tree-structured directory system.
- 4) Explain file system services in detail.
