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Total No. of Pages :02

Total No. of Questions : 07

B.Sc. (G&WD/IT)/ BCA(Sem.–3)

DATA STRUCTURES

Subject Code :UGCA1915

M.Code : 78181

Date of Examination : 08-12-2025

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY** consisting of **TEN** questions carrying **TWO** marks each.
2. **SECTION-B** contains **SIX** questions carrying **TEN** marks each and students have to attempt any **FOUR** questions.

SECTION-A

1. Write briefly :

- a. Define an algorithm. Give one example.
- b. What is the difference between static and dynamic memory allocation?
- c. Define recursion with a simple example.
- d. Differentiate between a one-dimensional and a two-dimensional array.
- e. What is a circular queue?
- f. Define stack. List any two applications.
- g. What is a doubly linked list?
- h. Differentiate between binary tree and binary search tree.
- i. What is a hash function?
- j. Write one difference between DFS and BFS in graph traversal.

SECTION - B

2. Write and explain an algorithm to find the largest element in an array and implement it using a program.
3. Implement a stack using an array and demonstrate push and pop operations.
4. Write a program to implement a circular queue using an array and perform insertion and deletion operations.
5. Write a program to insert a node at the beginning and end of a singly linked list and display the list.
6. Explain quick sort with algorithm and trace the sorting of the array [35, 15, 25, 10, 50].
7. Explain collision resolution techniques in hashing with examples.

NOTE : Disclosure of Identity by writing Mobile No. or Marking of passing request on any paper of Answer Sheet will lead to UMC against the Student.