Roll No. ....

Subject Code—2050

PGDCA EXAMINATION

(Second Semester)

DATA STRUCTURES AND ALGORITHMS

MS-06

Time : 3 Hours   *Maximum Marks :* 100

Note : Attempt any *Five* questions. All questions carry equal marks.

1. Distinguish between the following :   **10+10**

    (a) Primitive and Composite Data Structures

    (b) Linear and Non-Linear Data Structures.

2. (a) Define a Binary Tree. a strictly Binary Tree and a complete Binary Tree. How will a binary tree be created from the following inputs :

    10, 15, 12, 7, 8. 18. 6, 20.   **10**

(3-01–6-09)   P.T.O.

(b) What is hash function ? Explain any *three* hashing functions. **10**

3. (a) Explain array structure of 1-D and 2-D arrays and data access methods for them. **10**

(b) What do you mean by tree traversal ? Write an algorithm for inorder tree traversal. **10**

4. (a) Compare the efficiency of data structures implemented with linear list and linked list. **10**

(b) Write a short note on dynamic storage management. **10**

5. (a) What is doubly linked list ? Write algorithms for insertion and deletion operations on it. **10**

(b) What is Stack ? Write algorithms for push and pop operations. **10**

6. (a) What is threaded binary tree ? Discuss the applications of threaded binary tree.

    10

   (b) What is Dequeue ? Discuss the possible operations that can be performed on it. **10**

7. Write the algorithms for the following and also compute their complexity :

   (a) Insertion Sort   **10**

   (b) Merge Sort.   **10**

8. (a) What is Graph ? What are the applications of graph ?   **10**

   (b) Compare DFS and BFS. Also give suitable examples for them.   **10**