Roll No. | | | | | | | | | | | | | **Total No. of Pages: 02**

Total No. of Questions: 09

M.Sc. (IT) / Post-Graduate Diploma in Computer Applications (Sem. – 2)

DATA STRUCTURES

Subject Code: PGCA-1913

M Code: 77842

Date of Examination : 21-12-2022

Time: 3 Hrs. **Max. Marks: 70**

INSTRUCTIONS TO CANDIDATES:

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION - B & C have FOUR questions each, carrying TEN marks each.**
3. **Attempt any FIVE questions from SECTION B & C, selecting atleast TWO questions from each of these SECTIONS B & C.**

SECTION-A

1. Write briefly:

   a) What are the fundamental principle of recursion? Explain.

   b) What do you understand by polish notation. Explain.

   c) What do the terms LIFO means. Explain.

   d) Give an example that shows how a stack is used by a computer system.

   e) How Graph is represented?

   f) What is a heap?

   g) What is a circular queue?

   h) What is degree of a tree?

   i) Is there a header node in a circular link list?

   j) How a tree is represented?

SECTION-B

2. Show how to implement a stack efficiently by using a link list as a data structure.

3. What is a QUEUE? Write an algorithm to insert and delete elements in a QUEUE.

4. What are the various binary tree traversal techniques? Discuss with example.

5. What is a threaded binary tree? What are the possible operation on that?Explain.

SECTION-C

6. Explain the following with example:

   a) Degree of a Graph

   b) Null Graph

   c) Weighted graph

7. Explain the following:

   a) Depth first search

   b) Breadth first search

8. Suppose a sequence of numbers is given like: 1,5,6,7,9,22,10,55,45

   How this numbers will be sorted in

   a) Insertion Sorting

   b) Bubble sorting

9. Explain the Kruskal's Algorithm for graph