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MCS-208

**POST GRADUATE DIPLOMA IN
COMPUTER APPLICATIONS
(PGDCA-NEW)**

Term-End Examination

June, 2023

**MCS-208 : DATA STRUCTURES AND
ALGORITHMS**

Time : 3 Hours

Maximum Marks : 100

Weightage : 70%

Note : *Question No. 1 is compulsory. Attempt any **three** questions from the rest. All algorithms should be written nearer to 'C' language.*

1. (a) Explain various asymptotic notations for analysis of algorithms. 10
- (b) What are structures ? Write an algorithm for addition of two matrices. 10
- (c) What is Linear Search ? Write an algorithm for it. 10

P. T. O.

(d) Convert the following expression to postfix :

10

$$(a - b)(c + d)$$

2. (a) What is a queue ? Write an algorithm for implementation of a queue. 10

(b) What is Row Major Representation ? How does it differ from Column Major Representation ? 10

3. (a) What are Doubly Linked Lists ? Write an algorithm for implementation of a Doubly Linked List. 10

(b) What is a Tree ? Write an algorithm for implementation of a Binary Tree. 10

4. (a) Write Kruskal's algorithm. 10

(b) What is Depth First Search ? How does it differ from Breadth First Search ? 10

5. (a) Write an algorithm for Bubble Sort. Also, write its complexity. 10

(b) Write a short note on Binary Search Trees.

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