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MCS-208

POST GRADUATE DIPLOMA IN COMPUTER APPLICATIONS (PGDCA–NEW)

Term-End Examination

December, 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) Write the operations that are performed on queues. Write an algorithm to delete an element from the queue. 10

   (b) What is a Binary Tree ? Write an algorithm to traverse a Binary tree in post-order. 10

(c) What is Linear Search ? Write an algorithm for it. 10

(d) Convert the following expression to postfix : 10

a + (b * c + d)/e

2. (a) Explain the process of implementing two stacks in a single dimensional array. 10

(b) What is meant by worst case time complexity and best case time complexity ? Explain with an example. 10

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

(b) What are the differences between a tree and a binary tree ? Explain the process of converting a tree into a binary tree. 10

4. (a) What is a Binary Search Tree ? How does it differ from a Binary Tree ? 10

(b) Write Kruskal's algorithm to create minimum cost spanning tree. 10

5. (a) Write an algorithm for implementation of Bubble sort. 10

(b) Write all pairs shortest paths algorithm. 10