21CSC1C1L

Sl. No.

M.Sc. I Semester Degree Examination, April/May - 2024
COMPUTER SCIENCE
Data Structures and Algorithms
(NEP)

Time : 3 Hours   Maximum Marks : 70

Note : *Answer **any five** of the following questions with question No. **1 (Q.1)** is **Compulsory**. Each question carries **equal** marks.*

1.	(a)	Explain the Analysis of an Algorithm.	**7**
	(b)	Differentiate between linear and non-linear data structure.	**7**
2.	(a)	Briefly explain the different ways to representation of Sparse Matrix.	**7**
	(b)	Write a pseudo code to implement circular queue.	**7**
3.	(a)	Construct the binary tree from given pre-order and in-order sequence. Pre-order : 1, 2, 4, 8, 9, 10, 11, 5, 3, 6, 7.	**7**
		In-order : 8, 4, 10, 9, 11, 2, 5, 1, 6, 3, 7.	
	(b)	Convert the given infix expression to prefix.	**7**

$$K + L - M * N + (O \wedge P) * W / U / V * T + Q.$$

4.	(a)	Write an algorithm and pseudo code for linear search.	**7**
	(b)	Differentiate between sequential search and binary search.	**7**
5.	(a)	Explain the types of collision resolution techniques in hashing.	**7**
	(b)	Explain hashing technique with suitable example.	**7**
6.	(a)	How doubly linked list is better than singly linked list.	**7**
	(b)	Define Threaded binary tree. Explain with suitable example.	**7**
7.	(a)	Explain merge sort with a suitable example.	**7**
	(b)	Compare hashing and indexing in detail.	**7**

8. Write short notes on the following.

    (a)   Array Representation   **5**

    (b)   Tower of Hanoi   **5**

    (c)   Quick Sort   **4**

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