



School of Computer Science Engineering and Information Systems

Fall Semester 2024-2025

Continuous Assessment Test – I

Programme Name & Branch : MCA

Course Name & code: PMCA501L Data Structures and Algorithms

Class Number (s): VL2024250103225, VL2024250103124, VL2024250103187

Faculty Name (s): Dr.Seetha.R, Dr. Raghavan.R, Dr.E.Vijayan

Exam Duration: 90 Min.

Maximum Marks: 50

General instruction(s): ANSWER ALL THE QUESTIONS

Q.No.	Question	Max Marks
1.	Write a pseudo code to (i) create a singly circular linked list (3) (ii) count the number of nodes in it (3) (iii) delete the first node (4)	10
2.	Convert the infix expression $A^{(B-C)} * D / (E - (F + G * H))$ into prefix and evaluate it using the following values: A=6, B=7, C=5, D=8, E=14, F=4, G=2, H=3.	10
3.	Write a pseudo code for the following. Find the majority element in the array. A majority element in an array A [] of size n is an element that appears more than n/2 times. Examples : Input : A[]={3, 4, 2, 4, 2, 4, 4} Output : 4 Explanation: The frequency of 4 is greater than the half of the size of the array size. Input : A[] = {3, 3, 4, 2, 4, 4, 2, 4} Output : No Majority Element Explanation: There is no element whose frequency is greater than the half of the size of the array size.	10
4.	a. Using stack operations write a pseudocode to check a string given as an input is palindrome or not. (6) b. Why is it necessary to convert an infix expression into postfix/prefix (4)	10
5.	What are the limitations of linear queue? Propose a data structure to overcome it and write a pseudo code for its operations.	10