VIT
Vellore Institute of Technology

School of Computer Science and Engineering

Winter Semester 2022-2023

Continuous Assessment Test – 2

SLOT: A1 + TA1

Programme Name & Branch: B.Tech – CSE (BCI, BCE, BCT, BDS, BCB)

Course Name & code: Data Structures and Algorithms – BCSE202L

Class Number (s): VL2022230505842, 6331, 5847, 5851, 5837, 6304, 5855, 5849, 5840

Faculty Name (s): Joshva Devadas T, Priyanka N, Sayan Sikdar, Naveenkumar J, Akash Sinha, Kalaivani K, Ganesh Shamrao Khekare, Sunil Kumar PV, S M Farooq.

Exam Duration: 90 Min. **Maximum Marks: 50**

General instruction(s):

All Questions carry Equal Marks.

Q.No.	Question	Max Marks
Q1.	a) You are given a Singly Linked list below. **Head → A → B → A → B → A → B → NULL** Write the procedure to perform an alternating split of the given singly linked list. The expected output after splitting the singly linked list should result in two singly linked lists each containing only similar characters. **(4 Marks)** b) Write a procedure to check if two circular linked lists are identical. What will be the time complexity of this procedure. Illustrate the working of the procedure using the given circular linked list. **List 1: 1 -> 2 -> 3 -> 1** **List 2: 1 -> 2 -> 3 -> 1** **(6 Marks)**	10
2.	Suppose you are given an array of strings that need to be sorted in lexicographic order (i.e., dictionary order). How can you modify the quicksort algorithm to handle this requirement? Illustrate the working of your modified quicksort algorithm on the following array of names. names = ["Smith", "Johnson", "Williams", "Brown", "Jones", "Garcia", "Miller", "Davis"]	10
3.	a) Construct the Binary tree from given Traversals. **(4 Marks)** Inorder Traversal : { 4, 2, 1, 7, 5, 8, 3, 6 } Postorder Traversal: { 4, 2, 7, 8, 5, 6, 3, 1 } b) Build an expression tree from the given expression:	10