VIT
Vellore Institute of Technology

School of Computer Science and Engineering

Continuous Assessment Test – II

Fall Semester 2022-2023 **SLOT: F2+TF2**

Programme Name & Branch: BCB, BCE, BCI, BCT, BDS, BKT

Course Name & code: Data Structures and Algorithms - BCSE202L

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

Open Book/ Notebook Exam

Answer ALL Questions

Q.No.	Questions	Max Mark
1	Given a singly linked list, rearrange the list that all odd positions are together followed by even positions. Write a code and analyze that the code should run O(n) time complexity and O(1) space complexity.	10

Input	Output
1->2->3->4->5->6->NULL	1->3->5->2->4->6->NULL
2->5>-8->11->9->3->6->19->NULL	2->8->9->6->5->11->3->19->NULL

2	a)Construct the expression tree for the following expression, and state the step-by-step procedure. 8 7 1 ^ * 6 - 5 3 * 1 / + 5 6 * + 4 –	6
	b) Write the pseudocode to display the leaf nodes of a binary tree.	4
3	a) Write the pseudo code for finding min and max element in a Binary search tree.	3
	b) Construct a Binary search tree with the following: Insert(G), Insert(T), Insert(K), Insert(D), Insert(B), Insert(A), Insert(C), Delete(A), Delete(K), Delete(G), Insert(G), Insert(A), Insert(P), Insert(K), Insert(R), Insert(S) For the final Binary search tree write the following i) Depth and height of the tree ii) All the tree traversal results.	7
4	Construct a AVL tree with the following elements in step-by-step procedure: Insert: 35, 25, 38, 2, 3, 4, 28, 30, 39, 37, 40, 33, 45,50 Delete: 33, 25, 35, 40, 30 Insert: 1, 5, 30,40 What is the final height of the tree?	10
5	Arrange the given elements in decreasing order by constructing a heap with the minimum element at the root with top-down and bottom-up approaches. A, B, C, D, E, F, G, H, T, Z, X, W, Q	5+5