Vellore Institute of Technology
(Deemed to be University under section 3 of UGC Act, 1956)

SCHOOL OF COMPUTER SCIENCE AND ENGINEERING
CONTINUOUS ASSESSMENT TEST - II
FALL SEMESTER 2024-2025

SLOT: B2+TB2

(i) Array is better over Linked list for:

Sl. No.	Scenario / Operation	(what happens for) Array	(what happens for) Linked List

(ii) Linked list is better over array for:

Sl. No.	Scenario / Operation	Linked list	Array

b. Consider the following code snippet where x may be a data value in a SLL).

```
struct node * q = head; // q stores the address of head of a singly L.L
while (q != null && q → data !=x)
        { q = q → next;
        }
return q;
```

Question: If (a) q==null
(b) q != null,
what do you conclude? (2 marks)

3.	Insert the following Roman numerals into a binary search tree. **X, XXI, V, VI, III, IX, L, XX, XXV, XI, XV, XIV, IV, XVI, XIII, XL, LX** From the above-created BST, remove the root node. Illustrate the resultant tree. (The general convention is that V is 5, X is 10, and L is 50).	10	4	3
4.	a) Given the following preorder traversal of the binary search tree, create the tree: 45 20 12 8 10 9 32 24 40 89 78 70 76 97 93 90 95 Is it possible to construct the binary tree (not binary search tree) from preorder and postorder traversals? Justify with suitable example(s).	6	4	4
	b) Draw the expression tree for the given expression: ***((x + y) + z * (a + b) + c) * (e / h)*** Perform post-order traversal of the tree.	4		
5.	Demonstrate what happens when you insert the following sequence of numbers into an AVL tree: 50, 68, 95, 72, 87, 36, 23, 10, 25, 32, 27, 90. The balance factor for every node must be calculated. After every rotation, the new tree must be shown. In the resultant tree, delete node 87, followed by 95.	10	5	3