



# VIT

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

REG.NO.:

SLOT: E2+TE2

**SCHOOL OF COMPUTER SCIENCE AND ENGINEERING  
CONTINUOUS ASSESSMENT TEST - II  
FALL SEMESTER 2025-2026**

Programme Name & Branch : B.Tech. Computer Science and Engineering  
 Course Code and Course Name : BCSE202L – Data Structures and Algorithms  
 Faculty Name(s) : Common to All  
 Class Number(s) : Common to All  
 Date of Examination : 9/10/2025  
 Exam Duration : 90 minutes Maximum Marks: 50

**General instruction(s):**

- Answer All Questions
- M - Max mark; CO – Course Outcome; BL – Blooms Taxonomy Level (1 - Remember, 2 - Understand, 3 - Apply, 4 - Analyse, 5 - Evaluate, 6 - Create)
- Course Outcomes:  
 CO2: Articulate linear, non-linear data structures and legal operations permitted on them.  
 CO3: Identify and apply suitable algorithms for searching and sorting.  
 CO4: Discover various tree and graph traversals.  
 CO5: Explicate hashing, heaps and AVL trees and realize their applications.

Q. No	Question	M	CO	BL
1.	a) A company maintains two separate sorted linked lists of employee IDs: <ul style="list-style-type: none"> <li>• Linked List A stores the IDs of employees working in the Head Office.</li> <li>• Linked List B stores the IDs of employees working in the Branch Office.</li> </ul> Both linked lists are already sorted in ascending order. The management wants to combine these two linked lists into a single sorted linked list to create a consolidated employee directory. Write pseudocode to achieve this task.	6	2	2
	b) A hospital maintains a singly linked list of patient IDs in the order they were admitted. Each node contains: <ul style="list-style-type: none"> <li>• patient_id (integer)</li> <li>• next (pointer to the next patient record)</li> </ul> The hospital staff receives a query with a specific patient ID. They need to check if this patient is present in the records by traversing through the linked list starting from the first admitted patient. Write pseudocode to process the query using the patient record linked list.	4		
2.	You are given the following list of product IDs stored in a supermarket database: 45, 12, 78, 34, 89, 23, 56, 10 The manager wants these product IDs to be arranged in ascending order for easy lookup. Using the Quick Sort algorithm, and always choosing the last element as the pivot during each partition, sort the given list of product IDs. Clearly show the step-by-step partitioning process, indicate how the list is divided at each recursive step.	10	3	3

