



VIT

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

REG.NO. [REDACTED]

SCHOOL OF COMPUTER SCIENCE ENGINEERING AND INFORMATION SYSTEMS CONTINUOUS ASSESSMENT TEST - I FALL SEMESTER 2025-2026

SLOT: B1+TB1

Programme Name & Branch : M.Tech Integrated Software Engineering
Course Code and Course Name : ISWE102L – Data Structures and Algorithms
Faculty Name(s) : Dr.P C Kishoreraja, Dr.Raghavan.R, Dr.Thanga Mariappan L,
Dr.Yogaraja C A, Dr.Suganya D
Class Number(s) : VL2025260102669, VL2025260102658, VL2025260102676,
VL2025260102684, VL2025260102666, VL2025260102668
Date of Examination : 18.08.25
Exam Duration : 90 minutes
General instruction(s):

Maximum Marks: 50

- 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

- Analyze and understand stack, queue and linked list operations and its applications while solving real world problems.
- Comprehend the pros and cons of various linear and non-linear data structures.

Q. No	Question	M	CO	BL
1.	a) Write pseudo code to implement the stack data structure using array and perform the following operations. (i) Pop (ii) Push (iii) Peek (iv) Display b) Assume the maximum size of stack is five (i) Add 101,27,33 (ii) Delete two elements (iii) Add 88. How many operations are required to make the stack in "UNDERFLOW CONDITION".	10	1	2
2.	a) Write the pseudocode to convert single queue to circular queue with the size of six elements b) Justify why circular queue is superior than single queue	5 5	1	2
3.	Write an algorithm for infix to postfix conversion. Convert the following infix to its corresponding postfix form. Use a diagrammatic and tabular representation to depict the contents of the stack for every scanned token $(A+B) * (C-E) / (F+G) + H * L + K$	10	1	2
4.	a) Insertion and deletion operations are faster in linked lists than arrays. Justify with suitable illustration. b) Write a pseudo code segment to perform Insertion and deletion in a DLL in the intermediate node.	5 5	2	3
5.	In an office, there are n chairs numbered 1 through n for a reservation counter. The service desk has a counter that goes from 1 to n servicing each customer and repeats. New customers arrive (all the time) and take the seat with the lowest possible number which is still unoccupied. If all seats are occupied, then the arriving customer leaves and does not return. Identify an appropriate data structure for this use case.	10	2	3