

**VIT**Vellore Institute of Technology
(Approved by the Government of India under section 3 of U.E.A. Act, 1947)

Slot: F1+TF1

School of Computer Science Engineering and Information Systems

Fall Semester 2023-2024

Continuous Assessment Test – I

Programme Name & Branch: B.Tech IT

Course Name & code: Data Structures and Algorithm (BITE201L)

Class Number (s): VL2023240102589, VL2023240102582, VL2023240102578

Faculty Name (s) Dr. E. Vijayan, Dr. L. Agilandeewari, Dr. Nancy Victor

Maximum Marks: 50

Exam Duration: 90 Min.

Q.No.	Question	Max Marks
1.	a) What does the following function do for a given Linked List? void fun2(struct node* head) { if(head == NULL) return; printf("%d", head->data); if(head->next != NULL) fun2(head->next->next); printf("%d", head->data); } b) Write a code snippet for counting the total number of nodes in a singly linked list.	4 6
2.	a) How are stacks used in function calls and recursion? Give details. b) Write a recursive algorithm for Towers of Hanoi Problem and trace the execution of the recursive function for n=3 where 'n' is number of disks.	4 6
3.	In a circular singly linked list, it is said that having a pointer to the last node in a circular linked list is better than having a pointer to the first node, with respect to insertion. Give the necessary code snippet to perform front and back insertion in both the cases. (Note: Insertion should focus on beginning, end, and middle).	10
4.	Write a method "operation" that accepts a queue of integers as a parameter. Create the resultant queue by adding the following elements 10, 8, 2, 5, 8, 7, 6 using ascending priority queue.	10
5.	Convert the following infix expression to prefix expression. Write the procedure for conversion using stack and show every step in detail. (a+b)/c*d-e	10
