Class : D6AD	Division: A/B
Semester: III	Subject: Data Structures
Date: 03/09/2024	Time: 9:00AM-10:00AM

Q.1)		(Attempt any five of the following)	Marks (20)	CO's Mapped	Bloom's level
	a)	Evaluate the role of data structures in enhancing the efficiency of algorithms.	2M	1	BL3
	b)	Define Abstract Data Type (ADT) and give an example of an ADT in programming.	2M	1	BL2
	c)	Explain why self-referencing nodes are important in the structure of a linked list.	2M	3	BL2
	d)	Represent the given Polynomial using a Singly Linked List $p = 46 x^2 + 19 x + 23$	2M	1	BL2
	e)	Explain how to add an element to both the front and the rear of a double-ended queue implemented using a linked list.	2M	2,3	BL2
	f)	Describe the operations involved in a priority queue and how elements are prioritized.	2M	1,3	BL2
Q.2)	a)	Illustrate the working of Circular Queue for the given scenario. Declare a CQ of size 5, Enqueue the elements 12, 23,45, 88. Dequeue two elements from the CQ, Enqueue the elements 56, 78, 95, 17.	5M	2	BL3
		OR			
	b)	Convert the given Infix Expression to Postfix and evaluate the Postfix Expression. Infix Expression : **10 + 3 ^ 5 / (16 - 4)**	5M	2	BL3
Q.3)	a)	Write a Function in C to implement the following for Singly Circular Linked List. (i) Insert a node in the start the list (ii) Delete a node given its value.	5M	3	BL3
		OR			
	b)	Write a program to implement Queue using Linked List	5M	3	BL3

Course Outcomes : On successful completion of course learner will be able:

ADL304.1	Explain various data structures, their types and related terminologies.
ADL304.2	Implement stack and queue data structures and perform its applications.
ADL304.3	Implement operations like searching, insertion, deletion and traversals on various types of linked lists.
ADL304.4	Perform operations like searching, insertion, deletion and traversals on Trees.
ADL304.5	Perform operations like searching, insertion, deletion and traversals on Graphs.
ADL304.6	Students will be able to analyze and implement appropriate searching techniques for a given problem.