PRN:		Course Code :	UEC304

000194

Second Year **B. Tech** End Semester Examination Winter 2024

Data Structures

Day and Date: Fri 29 NOV 2024 Max Marks: **100**

Time : 10:30AM To 01:30PM Duration: **03** hrs

Instructions: All questions are compulsory.

			Marks	Bloom's Level	CO
Q.1		**Attempt the following**			
	a)	What is Data Structure? Classify different types of data structure with example	08	L1	CO1
	b)	Define Array? Explain the difference between array and Linked list	08	L3	CO1
		OR			
	b)	Write an algorithm for Traversing of element of the 1D array.	08	L2	CO1
Q.2		**Attempt the following**			
	a)	What is Linear Array? Write an algorithm for Insert of element from the array	08	L3	CO2
	b)	Explain the difference between linear search and binary search.	08	L4	CO2
		OR			
	b)	What is Binary search? Write algorithm for Binary search.	08	L3	CO2
Q.3		**Attempt any two from the following**			
	a)	What is linked list? Explain different types of linked list with diagram.	08	L1	CO3
	b)	Write algorithm for traverse operation of linked list.	08	L2	CO3
	c)	Write algorithm for delete operation of linked list.	08	L2	CO3
Q.4		**Attempt any two from the following**			
	a)	What is Stack? Write 'C code for POP operation.	08	L2	CO4
	b)	Convert the following from infix to postfix **1)** (X – Y+ Z) * (P / Q) + E + F **2)** P * (Q + R) / S – T * (U + V+W)	08	L3	CO4
	c)	Write algorithm for Insert operation of Queue.	08	L2	CO4

Backlog

Q.5	**Attempt any Two of the following**				
	a)	What is binary tree? Explain its type with neat diagram.	09	L2	CO5
	b)	Reconstruct the following tree: **1) In order:** D B F E A G C L J H K **2) Post order:** D F E B G L J K H C A	09	L5	CO5
	c)	Explain tree traversing methods with example and write algorithm of Inorder traversing.	09	L4	CO5
Q.6	**Attempt any Two of the following**				
	a)	Write short note on Graph traversing.	09	L2	CO6
	b)	What is the adjacency matrix representation of a graph? Explain with one example	09	L1	CO6
	c)	Write short note on topological sorting.	09	L5	CO6

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Backlog