Code No: **R201218** **R20** **SET - 1**

I B. Tech II Semester Supplementary Examinations, Jan/Feb-2024

DATA STRUCTURES

(Common to CSE, IT, CSE-AI&ML, CSE-AI, CSE-DS, CSE-AI&DS, AI&DS)

Time: 3 hours Max. Marks: 70

Answer any five Questions one Question from Each Unit

All Questions Carry Equal Marks

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UNIT-I

1	a)	Describe the Insertion Sort algorithm, trace the steps for sorting the following list, and derive the time complexity. 12, 19, 33, 26, 29, 35, 22, 37	[7M]
	b)	Write an algorithm to implement any one exchange sorting technique.	[7M]
		(OR)	
2	a)	Trace the steps Radix sorting with the following list 366, 47, 58, 49, 570, 470, 958, 349, 605, 709	[7M]
	b)	Write an algorithm to implement merge sort.	[7M]
		UNIT-II	
3	a)	Write a C program to reverse a Single Linked List.	[7M]
	b)	Discuss various applications of a double-linked list.	[7M]
		(OR)	
4	a)	Compare and Contrast Single, Double, and Circular Linked List.	[7M]
	b)	Write an algorithm to add two polynomials using a linked list.	[7M]
		UNIT-III	
5	a)	Write the algorithm for evaluating postfix expression and apply on a suitable example.	[7M]
	b)	Describe the Circular queue and its operations.	[7M]
		(OR)	
6	a)	Compare and contrast the Queue and Circular Queue and implement enqueue and dequeue operations.	[7M]
	b)	Evaluate the following arithmetic expression Using Stacks (9-(((3*4)+8)/4)).	[7M]
		UNIT-IV	
7	a)	Outline the concept of Binary Tree Representation using Arrays and Linked List with examples.	[7M]
	b)	Define Tree and its terminology. Explain the properties of Binary Trees.	[7M]
		(OR)	
8	a)	Explain the concept of heap sort with an example.	[7M]
	b)	Explain the rotations of AVL trees with examples.	[7M]
		UNIT-V	
9	a)	Write a C Program to implement BFS Traversal for a given Graph.	[7M]
	b)	Explain Kruskals Algorithm with an example.	[7M]
		(OR)	
10	a)	Explain Warshall's Algorithm with an example.	[7M]
	b)	Generate minimum spanning tree for the graph given below using Prims algorithm.	[7M]

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