Subject Code: 19CS302PC	SET-II	HT NO:			7	R					

CMR TECHNICAL CAMPUS

UGC AUTONOMOUS

B. Tech. III Semester Supply End Examinations, August-2023

Data Structures

Common to CSE & IT

Time: 3 Hours **Max. Marks: 70**

Note

i. This Question paper contains Part- A and Part- B.
ii. All the Questions in Part A are to be answered compulsorily.
iii. All Questions from Part B are to be answered with internal choice among them.

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PART-A

10 X 02 = 20 Marks

			Marks	CO	BL
1.	a	Discuss stack overflow with an example?	2	CO1	L2
	b	What are the applications of the singly linked list?	2	CO1	L1
	c	What is Double hashing?	2	CO2	L1
	d	What are the problems in hashing?	2	CO2	L1
	e	Define Red Black Tree?	2	CO3	L1
	f	Discuss the drawbacks of AVL trees?	2	CO3	L2
	g	Define Min Heap with an example?	2	CO4	L1
	h	List out External sorting methods?	2	CO4	L1
	i	Define Pattern Matching and Tries?	2	CO5	L1
	j	Explain Standard Tries?	2	CO5	L1

PART- B

5 X 10 = 50 Marks

			Marks	CO	BL
2.	a	Write a Program to implement linked list using array.	10	CO1	L3
		OR			
3	a	Write an algorithm for basic operations of Queue.	5	CO1	L1
	b	Write a program to implement the insert and delete operations on a Queue.	5	CO1	L3
4	a	Analyze input (371, 323, 173, 199, 344, 679, 989) and hash function h(x)=x mod 10, Show the result Separate Chaining, linear probing	10	CO2	L4
		OR			
5	a	Apply quadratic hashing to fill the hash table of size 11 elements 20,5,10,22,33,40,50,30,51,31	10	CO2	L3

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6	a	Construct AVL tree for the following elements (23, 32, 24, 36, 15, 12, 39, 2, 19).	10	CO3	L3
		OR			
7	a	Write an algorithm to construct a Binary Search Tree from a given list of elements. Illustrate the same with 34, 13, 58, 29, 47, 6, 71, 62, 88, 25	10	CO3	L2
8	a	Give any two representations of graph. Give algorithm for DFS. Demonstrate DFS using suitable example	10	CO4	L2
		OR			
9	a	Explain the heap sort algorithm by tracing the following elements stepwise 3, 5, 9, 7, 1, 4, 6, 8, 2	10	CO4	L2
10	a	Explain in detail Boyer -Moore and Brute Force algorithm with example	10	CO5	L2
		OR			
11	a	Write a C program for implementing Knuth-Morris- Pratt pattern matching algorithm to determine the index of the string S1 of length m in string S2 of length n where m<n	10	CO5	L3

CO : Course Outcomes

BL : Bloom's Taxonomy Levels **L 1 : Remembering** **L 2 : Understanding**

L 3 : Applying **L 4 : Analysing**

L 5 : Evaluating **L 6 : Creating**

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