H.T No										

Sreenidhi Institute of Science and Technology
(An Autonomous Institution)

Regulations: A22

Code No: 9EC01 **Date: 23-Aug-2023 (FN)**

B.Tech I-Year II- Semester External Examination, Aug/Sept-2023 (Regular)
DATA STRUCTURES (Common to All)

Time: 3 Hours **Max.Marks:60**

Note: *a) No additional answer sheets will be provided.*
b) All sub-parts of a question must be answered at one place only, otherwise it will not be valued.
c) Missing data can be assumed suitably.

Bloom's Cognitive Levels of Learning (BCLL)

Remember	L1	Apply	L3	Evaluate	L5
Understand	L2	Analyze	L4	Create	L6

Part - A Max.Marks: 6x2=12

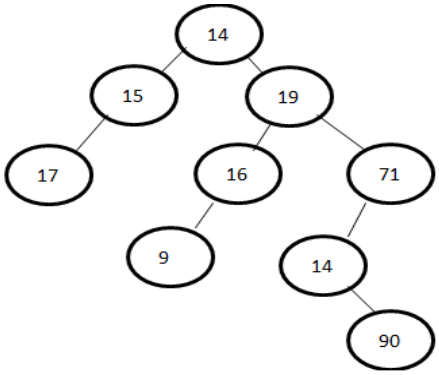
ANSWER ALL QUESTIONS, EACH QUESTION CARRIES 2 MARKS.

		BCLL	CO(s)	Marks
1	List some common data structures.	L1	CO1	[2M]
2	Differentiate between stack and queue.	L4	CO2	[2M]
3	Give advantages of linked list over arrays.	L2	CO3	[2M]
4	Draw a binary tree with seven nodes and three leaves.	L1	CO4	[2M]
5	Define weighted and directed graph.	L1	CO5	[2M]
6	What are the best and worst case time complexities of merge sort?	L2	CO6	[2M]

Part – B Max.Marks: 6x8=48

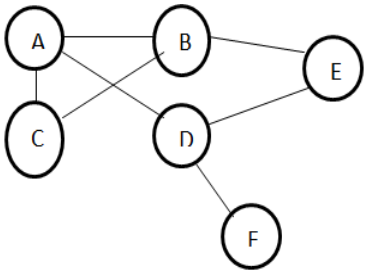
ANSWER ALL QUESTIONS. EACH QUESTION CARRIES 8 MARKS.

			BCLL	CO(s)	Marks
7.	a)	Define a structure. Develop a C program to implement student structure (Roll No, Name, Marks).	L6	CO1	[8M]
		OR			
	b)	Explain about various Dynamic memory allocation functions with suitable examples.	L2	CO1	[8M]
8.	a)	Utilize stack, convert the following infix to postfix a+b*c-(d/e)^f*h	L4	CO2	[8M]
		OR			
	b)	Write about stack ADT implementation using arrays.	L1	CO2	[8M]
9.	a)	Write pseudo-code for delete specific element in singly linked list.	L1	CO3	[8M]
		OR			
	b)	Difference between single and double linked lists? Write the disadvantages of linked lists.	L4	CO3	[8M]
10.	a)	Derive post-order and pre - order travel using stack for the given binary tree	L3	CO4	[8M]



OR

	b)	Construct binary search tree for the nodes 12, 3, 34, 56, 6, 16, 36, 39, 84, 10, 58, 83, 87	L6	CO4	[8M]
11.	a)	Construct max heap for the following elements: 40, 80 , 30 , 20 ,10 ,40, 30, 60 ,100 ,70 ,160 ,50 , 130, 110, 120.	L3	CO5	[8M]
		OR			
	b)	Derive DFS for the given graph using necessary data structure.	L3	CO5	[8M]



12.	a)	Build Binary Search Algorithm and Develop Binary search program using recursion.	L6	CO6	[8M]
		OR			
	b)	Rearrange following numbers using merge sort 14, 19, 6, 5, 50, 18, 26, 42, 1, 9, 12	L6	CO6	[8M]

-- 00 -- 00 –