Total No. of Questions – [2]

Total No. of Printed Pages:02

G.R. No.	

PAPER CODE	U124 - 375

March 2024 (INSEM) EXAM

F.Y.B. TECH. CSE (IoTCSBT) (SEMESTER - II)

COURSE NAME: FUNDAMENTALS OF DATA STRUCTURES

COURSE CODE: CI12235

(PATTERN 2023)

Time: [40 min]

[Max. Marks: 20]

(*) Instructions to candidates:

1) **Figures to the right indicate full marks.**
2) **Use of scientific calculator is allowed**
3) **Use suitable data wherever required**
4) **Solve any two sub questions from Question 1 and 2**

Question No.	Question Description	Marks	CO mapped	Blooms Taxonomy Level
Q.1	a) Categorize a variety of data structures based on multiple classification criteria.	[5]	1	Analyze
	b) Analyze the relationship between the time complexity of an algorithm and different input sizes. Also discuss how Asymptotic notation are used to represent it?	[5]	1	Analyze

	c) Calculate the growth rate function for following algorithm.
	`for(int i = 0; i < n; i++){`
	`  for( int j = 0; j < n * n; j++){`
	`  for(int k = 0; k < j; k++){`
	`  sum++;`
	`  }`
	`  }`
	`}`
		[5]	1	Apply

Q2	a) Given an array, arr[1.....10][1.....15] with base value 100 and the size of each element is 1 Byte in memory. Find the address of arr[8][6] with the help of row-major order.	[5]	2	Apply
	b) Describe the basic idea behind fast transpose operations for sparse matrices, focusing on minimizing unnecessary element access.	[5]	2	Analyze

	c) Implement a C++ function to insert a new node at last into following type of linked list. 1. Double linked list 2. Circular linked list	[5]	2	Apply