PRN No.	

December 2024 Backlog exam

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

COURSE NAME: FUNDAMENTALS OF DATA STRUCTURES

COURSE CODE: CI12235

(PATTERN 2023)

Time: [2 Hrs]

[Max. Marks: 60]

(*) Instructions to candidates:
1) Use of scientific calculator is allowed
2) Use suitable data where ever required
3) All questions are compulsory. Solve any THREE sub questions from EACH question

Q. No.	Question Description	Max. Marks	CO mapped	BT Level
Q.1	Solve any three sub questions from the following			

	a) Calculate the growth rate function for following algorithm.
	for(int i = 0; i < n; i++){
	   for(int j = 0; j < n ; j++){
	      sum++;
	    }
	  }
	}
		[5]	CO 1	3

	b) Differentiate between linear and non linear data structures.	[5]	CO 1	2
	c) What is ADT? List three examples of ADTs.	[5]	CO 1	2
	d) Compare and contrast Arrays and Linked List.	[5]	CO 1	2
Q2	Solve any three sub questions from the following			
	a) Identify the difference between row-major and column-major order in multidimensional arrays.	[5]	CO 2	3
	b) Describe the basic idea behind addition of sparse matrices.	[5]	CO 2	2
	c) Write code to traverse a single linked list and print its elements.	[5]	CO 2	3
	d) Implement a C++ function to delete a last node from Double linked list.	[5]	CO 2	3

Q3.	Solve any three sub questions from the following			
	a) Demonstrate with a pseudo-code PUSH and POP operations on a stack .	[5]	CO 3	3
	b) What is Queue? Compare and contrast Queues with Stacks.	[5]	CO 3	2
	c) Write a pseudo-code to enqueue and dequeue an element from regular queue.	[5]	CO 3	3
	d) Convert infix expression to postfix expression: ((A – (B+C) * D) / (E+F)) using stack.	[5]	CO 3	3
Q.4	Solve any three sub questions from the following			
	a) Sort the following array. [24, 9, 3, 48, 61, 2, 19, 55, 7, 21] Using Selection sort.	[5]	CO 4	3
	b) Compare and contrast: Linear search and Binary search	[5]	CO 4	2
	c) Sort the following array using bubble sort. [7, 1, 3, 4, 10, 9, 8, 6, 5, 25]	[5]	CO 4	3
	d) Sort the following array. [44, 19, 57, 84, 16, 21, 09, 55, 17, 29] Using Quick sort.	[5]	CO 4	3

Note-[BT level 1. Remember 2. Understand 3. Apply 4. Analyze 5. Evaluate 6. Create]