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PRN No.	

PAPER CODE	0124-344

May 2024 (ENDSEM) EXAM

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

COURSE NAME: FUNDAMENTALS OF DATA STRUCTURE **Branch: CSE AI** **COURSE CODE:CA12234**

(PATTERN 2023)

Time: [1Hr. 30 Min] **[Max. Marks: 40]**

(*) 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) **All questions are compulsory. Solve any one sub question from each Question 1 and 2 and any three sub questions each from Questions 3 and 4.**

Q. No.	Question Description	Max. Marks	CO mapped	BT Level
Q.1	a) Illustrate Persistent and Ephemeral Data Structures with examples	[5]	CO1	Understand
	b) Compare and contrast Compiler and Interpreter. Explain any 3-language preprocessor commands with examples.	[5]	CO1	Understand
Q2	a) Construct a function to insert an element at the beginning using singly linked list.	[5]	CO2	Apply
	b) Construct a function in C++ to find the maximum value from a doubly linked list.	[5]	CO2	Apply
Q.3	a) Demonstrate the concept of Stack underflow and stack overflow with example.	[5]	CO3	Apply
	b) Evaluate the following postfix expressions using stack: Assume A=1, B=2, C=3. a. A B + C – B A + C $ - b. A B C + * C B A – + *	[5]	CO3	Apply
	c) Outline the concept of Circular Queue with proper examples and pseudo code to insert an element at rear end.(using array)	[5]	CO3	Apply
	d) Construct a function to insert an element onto a queue.	[5]	CO3	Apply

Q.4	a) Illustrate the Radix sort algorithm on the given elements 1124, 123, 64, 87, 4, 84, 32, 10, 25, 45.	[5]	CO4	Apply
	b) Outline a Pseudo code for selection sort and explain with example.	[5]	CO4	Apply
	c) Construct a pseudo code for bubble sort.	[5]	CO4	Apply
	d)Demonstrate the steps involved in searching an element using binary search with proper example.	[5]	CO4	Apply