Total No. of Questions – [2]

Total No. of Printed Pages: 02

G.R. No.	

PAPER CODE	U124-354

March 2024 (INSEM) EXAM

F.Y. B. TECH. COMPUTER SCIENCE & ENGG (AIML)

(SEMESTER - II)

COURSE NAME: FUNDAMENTALS OF DATA STRUCTURES

COURSE CODE: CM12234

(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) Consider the following sparse matrix. Represent into sparse triplet form and then convert it into simple transpose form. 0 4 0 5 0 0 3 6 0 0 2 0 2 0 0 0 1 0 0 0	[5]	1	3
	b) Consider a two dimensional array A[1....20][1....5] with base address 1000 and size of each element is 2 bytes in memory. Find the address of A[18][4] using row major order.	[5]	1	3
	c) Justify the "Asymptotic Notation help in understanding the scalability of an algorithm". Prove that f(n) = O(g(n)) with an example.	[5]	1	3
Q2	a) Design an algorithm to insert and delete an element into stack with suitable example.	[5]	2	3
	b) Convert the infix string ((A+B) *(C-D))/(E+F) into postfix string with stack. Show the content of stack in each step.	[5]	2	3

	c) The stack contains 30 40 50 60 78 90 with 10 as topmost element of the stack. Represent the affect of PUSH and POP operations for the following diagrammatically. PUSH 36 PUSH 46 POP POP POP POP PUSH 100.	[5]	2	3

Note: [BT Level – 1. Remember 2. Understand 3. Apply 4. Analyze 5. Evaluate 6. Create]