BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(MID SEMESTER EXAMINATION)

CLASS: B. TECH **SEMESTER: V**
BRANCH: All (MINOR) **SESSION: MO/2022**

SUBJECT: CS201 DATA STRUCTURES

TIME: 2 HOURS **FULL MARKS: 25**

INSTRUCTIONS:
1. The total marks of the questions are 25.
2. Candidates attempt for all 25 marks.
3. Before attempting the question paper, be sure that you have got the correct question paper.
4. The missing data, if any, may be assumed suitably.
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

				CO	BL
Q1	(a)	What do you understand by the efficiency of an algorithm?	[2]	CO [3]	BT-2
Q1	(b)	With suitable example, explain the best case, average case and worst-case time complexity of an algorithm?	[3]	CO [4]	BT-3
Q2	(a)	What is the significance of Big-Oh, Big-omega and Big-theta notations?	[2]	CO [4]	BT-4
Q2	(b)	Solve the recurrence relation using back substitution method: T(n) = 1 if n=0, T(n-1) + n if n > 0	[3]	CO [3]	BT-3
Q3	(a)	What is the purpose and properties of Abstract Data Type?	[2]	CO[1], CO [2]	BT-2
Q3	(b)	Briefly discuss sparse matrix?	[3]	CO [2]	BT-3
Q4	(a)	Differentiate between *peek ()* and *pop ()* functions?	[2]	CO[1], CO [2]	BT-2
Q4	(b)	Convert the following infix expression into postfix expression using the algorithm: A – (B / C + (D % E * F) / G) * H	[3]	CO [5]	BT-4
Q5	(a)	Obtain the infix expression from the given postfix expression: P: 9, 3, 4, *, 8, +, 4, /, -	[2]	CO[1], CO [5]	BT-3
Q5	(b)	Discuss how Circular queue is better than a linear queue?	[3]	CO [2]	BT-4, BT-5

:::::: 15/10/2022 ::::::M