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

CLASS: BTECH **SEMESTER : V**
BRANCH: ECE/EEE **SESSION : MO/2023**

SUBJECT: CS263 DATA STRUCTURES AND ALGORITHM

TIME: 3 Hours **FULL MARKS: 50**

INSTRUCTIONS:
1. The question paper contains 5 questions each of 10 marks and total 50 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

			CO	BL
Q.1(a)	Differentiate between linear and non-linear data structure. Also discuss their merits and demerits.	[5]	1	4
Q.1(b)	Define Big "oh" (O), Big Omega (Ω) and Big Theta (Θ) notations of time complexity.	[5]	1	1
Q.2(a)	Explain the terms overflow and underflow in a stack . Write a program to implement a stack that stores Character data.	[5]	2	2
Q.2(b)	Convert the following infix expressions to their postfix equivalents (i) (A-B) + C*D/ E-C (ii) (A- 2*(B+C)/D*E)+F	[5]	3	4
Q.3(a)	Explain the difference between a circular linked list and singly linked list.	[5]	2	4
Q.3(b)	Create a linked list which stores names of the employees. Then, sort these names and re-display the contents of the linked list.	[5]	3	5
Q.4(a)	Create a binary search tree with the input given below: 96, 2, 46, 12, 54, 4, 65, 23, 87, 23, 54, 45	[5]	3	5
Q.4(b)	Create a B Tree of order 5 for following data arriving in sequences: 92, 27, 7, 9, 16, 21, 3, 4, 16, 11, 21, 71	[5]	3	5
Q.5(a)	What is a graph? Explain its key terms.	[5]	1	1
Q.5(b)	If the following sequence of numbers is to be sorted using quick sort, then show the iterations of the sorting process. 42, 32, 73, 21, 19, 18 , 88, 65, 74	[5]	4	4

::::::29/11/2023::::::M