GYANMANJARI INNOVATIVE UNIVERSITY

GYANMANJARI INSTITUTE OF TECHNOLOGY

B.Tech.-Mid Semester Examination (MSE)-W2025

Enrollment No.:_____

Subject Code: BETCE13303 **Date: 09/09/2025**

Subject Name: DATA STRUCTURE **Semester: 3**

Time: 2:30 pm to 4:30 pm **Total Marks: 60**

Instructions:

1. **Question No. 1 is compulsory.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

			Marks
Q.1	(a)	What do you mean by data structure? Explain types of data structure in detail.	05
	(b)	Define the following terms with example-(1) Complete Binary tree (2) Siblings (3) Strictly binary tree (4) Height of tree (5) level of tree	05
	(c)	What is Stack. Write and algorithm of all stack operations with proper example.	10
Q.2	(a)	Define Algorithm and explain feature of algorithm.	05
	(b)	Write a program to implement Sequential search algorithm.	05
		OR	
	(b)	Give the difference between Stack and queue.	05
	(c)	Construct binary search tree of 10,3,15,22,6,45,65,23,78,34,5,9,7. Find INORDER, PREORDER, POSTORDER traversal.	10
		OR	
	(c)	Explain simple queue and its operation and write a program for implementing queue.	10
Q.3	(a)	What is row major array and column major array. Explain with proper example.	05
	(b)	What is recursion. Write a program of finding factorial of give number.	05
	(c)	Convert following infix expressions to the postfix and prefix conversion(i)A/B$C+D*E/F-(G+H)(ii) (A@B)*D+E/(F+G*D)+C	10
		OR	
Q.3	(a)	Define time and space complexity. List its cases and explain with example.	05
	(b)	Construct binary search tree for the following data 25,35,53,20,12,22,8,9,50,18 then perform operation (a) delete 20 (b) delete 18 (c) delete 25.	05
	(c)	List disadvantages of Simple queue. Explain circular queue algorithm with insertion and deletion operation.	10