GALGOTIAS UNIVERSITY

ADMISSION NUMBER												

School of Computing Science and Engineering

Bachelor of Technology in Computer Science and Engineering
Mid Term Examination - Nov 2023

Duration : 90 Minutes
Max Marks : 50

Sem V - E2UC503C - Advanced Data Structures and Algorithms

General Instructions
Answer to the specific question asked
Draw neat, labelled diagrams wherever necessary
Approved data hand books are allowed subject to verification by the Invigilator

1)	Construct a queue data structure (in Java or Python) with full queue and empty queue checks using linked list. Also find the complexity Enqueue(), Dequeue() operations.	K3	(6)
2)	Given the post-order traversal sequence [8, 9, 4, 5, 2, 6, 7, 3, 1], and the pre-order traversal sequence [1, 2, 4, 8, 9, 5, 3, 6, 7], construct the binary tree. Show the step-by-step process.	K3	(9)
3)	Compare the strengths and weaknesses of B+ trees compared to other data structures, such as AVL trees or hash tables, in terms of data organization and retrieval efficiency.	K4	(8)
4)	Assess the advantages and limitations of AVL trees and B+ trees in maintaining data and query performance. Determine when to use each type of self-balancing tree.	K5	(15)
5)	Create a recursive algorithm for generating all possible permutations of a given set of elements. Explain your approach and its time complexity.	K6	(12)