

QP Code: D133786		Total Pages: 1	Name:
		Register No.	
THIRD SEMESTER UG DEGREE EXAMINATION, NOVEMBER 2025			
(CUFYUGP)			
CSC3CJ202/CSC3MN200 - DATA STRUCTURES AND ALGORITHMS			
2024 Admission onwards			
Maximum Time: 2 Hours		Maximum Marks: 70	
Section A			
All Questions can be answered. Each Question carries 3 marks (Ceiling: 24 Marks)			
1	Define ADT and explain its significance.		
2	Differentiate between linear and non-linear data structures with examples.		
3	Explain the types of arrays with an example of 2D array.		
4	What is a self-referential structure? Give a simple example in C.		
5	Define singly linked list and explain its basic structure.		
6	Explain the difference between stack and queue.		
7	Give one real-life application of a stack and one for a queue.		
8	Define complete and skewed binary trees.		
9	Explain adjacency matrix representation of a graph with an example.		
10	Differentiate linear search and binary search with examples.		
Section B			
All Questions can be answered. Each Question carries 6 marks (Ceiling: 36 Marks)			
11	Write an algorithm to insert an element at the beginning of a singly linked list.		
12	Explain stack operations using array implementation. Discuss overflow and underflow.		
13	Convert the infix expression $(A+B)*(C-D)$ to postfix using stack.		
14	Explain circular queue with example and array implementation.		
15	Draw a binary tree (at least 5 nodes) and perform inorder, preorder, and postorder traversal.		
16	Explain division method and mid-square method of hashing with examples.		
17	Differentiate between open hashing and closed hashing. Illustrate with examples.		
18	Explain selection sort algorithm with an example of sorting 5 numbers.		
Section C			
Answer any ONE. Each Question carries 10 marks (1x10=10 Marks)			
19	Write a detailed algorithm for non-recursive inorder traversal of a binary tree and demonstrate it with a 5-node tree.		
20	Explain the implementation of a queue using a linked list. Include insertion and deletion operations with algorithms.		