

ESE- All

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UID No:

Academic Year: 2022-23

Program Name/Code: CS201/ CS202/ IT201/ IT202/ CS701/ CS702

Semester: 3rd

Subject Title: Data Structures

Subject Code: 20CSH-211

Time: 3 Hour

Maximum Marks: 60

Instructions: Attempt all questions

Q. No.	Statement	CO mapping
Section A 5 x 2 = 10 marks		
1	Discuss various classifications of data structures.	CO1
2	Briefly explain Stack as an Abstract Data Type.	CO2
3	Define the terms: Leaf, Siblings, Root, and Path in context of a binary tree.	CO3
4	Define Balance Factor in an AVL Tree.	CO3
5	Discuss Hashing and Hash Function.	CO3
Section B 4 x 5 = 20 marks		
6	Describe the concept of Insertion sort along with its complexity analysis.	CO1
7	Discuss the disadvantages of linear queue over circular queue and Mention algorithm for the implementation of Circular Queue using Linear Array.	CO2
8	Explain File Organization. Discuss its types with examples.	CO3
9	Explain Quick Sort with suitable algorithm. Implement the algorithm on following data;	CO3

	15 81 63 22 56 2 45	
Section C 3 x 10 = 30 marks		
10	a) Write an algorithm to insert new node at the beginning and at the end position of a doubly linked list. (2.5+2.5) b) Explain the concept for Circular Linked List. Give its advantages over Linear Linked List. (2+3)	CO1
11	Write the algorithm for finding Minimum Spanning Tree (MST) using Prim's Algorithm? Explain it by finding MST of given graph. (5+5)	CO3
12	Write recursive version (using Stack) of Post Order traversal of a binary tree, explaining the procedure (step by step) on the given tree. (5+5)	CO3