NARAYANA ENGINEERING COLLEGE::NELLORE

AUTONOMOUS

DEPARTMENT OF MCA

ASSIGNMENT QUESTION BANK

Class	: I MCA - II SEM	**AY** :: 2022-23
Course Title	: Data Structures (21MC201)	
Faculty	: Mrs. Sk. Mehartaj	**Branch:** MCA

S.No	Question	CO	BTL	Marks
	MODULE – I			
1	What is Data structure and Explain its Classifications of Data structure?	1	1	12
2	a. Distinguish between Linear and Non Linear Data Structures? b. Explain operations on data structures ?	1	2	8+4
3	a. What is an Algorithm and need of an Algorithm? b. Explain analysis of an algorithm?	1	1,2	6+6
4	Explain its Complexities of an algorithm with an example?	1	2	12
5	Explain Asymptotic Notations?	1	2	12
6	What is an Array and Explain representation of data in Arrays with an example?	1	1,2	12
7	Explain Linear Search technique an algorithm with an example?	1	2	12
8	Explain Binary Search technique an algorithm with an example?	1	2	12

S.No	Question	CO	BTL	Marks
	MODULE – II			
1	What is Stack? Explain representation of stack.	2	1,2	12
2	Explain the stack operations using an algorithm with an example.	2	2	12
3	Explain in detail any three applications of stack.	2	2	12
4	a. What are the applications of stack? b. Convert the following infix expression to postfix expression? (A+B) * (C-D)	2	1,2	4+8
5	a. What is Queue? b. Explain the operations of Queue?	2	1,2	4+8
6	a. Define Circular Queue? b. Explain the Insertion and Deletion operations on Circular Queue?	2	1,2	4+8
7	Give brief description about the Double Ended Queue?	2	2	12
8	a. Explain in Priority Queues? b. Explain an algorithm to implement insert and delete operations in Priority Queue with examples?	2	2	6+6

S.No	Question	CO	BTL	Marks

MODULE – III				
1.	What is Linked List? Explain various types in Linked List detail?	3	1	12
2	What is a DLL? Explain the algorithm in detail for inserting and deleting a node from DLL?	3	1	12
3.	Give brief description about the circular linked lists.	3	2	12
4.	a. Distinguish between Single Linked List and Double Linked List? b. Explain the step by step process of Merge Sort with example.	3	3,2	4+8
5	Explain the queue using Linked List with example?	3	2	12
6	a. Explain the step by step process of Bubble sort with an example.	3	2	12
7	a. Explain selection sort algorithm with an example. b. Explain insertion sort with an example and analyze its complexity.	3	2	6+6
8	Explain the step by step process of Quick Sort with example.	3	2	12

S.No	Question	CO	BTL	Marks
	MODULE – IV			
1	a. Explain Binary search tree traversing techniques with examples?	4	2	12
2	a. Define Binary tree and its representation with an example? b. Explain Binary tree operations with an example?	4	1,2	4+8
3	Construct Binary Search Tree by inserting and deleting the following keyelements: 10, 12, 5, 4, 20, 8, 7, 15 and 13	4	2	12
4	Discuss about height balanced trees and their operations with an example.	4	2	12
5	Define B Tree. Explain its operations with examples.	4	2	12
6	Explain an algorithm to implement the following operations on Binary tree a) Insertion b) Deletion	4	2	6+6
7	Write a Program to implement Binary Search Tree traversing operations.	4	3	12
8	a. Differentiate Binary tree and Height balanced binary tree. b. Why do we need height balanced trees? Illustrate with anexample.	4	4,	8+4

S.No	Question	CO	BTL	Marks
	MODULE – V			
1.	a. What is Graph? b. What are the basic terminologies in a Graph?	5	1	4+8
2.	Explain Graph traversal methods? Explain an algorithm with examples	5	2	12
3.	a. Define Shortest Path? b. Explain All Pairs of Shortest Path Problem illustrates with an example?	5	1,2	6+6
4.	Explain about Topological Sorting with suitable example?	5	2	12
5.	Explain concept of Minimum Spanning Tree using following methods and illustrate Algorithm with an example? a) Prim's b) Kruskal's	5	2	6+6
6.	a. Explain Dijkstra's algorithm for finding shortest path and give an example.	5	2	6+6
7.	Explain in detail about Static Hashing with an example?	5	2	12
8.	Explain in detail about Dynamic Hashing with an example?	5	2	12

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