

## **DEPARTMENT OF MCA**

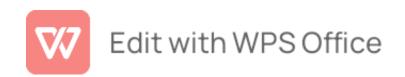
## **ASSIGNMENT QUESTION BANK**

Course Title: Data Structures (21MC201)

Faculty: Mrs. Sk. Mehartaj

Branch: MCA

S.No	Question	СО	BTL	Marks
	MODULE – I			
1	What is Data structure and Explain its Classifications of Data structure?	1	1	12
2	<ul><li>a. Distinguish between Linear and Non Linear Data</li><li>Structures?</li><li>b. Explain operations on data structures?</li></ul>	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	СО	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	<ul><li>a. Define Circular Queue?</li><li>b. Explain the Insertion and Deletion operations on Circular Queue?</li></ul>	2	1,2	4+8	
7	Give brief description about the Double Ended Queue?	2	2	12	
8	<ul><li>a. Explain in Priority Queues?</li><li>b. Explain an algorithm to implement insert and delete operations in Priority Queue with examples?</li></ul>	2	2	6+6	

S.No Question CO BTL Ma	ks
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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.	<ul><li>a. Distinguish between Single Linked List and Double Linked List?</li><li>b. Explain the step by step process of Merge Sort with example.</li></ul>	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	<ul><li>a. Explain selection sort algorithm with an example.</li><li>b. Explain insertion sort with an example and analyze its complexity.</li></ul>	3	2	6+6
8	Explain the step by step process of Quick Sort with example.	3	2	12

S.No	Question	СО	BTL	Marks
MODULE – IV				
1	a. Explain Binary search tree traversing techniques with examples?	4	2	12
2	<ul><li>a. Define Binary tree and its representation with an example?</li><li>b. Explain Binary tree operations with an example?</li></ul>	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	<ul><li>a. Differentiate Binary tree and Height balanced binary tree.</li><li>b. Why do we need height balanced trees? Illustrate with anexample.</li></ul>	4	4,	8+4



S.No	Question	CO	BTL	Marks
MODULE – V				
1.	<ul><li>a. What is Graph?</li><li>b. What are the basic terminologies in a Graph?</li></ul>	5	1	4+8
2.	Explain Graph traversal methods? Explain an algorithm with examples	5	2	12
3.	<ul><li>a. Define Shortest Path?</li><li>b. Explain All Pairs of Shortest Path Problem illustrates with an example?</li></ul>	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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