

SEMESTER END REGULAR EXAMINATIONS (AR23), July - 2024

U.G.	CSE,IT, AIDS &AIML	Degree	Bachelor of Technology
Academic Year	2023 - 2024	Sem.	II
Course Code	23CS201	Course Title	
		Data Structures	
Duration	3 Hours	Maximum Marks	70 (Seventy)

SECTION-I

7 x 2 = 14 Marks

1.

No.	Questions (a to g)	COs
a	Define Abstract data type.	1
b	Compare linear and nonlinear data structure.	1
c	List any two properties of Stack.	3
d	Which data structure handles recursion?	3
e	Define Priority Queue.	4
f	Define back tracking approach.	4
g	What is a collision in hashing, and how is it resolved in a hash table?	6

SECTION-II

4 x 14 = 56 Marks

No.	Questions (2 to 9)	COs	Marks
2	(a) Write insertion sort algorithm and illustrate its working by sorting the array [56, 21, 34, 8, 19, 7] in ascending order.	1	8M
	(b) Explain the following operations in a singly linked list with pseudo code. <ul style="list-style-type: none"> • Insert at a specific position • Delete the last element 	2	6M
OR			
3	(a) Explain binary search algorithm and search for the key 66 in the list A = [8, 23, 40, 34, 66, 76, 97].	1	8M
	(b) Compare and contrast Array and Linked List data structures.	2	6M
4	(a) Explain the properties and operations of a stack in detail.	3	8M
	(b) Explain insertion and delete operations in a doubly linked list with suitable illustrations.	2	6M
OR			
5	(a) Write a C program to implement Stack data structure using linked list.	3	8M
	(b) Write pseudo code for deletion at any given node in single linked list.	2	6M
6	(a) Explain the operations of Deque with suitable illustrations.	4	8M
	(b) Convert the given infix expression to postfix expression using a stack. A*B+C/(D-(E+F))/G	5	6M
OR			
7	(a) Write a C program to implement queue data structure using array.	4	8M
	(b) Write a procedure to recover a binary search tree from traversal order. Construct a binary search tree from the given preorder traversal: 4, 2, 1, 3, 9, 8, 6, 5, 7, 10.	5	6M
8	(a) Explain open addressing techniques in hashing with examples.	6	8M
	(b) Explain the various types of binary tree in detail.	5	6M
OR			
9	(a) Explain about linear probing and quadratic probing.	6	8M
	(b) Explain insert and delete operations in a binary search tree with examples.	5	6M