Reg. No.												

Question Paper Code	12526

B.E. / B.Tech. - DEGREE EXAMINATIONS, NOV / DEC 2023

Second Semester

Artificial Intelligence and Data Science

(Common to Computer Science and Business Systems & Computer Science and Engineering (AIML))

20CBPC201 - DATA STRUCTURES AND ALGORITHMS

(Regulations 2020)

Duration: 3 Hours Max. Marks: 100

PART - A (10 × 2 = 20 Marks)

Answer ALL Questions

		Marks, K-Level, CO
1.	List all the criteria to be considered for solving an algorithm.	2,K1,CO1
2.	Define Stepwise Refinement.	2,K1,CO1
3.	Recall the operations that can be performed on a stack.	2,K1,CO2
4.	What are the four cases for inserting and deleting the elements in DEQUEUE?	2,K1,CO2
5.	List the properties of a binary tree.	2,K1,CO3
6.	Define connected and strongly connected graphs.	2,K1,CO3
7.	Relate the advantage of shell sort over insertion sort.	2,K1,CO4
8.	List the various factors to be considered in deciding a sorting algorithm.	2,K1,CO4
9.	What is Queued Sequential Access Method?	2,K1,CO6
10.	List the features of a file.	2,K1,CO6

PART - B (5 × 13 = 65 Marks)

Answer ALL Questions

11.	a)	(i) Explain in detail about recursive algorithm.	7,K2,CO1
		(ii) Illustrate the performance Analysis of an Algorithm.	6,K2,CO1
		OR	
	b)	Explain Asymptotic Notations in detail.	13,K2,CO1
12.	a)	Explain in detail about the array implementation of stack.	13,K2,CO2
		OR	
	b)	Outline the steps to be followed to convert an infix expression to postfix expression with suitable example.	13,K2,CO2

13. a) Compare depth-first search and breadth-first search traversal of a graph with suitable examples. *13,K2,CO3*

OR

b) Demonstrate B tree and B+ tree ADT in detail. *13,K2,CO3*

14. a) Illustrate selection sort with suitable example. *13,K2,CO4*

OR

b) Explain the algorithm for Insertion sort and sort the following array:39,9,45,6318,81,108,54,72,36. *13,K2,CO4*

15. a) Explain in detail about file organization. *13,K2,CO6*

OR

b) Illustrate the types of Accessing schemes. *13,K2,CO6*

PART - C (1 × 15 = 15 Marks)

16. a) Identify the working of binary search and linear search technique with routines and suitable examples. *15,K3,CO5*

OR

b) Make use of Binary Search to search if a number 50 is present in a given set of numbers. 10,20,30,40,50,60,70. *15,K3,CO5*

.