Question Paper Code	12650

B.E. / B.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2024
Second Semester
Computer Science and Business Systems
(Common to Artificial Intelligence and Data Science & 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.	Define an Algorithm.	2	K1	CO1
2.	What is data abstraction?	2	K1	CO1
3.	Solve: Convert the following infix expression to postfix expression: (A+B)*(C+B)*(E/F).	2	K2	CO2
4.	What are the operations that can be performed on a stack?	2	K2	CO2
5.	List the properties of a binary tree.	2	K1	CO3
6.	Write the balance factor for AVL tree.	2	K1	CO3
7.	Differentiate linear and binary search techniques.	2	K2	CO4
8.	State the collision resolution methods.	2	K1	CO5
9.	List the types of file Organization.	2	K1	CO6
10.	Define Direct access file.	2	K1	CO6

PART - B (5 × 13 = 65 Marks)
Answer ALL Questions

				Marks	K-Level	CO
11.	a)	Explain Asymptotic Notations in detail.		13	K2	CO1
		OR				
	b)	Describe Testing and its types in detail.		13	K2	CO1
12.	a)	Explain in detail about the array implementation of stack.		13	K2	CO2
		OR				
	b)	Discuss the steps to be followed to convert an infix expression to postfix expression with suitable example.		13	K2	CO2
13.	a)	Explain AVL tree ADT in detail.		13	K2	CO3
		OR				

K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create   **12650**

	b)	Explain Depth first and breadth first traversal.	*13*	*K2*	*CO3*
14.	a)	Discuss in detail about Sequential Search and Binary search with suitable examples.	*13*	*K2*	*CO4*

<div align="center">**OR**</div>

	b)	Examine the algorithm for Insertion sort and sort the following array:39,9,45,6318,81,108,54,72,36.	*13*	*K2*	*CO4*
15.	a)	Discuss the types of Accessing schemes.	*13*	*K2*	*CO6*

<div align="center">**OR**</div>

	b)	Explain in detail about Direct Access file organization.	*13*	*K2*	*CO6*

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PART - C (1× 15 = 15 Marks)

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16.	a)	List the different types of hashing techniques. Explain them in detail with an example.	*15*	*K2*	*CO5*

<div align="center">**OR**</div>

	b)	Describe the shell sort algorithm and illustrate it with an example.	*15*	*K2*	*CO5*