Reg. No.												

Question Paper Code	12303

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

First Semester

M.E. - Big Data Analytics

20PBDPC101 - ADVANCED 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 Big-Oh notation.	*2,K1,CO1*
2.	Evaluate the time complexity with example.	*2,K3,CO1*
3.	Evaluate Binomial heap.	*2,K3,CO2*
4.	Define max heap.	*2,K1,CO2*
5.	Define Red black tree.	*2,K1,CO3*
6.	Justify the need of rotations in AVL tree.	*2,K2,CO3*
7.	Define k-d Trees.	*2,K1,CO4*
8.	List the application in which Convex Hulls are used.	*2,K2,CO4*
9.	Define parallel prefix computation.	*2,K1,CO5*
10.	Illustrate EREW, PRAM sort.	*2,K2,CO5*

PART - B (5 × 13 = 65 Marks)

Answer ALL Questions

11.	a)	Explain in detail about amortized analysis.	*13,K2,CO1*
		OR	
	b)	Apply NP-Completeness to 3-coloring problem with required steps.	*13,K3,CO1*
12.	a)	Discuss the insert and delete-min operations in lazy binomial heap.	*13,K2,CO2*
		OR	
	b)	Analyze the operations of Deaps with suitable examples.	*13,K3,CO2*
13.	a)	Briefly explain the four kinds of rotations in AVL tree.	*13,K2,CO3*
		OR	
	b)	Briefly explain the rotations in Splay tree.	*13,K2,CO3*

14. a) Explain One Dimensional Range Searching with an example. *13,K2,CO4*

OR

b) Explain Convex Hull using Jarvis' Algorithm or Wrapping. *13,K2,CO4*

15. a) Explain finding the maximum of an array with an example. *13,K1,CO5*

OR

b) Illustrate the prefix sums and their applications with an example. *13,K3,CO5*

PART - C (1 × 15 = 15 Marks)

16. a) Justify the Data Distribution on EREW, Mesh and Butterfly with suitable examples. *15,K3,CO5*

OR

b) Illustrate the matrix multiplication with an example. *15,K3,CO5*