Reg No.:_____   Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

First Semester MCA (Two Years) Degree (R, S) Examination December/January 2023-24

Course Code: 20MCA105

Course Name: ADVANCED DATA STRUCTURES

Max. Marks: 60   Duration: 3 Hours

PART A

Answer all questions, each carries 3 marks.   Marks

1	What is meant by Hash collision?	(3)
2	Explain Set implementation using bit strings. Give an example.	(3)
3	What is meant by Splay Trees?	(3)
4	What is a Balanced Binary Search Tree? Give an example.	(3)
5	What is a Binomial Heap? Give an example.	(3)
6	List out any three operations of Fibonacci Heaps.	(3)
7	What is a Minimum Cost Spanning Tree? Give an example.	(3)
8	Write down the Prim's algorithm.	(3)
9	Explain on any three problems to be solved in Blockchain Data Analysis.	(3)
10	What is Contract Data?	(3)

PART B

Answer any one question from each module. Each question carries 6 marks.

Module I

11	Write in detail on the operations of disjoint sets.	(6)

OR

12   Explain amortized analysis using aggregate method. Illustrate using Multipop   (6)
        Stack example.

Module II

13   What is a B-Tree? State its various properties. Explain the insertion operation in a   (6)
        B-Tree.

OR

14   What is a Red-Black-Tree? State its various properties. Explain the rotation   (6)
        operations in a Red- Black tree.

Module III

15   How is a delete key operation performed in a Binomial Heap? Give an example.   (6)

OR

16   How is a delete key operation performed in a Fibonacci Heap? Give an example.   (6)

Module IV

17   Explain Depth First Search algorithm with an example.   (6)

OR

18   Explain Kruskal's algorithm with an example.   (6)

Module V

19   Explain the blockchain architecture with the help of a neat diagram.   (6)

OR

20   Write notes on blockchain data structure.   (6)

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