No. of Printed Pages : 02 **Roll No. .....**

18AA1002

M. Tech. EXAMINATION, 2020

(First Semester)

(C Scheme)

(Re-appear Only)

CSE

MTCSE503C

ADVANCED DATA STRUCTURES

Time : 3 *Hours*] [*Maximum Marks :* 75

Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Attempt *Five* questions in all, selecting *one* question from each Unit. Q. No. **9** is compulsory. All questions carry equal marks.

Unit I

1. (a) What is an extensible Hashing ? State with and example. **7½**

(b) What is an Double Hashing ? State with and example. **7½**

2. (a) Describe various collision resolution techniques also mention their applicability. **10**

(b) Write ADT for simple Linked List. **5**

Unit II

3. (a) What is a Skip List ? Compute complexity for insertion operation in it using randomized algorithm. **7½**

(b) Differentiate B tree and Binary search tree. **7½**

4. (a) What are deterministic skip lists ? Explain in comparison to simple skip list. **7½**

(b) State and explain any *one* method for Computational Geometry. **7½**

Unit III

5. (a) Consider an empty Red Black Tree and Insert 12, 56, 5, 78, 34, 23, 45, 22, 66 into that. Show all intermediate states. **7½**

(b) Explain deletion algorithm for BST. **7½**

6. (a) Explain the process of splaying and also estimate the cost of each splaying operation. **7½**

(b) Compare 2-3 Tree with BST. **7½**

Unit IV

7. Write short notes on the following : **7½+7½**

(a) K-D Tree

(b) Search operation in Priority Tree.

8. (a) Write an Algorithm for two dimensional Range Search. **7½**

(b) What is Divide and Conquer Strategy ? Mathematically compute worst case and best case complexity of search operation in binary search tree. **7½**

(Compulsory Question)

9. (a) What are Skewed Tree ? Name some of the data structures where skewedness is reduced.

(b) What are limitations of Hashing ?

(c) What is Black Height of a Red Black Tree ? What is its maximum and minimum value in comparison of height of tree ?

(d) Write the limitations of Binary Search Tree.

(e) Write any *three* properties of Quad-Tree. **3×5=15**