**CSE 224 (R-20)**

Total No. of Questions : 10 ] [ Total No.of Pages : 02

# II/IV B. Tech. DEGREE EXAMINATIONS, AUGUST - 2024

## Second Semester

## COMPUTER SCIENCE AND ENGINEERING

## ADVANCED DATA STRUCTURES

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Time : **Three Hours** Maximum : **70** Marks

**Answer ONE question from each Unit. 5x14=70 M**

**All Questions carry equal marks.**

### UNIT - I

1. Give a brief on recurrences. Explain the any two methods for solving recurrences with suitable application as an example.

(OR)

2. a) What is a Randomized Algorithm ? Give the a randomized version of QuickSort.

   b) Give a brief on little o and little omega notations.

### UNIT - II

3. Explain the implementation of a binomial heap and its operation with suitable example.

(OR)

4. a) Explain the insertion operation in B+ tree with suitable example ?

   b) Explain the step by step process of Joining two Red-Black trees ? Give an example.

### UNIT - III

5. Define Graph. Define suitable ADT to represent a graph using adjacency matrix. Give algorithms to perform DFS and BFS of a graph represented using adjacency matrix.

(OR)

6. a) Write an algorithm to find a minimum spanning tree of a weighted directed graph with an example.

   b) What is max flow and min-cut ? How do you find it ? Explain with example.

**P.T.O.**

## UNIT - IV

7. Give a brief on Union-Find ADT and its approach. Explore different Union-Find Operations.

(OR)

8. Explain the process of path compression and union by rank with a suitable example.

## UNIT - V

9. a) Draw the flowchart for Knuth-Moriris-Pratt algorithm.

   b) What is Patricia ? Explain the step to be followed to obtain Patricia from a compressed Binary Trie ?

(OR)

10. Discuss the following with suitable example.

    a) What is a compressed trie ?

    b) Construct Compressed Tries with Skip Fields.

    c) Construct Compressed Tries with Labeled Edges.

    d) Estimate Space Required by a Compressed Tries.