III B. Tech I Semester Regular Examinations, February-2022
ADVANCED DATA STRUCTURES
(Computer Science and Engineering)

Time: 3 hours   Max. Marks: 75

Answer any **FIVE** Questions **ONE** Question from **Each unit**
All Questions Carry Equal Marks
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UNIT-I
1. a) Write an iterative version of RANDOMIZED-SELECT. [8M]
   b) Discuss the Motivation for Dynamic Hashing. [7M]
   (OR)
2. a) Explain the step wise procedure for sorting 900 megabytes of data(chunks of 100 MB)using only 100 megabytes of RAM using any suitable external sorting technique. [8M]
   b) Explain about double hashing with an example. [7M]

UNIT-II
3. a) Create a Binomial Heap for the following data: [8M]
      11, 45, 23, 9, 4, 16, 8, 29, 1, 12, 21, 15
   b) Explain in detail about Height Biased Leftist Trees. [7M]
   (OR)
4. a) How to meld two min pairing heaps into a single min pairing heap? Explain with an example. [8M]
   b) Explain about cost amortization. [7M]

UNIT-III
5. a) Explain single rotation in AVL tree with an example. [8M]
   b) Define Red-Black tree and give its properties. [7M]
   (OR)
6. Start with an empty Red-Black tree and insert the following keys in the given order: 40, 50, 70, 30, 42, 15, 20, 25, 27, 26, 60,55 Draw the figures depicting your tree immediately after each insertion and following the rebalancing rotation or color change (if any). Label all nodes with their color and identify their rotation types (if any) that is done. [15M]

UNIT-IV
7. a) What is multi way search tree? Explain with an example. [8M]
   b) Narrate the properties of B-Tree of order m. [7M]
   (OR)
8. Construct a B+-Tree of order 3 by inserting values [5, 8, 1, 7]. Give the steps for deleting values 8 and then 5. [15M]

UNIT-V

9. a) Explain how a trie could be used to implement a spelling [8M]
        checker.
    b) Compare binary trie and compressed binary trie.   [7M]
                            (OR)
10. a) Construct a binary trie for 1000, 0010, 0001, 0000, 1001, 1100. [8M]
    b) Give the applications of generalized suffix trees.   [7M]

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