NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI-15

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

II YEAR B.TECH , CYCLE TEST 1

CSPE43 ADVANCED DATA STRUCTURES AND ALGORITHMS

DATE: 10-03-2023 **Duration: 1 Hr** **Max Marks: 20**

CO Mapping:

Apply the appropriate heap data structure for solving real-world problems	1,2,3,4
Use special tree data structures for a given real-world problem	5,6

ANSWER ALL THE QUESTIONS

1. Insert the following elements into the Binomial heap and apply Extract min key operation for 2 times. **g, b, d, q, a, k, f, h, o, j, t** and **e.** (4)
2. Differentiate height biased leftist tree from weight biased leftist tree. (Atleast 3 reasonable differences) (2)
3. Initialize the Deap with the following numbers in the same order: **-1, 4, 5, 7, 9, 11, 13, 8, 50, 70, 100, 2** and **4**. From the resultant tree, extract the minimum value. (4)
4. What effect does the term "Fibonacci" in "Fibonacci heap" have? Why is it preferred over a binomial heap? (2)
5. Insert the following numbers **13, 17, 1, 14, 16, 23, 24, 20, 7, 5** and **10** into the splay tree using the top-down splaying method. From the resultant tree, delete **25** and **16.** (4)
6. From the given B Tree of order 5, delete the following elements **64, 23, 72, 65, 20, 70, 95, 77, 80, 100, 6, 27, 60, 16** and **50**. (4)