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| **TERM END EXAMINATIONS (TEE) – August- September 2021** | | | | | | | | | | |
| **Programme** | | | **:** | **B.Tech. – BAI, BCE, BCG** | | **Semester** | | **:** | **Interim 2021-22** | |
| **Course Name** | | | **:** | **Data Structures and Algorithms** | | **Course Code** | | **:** | **CSE2002** | |
| **Faculty Name** | | | **:** | **Ms. Meenakshi Choudhary** | | **Slot / Class No** | | **:** | **C11+DC1/0061** | |
| **Time** | | | **:** | **1½ hours** | | **Max. Marks** | | **:** | **50** | |
| **Answer ALL the Questions** | | | | | | | | | | |
| **Q. No.** | **Question Description** | | | | | | | | | **Marks** |
| **PART - A (30 Marks)** | | | | | | | | | | |
| 1 | (a) | What is the significance of time and space complexity of an algorithm? Analyse the time complexity of linear and binary search by taking suitable example. | | | | | | | | 3+7 |
| OR | | | | | | | | | |
| (b) | Explain Insertion sort with the pseudocode and time complexity. Apply Insertion sort on the following elements to sort them and explain each pass.  17, 11, 24, 19, 13, 27, 16, 29, 23. | | | | | | | | 5+5 |
| 2 | (a) | Explain circular queue in detail. Write the algorithm/pseudocode to perform insertion and deletion in the circular queue. (Consider array implementation). | | | | | | | | 3+7 |
| OR | | | | | | | | | |
| (b) | Explain circular linked list. Write the algorithm/pseudocode to insert and delete an element from the last position of the circular linked list. | | | | | | | | 3+7 |
| 3 | (a) | Explain AVL tree and its properties. Create an AVL tree by using the given keys.  30, 20, 25, 23, 22, 27, 26, 32, 31. | | | | | | | | 5+5 |
| OR | | | | | | | | | |
| (b) | Explain Splay trees. Insert the following elements in an empty splay tree in the given order and apply suitable rotations.  20, 10, 15, 13, 18, 14 | | | | | | | | 3+7 |
| **PART - B (20 Marks)** | | | | | | | | | | |
| 4 | | Describe quick sort in brief and apply it on the following elements. Explain each pass while sorting. Also do the complexity analysis.  17, 11, 24, 19, 13, 27, 16, 29, 23. | | | | | | | | 10 |
| 5 | | What is minimum cost spanning tree of a graph? Find out the minimum cost spanning tree for the following graph using Prim’s and Krushkal’s algorithms. | | | | | | | | 3+7 |
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