



**R17 Regulation**  
**TKR COLLEGE OF ENGINEERING AND TECHNOLOGY**  
(Autonomous, Accredited by NAAC with 'A' Grade)

**Subject code:1P3EB**

**B.Tech II Year I Semester Supplementary Examinations, July 2022**  
**DATA STRUCTURES THROUGH C++**

**CSE**

**Maximum Marks: 70**

Date:21.07.2022 Duration: 3 hours

- Note:**
- 1.This question paper contains two parts A and B.
  2. Part A is compulsory which carries 20 marks. Answer all questions in Part A.
  3. Part B consists of 5 Units. Answer any one full question from each unit.
  4. Each question carries 10 marks and may have a, b, c, d as sub questions.

**Part-A**

**All the following questions carry equal marks**

**(10x2M=20 Marks)**

- 1 What is copy constructor?
- 2 Define operator overloading.
- 3 Define a node in doubly linked list.
- 4 Explain the push operation in Stack ADT.
- 5 Write the differences between the Max Heap and Min Heap.
- 6 Define Threaded Binary Tree.
- 7 Define Hash Function.
- 8 Give the time complexity of the Merge Sort Algorithm.
- 9 Define a Graph.
- 10 Define Red Black Tree

**Part-B**

Answer All the following questions.

**(5X10M=50Marks)**

- 11 a) Write a C++ program to overload + operator to concatenate two strings. 5M  
b) Differentiate between function overloading and function overriding. 5M  
OR
- 12 Discuss in detail about the Asymptotic Notation with examples. 10M
- 13 Write a C++ program to demonstrate the array representation of Sparse Matrix. 10M  
OR
- 14 Write a C++ program demonstrating insertion and deletion operations for Circularly Linked List. 10M
- 15 a) Explain the properties of binary trees.  
b) Draw all possible binary trees whose post order traversal is 3,5,4. [5M+5M]  
OR
- 16 Write a C++ program to insert an element into Max Heap. 10M
- 17 Write a C++ program to demonstrate the Binary Search Tree. 10M  
OR
- 18 Explain Radix sort in details with an example. 10M
- 19 a) Write an algorithm to traverse a graph using breadth first search. 5M  
b) Explain about adjacency matrix and adjacency list. 5M  
OR
- 20 Explain AVL- trees in detail with example. 10M