R17 Regulation *Subject code:* 1P3FB

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

B.Tech II Year I Semester Supplementary Examinations, February 2021
Data Structures through C++
(Information Technology)

Maximum Marks: 70 Date: 22.02.2021 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 Why you need a data structure?
2 Define inheritance.
3 List the applications of stacks
4 Define linked list.
5 What is dynamic equivalence problem?
6 Define a complete binary tree.
7 What do you mean by hash function?
8 What is the complexity of merge sort?
9 What is a graph?
10 List the applications of depth first search.

Part-B

Answer All the following questions. **(10M X 5=50Marks)**

11 Explain the concept of asymptotic notations in detail.(10M)

OR

12 Explain about the exception handling in C++ with suitable example program. (10M)
13 Explain doubly linked list in detail. (10M)

OR

14 What is a Queue ADT? Explain its operation with example?(10M)
15 Explain about binary tree with example program. (10M)

OR

16 Implement priority queue and state the applications.(10M)
17 What is selection sort? Write the process of selection sort.(10M)

OR

18 Explain the procedure of insertion sort with an example.(10M)
19 What is a binary search tree? Explain the deletion operation with algorithm and suitable example?(10M)

OR

20 Explain AVL tree and how to insert a node with suitable algorithm in detail.(10M)