R20 Regulation *Subject code: 3P3FC*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous, Accredited by NAAC with 'A' Grade)

B.Tech III Semester Regular/Supplementary Examinations, March/April 2023

DATA STRUCTURES

(INFORMATION TECHNOLOGY)

Maximum Marks: 70 Date:10.04.2023 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 Define inheritance and polymorphism.
2 Give an overview of friend function in C++ ?
3 Explain the ADT of stack.
4 What are the applications of stack.
5 List out the properties of Binary Tree?
6 How many binary trees are possible with four nodes?
7 Write the importance of Hash function in Hashing?
8 Give comparison of sorting methods.
9 Write a short note on Representation of Graphs?
10 Write about Red- Black Trees?

Part-B

Answer All the following questions. (5X10M=50Marks)

11 (a) Explain constructors and destructors with examples. 6M
(b) Give an overview of Class and Object in C++? 4M

OR

12 (a) Explain the difference between Call by Value and Call by Reference in C++? 5M
(b) Discuss about function Overloading in C++? 5M

13 Write a program for the implementation of double linked list? 10M

OR

14 (a) Explain the operations of Queue with an example? 5M
(b) Write a program to convert an infix expression into its equivalent postfix expression? 5M

15 (a)Define binary tree? Explain how to represent the binary tree with an example? 5M
(b)Discuss about the ADT Binary Tree. 5M

OR

16 (a) List out Binary Tree Traversals. Explain? 6M
(b) Explain about Insertion and deletion operations in max heap? 4M

17	Explain about the various hash collision resolution techniques with an example.	10M
	OR	
18	(a)Sort the following list of elements by using insertion sort 35, 19, 66, 14, 8, 10, 57, 100	5M
	(b)Write an algorithm of Quick Sort with an example?	5M
19	(a)Differentiate between BFS and DFS?	5M
	(b)Explain the deletion operation of Binary search tree with an example?	5M
	OR	
20	Insert the following list of elements from the AVL tree. Delete the elements 18, 2 and 30 from the AVL tree 12, 30, 36, 18, 25, 9, 4, 2, 17, 14 , 20, 47.	10M