R20 Regulation *Subject code: 3P3FC*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech III Semester Supplementary Examinations, June 2026

DATA STRUCTURES

(IT)

Maximum Marks: 70 Date: 20.06.2026 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)		Marks	CO	BTL
1	Define friend function.	2M	1	L1
2	Define constructor.	2M	1	L1
3	What is doubly linked list?	2M	2	L1
4	What is queue?	2M	2	L1
5	List out the properties of Binary Tree.	2M	3	L1
6	What is Max Heap?	2M	3	L1
7	What is linear probing?	2M	4	L1
8	What is quick sort?	2M	4	L1
9	Define binary search tree.	2M	5	L1
10	Write about AVL Trees.	2M	5	L1

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	BTL
11	Explain new and delete operators with an example program.	10M	1	L2
	OR			
12	Discuss function template and class template.	10M	1	L2
13	Explain different operations on singly linked list.	10M	2	L2
	OR			
14	Discuss about linked implementation of stack.	10M	2	L2
15	Explain tree traversals with an example.	10M	3	L2
	OR			
16	Construct max heap for 150,80,40,30,10,70,110,100,20,90,60,50,120,140,130.	10M	3	L2
17	Apply insertion sort for the following elements 3,1,4,7,5,9,2,6,5,10	10M	4	L2
	OR			

18	Define hashing and discuss the different hashing functions with an example.	10M	4	L2
19	Define graph and explain how graphs can be represented in adjacency matrix and adjacency list ?	10M	5	L2
	OR			
20	Construct a B- tree of order 3 with the following elements. 25,10,20,30,80,40;50,60,82,70,90,85,93	10M	5	L2