



R20 Regulation **Subject code: 3P3FC**
TKR COLLEGE OF ENGINEERING AND TECHNOLOGY
(Autonomous, Accredited by NAAC with 'A+' Grade)

B.Tech III Semester Supplementary Examinations, February 2024
DATA STRUCTURES
(IT)

Maximum Marks: 70

Date: 26.02.2024 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)		CO	Bloom Tx
1	Define inheritance and polymorphism.	1	L1
2	Give an overview of friend function in C++ ?	1	L1
3	Explain the ADT of stack.	2	L2
4	What are the applications of stack.	2	L1
5	List out the properties of Binary Tree?	3	L1
6	How many binary trees are possible with four nodes?	3	L1
7	Write the importance of Hash function in Hashing?	4	L1
8	Give comparison of sorting methods.	4	L1
9	Write a short note on Representation of Graphs?	5	L1
10	Write about Red- Black Trees?	5	L1

Part-B

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

11	(a) Explain constructors and destructors with examples. (b) Give an overview of Class and Object in C++?	5M 5M	1	L2
OR				
12	(a) Explain the difference between Call by Value and Call by Reference in C++? (b) Discuss about function Overloading in C++?	5M 5M	1	L4 L2
13	Explain the implementation of double linked list with example.	10M	2	L2
OR				
14	(a) Explain the operations of Queue with an example? (b) Write a program to convert an infix expression into its equivalent postfix expression?	5M 5M	2	L2 L3
15	(a) Define binary tree? Explain how to represent the binary tree with an example? (b) Discuss about the ADT Binary Tree.	5M 5M	3	L2
OR				
16	(a) List out Binary Tree Traversals. Explain?	5M	3	L2

	(b) Explain about Insertion and deletion operations in max heap?	5M		
17	Explain about the various hash collision resolution techniques with an example.	10M	4	L2
	OR			
18	Sort the following list of elements by using insertion sort 35, 19, 66, 14, 8, 10, 57, 100	10M	4	L3
19	(a) Differentiate between BFS and DFS? (b) Explain the deletion operation of Binary search tree with an example?	5M 5M	5	L4 L2
	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	5	L3