



Regulation R18  
TKR COLLEGE OF ENGINEERING AND TECHNOLOGY  
(Autonomous, Accredited by NAAC with 'A' Grade)

Subject code: 2P3FB

**B.Tech III Semester Supplementary Examinations, July 2022**  
**DATA STRUCTURES**  
**(INFORMATION TECHNOLOGY)**

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 call-by-value?
- 2 What is inheritance in C++ and name the different types of inheritance?
- 3 List the different types of Linked Lists?
- 4 List the applications of Stack?
- 5 Define Binary Tree?
- 6 Define the terms: root, degree, siblings and height.
- 7 Distinguish between Linear search and Binary search?
- 8 Explain Hash function?
- 9 Define AVL tree with example?
- 10 What are the properties of B-Trees?

Part-B

Answer All the following questions.

(10M X 5=50Marks)

- 11 a) What is constructor? Explain various types of constructors with an example. 5  
b) What is algorithm? What are the properties of an algorithm? 5  
OR
- 12 a) Explain new and delete operators with an example program. 5  
b) Distinguish between linear data structure and nonlinear data structure? 5
- 13 Discuss about linked implementation of Queue ADT? 10  
OR
- 14 Create a program to insert an element in between two nodes in a double linked list. 10
- 15 Explain Binary tree ADT with suitable example. 10  
OR
- 16 Explain with an example how to insert and delete an element to max heap. 10
- 17 Apply insertion sort on the following elements 3, 1, 4, 7, 5, 9, 2, 6, 5, 10. 10  
OR
- 18 State and explain quick sort with an example. 10
- 19 Construct a binary search tree for the following 10  
100, 50, 200, 25, 90, 80, 150.  
OR
- 20 A. Distinguish between BFS and DFS. 5  
B. Explain Red Black trees with suitable example. 5