



R20 Regulation

Subject code: 3P3FC

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech III Semester Supplementary Examinations, December 2025

DATA STRUCTURES (IT)

Maximum Marks: 70

Date: 24.12.2025

Duration: 3 hours

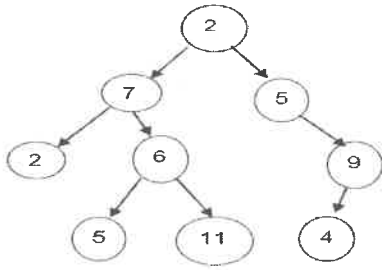
- Note:
1. This question paper contains two parts A and B.
 2. Part A is compulsory which carries 20 marks. Answer all questions in Part A.
 3. Part B consists of 5 Units. Answer any one full question from each unit.
 4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A

All the following questions carry equal marks (10X2M=20 Marks)		Marks	CO	BTL
1	What is function overloading?	2M	1	L1
2	Write the access specifiers with suitable example.	2M	1	L1
3	List the advantages of linked list.	2M	2	L1
4	Define circular linked list.	2M	2	L1
5	Define the term node, degree, siblings and level.	2M	3	L1
6	Define complete binary tree.	2M	3	L1
7	List out different types of popular hash functions.	2M	4	L1
8	List the uses of hash table.	2M	4	L1
9	Write the properties of B- Trees?	2M	5	L1
10	List the different AVL tree rotations to insert a node.	2M	5	L1

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	BTL
11	Define inheritance? Explain various types of inheritance with a sample program.	10M	1	L2
OR				
12	What is constructor? Explain various types of constructors with an example.	10M	1	L2
13	Evaluate the following expression $A+(B*C)-((D*E+F)/G)$ into postfix form.	10M	2	L2
OR				
14	Discuss about linked implementation of stack.	10M	2	L2
15	Write inorder, preorder and post order traversal for the following tree	10M	3	L2



OR

16	Explain with an example how to insert and delete an element to a max heap.	10M	3	L2
17	Write a cpp program to implement quick sort to arrange a list of integers in ascending order.	10M	4	L2
	OR			
18	Rearrange the following numbers using quick sort procedure. 42,12,18,98,67,83,8,10,71.	10M	4	L2
19	Construct an AVL tree for the following elements 10,20,15,3,2,16,18,26.	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