R18 Regulation Subject code : 2P3EB

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech III Semester Supplementary Examinations, July 2022

Data Structures through C++

(CSE)

Maximum Marks: 70 Date: 21.07.2022 Duration: 3 hours

Part-A

All the following questions carry equal marks (10x2M=20 Marks)

1 What are nonlinear data structures?
2 What are the types of Asymptotic notations?
3 List out the basic operations that can be performed on a stack?
4 What is an array? what are the different types of an arrays?
5 Define tree?
6 Define Max heap?
7 What is linear search
8 Define sorting
9 Which data structures are used for BFS and DFS of a graph?
10 List the different AVL tree rotations to insert a node.

Part-B

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

11 Analyze time and space complexity for addition of two matrices with algorithm. [10]

OR

12 Calculate the time complexity and space complexity for the sum of array elements. [10]
13 Explain the following operations in a double linked list. [10]
A) Insert an element B) Delete an element

OR

14 Explain queue operation using array and linked list with an example each. [10]
15 Explain max priority queue ADT. [10]

OR

16 Construct a binary tree from a given preorder and in order sequence. [10]
Preorder: ABDGCEHIF In order: DGBAHEICF
17 Explain radix sort with an example {82,901,100,12,150,77,55,23} [10]

OR

18 Differentiate linear search algorithm and binary search algorithm. [10]
19 Explain various rotations of AVL trees maintaining balance factor while insertion takes place. [10]

OR

20 Explain graph search methods (BFS and DFS) with an example.