Roll No. .....

3128

B. Tech. 3rd Semester (CSE) Examination – December, 2022

DATA STRUCTURES AND ALGORITHMS
(w. e. f. March -2021)

Paper : PCC-CSE-203G(A)

Time : Three Hours] *[Maximum Marks : 75*

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt ***five*** questions in all, selecting ***one*** question from each Unit. Question No. **1** is ***compulsory***. All questions carry equal marks.

1. (a) Define the term Data Structure. 2.5

(b) What is complexity of an algorithm ? 2.5

(c) What is priority queue ? 2.5

(d) What is Threaded Binary Tree ? 2.5

(e) Describe the term Hashing. 2.5

(f) Explain the Applications of Binary Trees in brief. 2.5

UNIT – I

2. What is Linear Search ? How Binary Search is better than the Linear Search ? Explain by taking suitable example. 15

3. What is an Algorithm ? In what way analysis of an algorithm is done ? Describe in detail. 15

UNIT – II

4. (a) Describe various applications of stack data structure. 10

(b) Convert the following infix expression into prefix and postfix : 5

$$((A+B)-C*(D/E))+F$$

5. What is Queue Data Structure ? Explain its various types with standard operations performed on them. 15

UNIT – III

6. What is linked list ? Write algorithms for several operations : Traversing, Searching, Insertion into, Deletion from linked list. 15

7. (a) What is Binary Search Tree ? Explain algorithm for insertion and searching from BST. 7.5

(b) Describe AVL Tree in detail. 7.5

UNIT – IV

8. What is Sorting ? Explain merge sort with complexity by taking suitable example. 15

9. Write Prim's Algorithm for finding Minimum Cost Spanning Tree. 15
