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

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