B.Tech. (CSE) 3rd Semester (G-Scheme) Examination, November-2023
DATA STRUCTURES AND ALGORITHMS
Paper - PCC-CSE-203-G(A)
(w.e.f. March-2021)

Time allowed : 3 hours] *[Maximum marks : 75*

Note : ***Question No. 1 is compulsory.*** *Attempt* ***five*** *questions in total, selecting* ***one*** *question from each unit.*

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

   (b) What is Searching ? 2.5

   (c) What is Circular queue ? 2.5

   (d) What is Tree data structure ? Differentiate between Tree and Graph. 2.5

   (e) Describe the term Hashing. 2.5

   (f) What is Spanning Tree ? Explain by taking suitable example. 2.5

Unit–I

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

3. What is an Algorithm ? Explain its performance analysis (Space and Time complexity) with example. 15

Unit-II

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

   (b) Convert the following infix expression into prefix and postfix : ((A + B) – C* (D / E))+ F 5

5. What is Priority Queue ? Explain its standard operations. 15

Unit-III

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

7. (a) Explain various applications of Binary Tree. 7.5

   (b) Describe B+ Tree in detail. 7.5

Unit–IV

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

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