Roll No. .....

OLE-3128

B. Tech. 3rd Semester (CSE) Examination – April, 2021

DATA STRUCTURES & ALGORITHMS
(With New Syllabus)

Paper : PCC-CSE-203-G(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 : Question No. **1** is ***compulsory***. Remaining, attempt ***one*** question from ***one*** Unit. Attempt ***five*** questions in all.

1. Write short note on the following : $2.5 \times 6 = 15$

(a) Insertion Sort

(b) Application of Binary Trees

(c) Binary Search Tree

(d) Graph Data Structure

(e) Linear Search

(f) Headed nodes

UNIT – I

2. (a) What is an algorithm ? Define its complexity in term of time and space with suitable example. 10

(b) Explain various types of Data structure. 5

3. What is searching ? Explain binary search algorithm with relevant example. How binary search is better than linear search ? Explain the complexity of binary search also. 15

UNIT – II

4. (a) What is stack ? Write algorithms for insertion and deletion for stack data structure. Explain with relevant example. 10

(b) Write short note on applications of stack. 5

5. (a) What is circular queue ? Write the operations performed on circular data structure. 10

(b) What is priority queue ? Explain with relevant example. 5

UNIT – III

6. What is circular linked list ? Write algorithms for insertion and deletion for circular linked list data structure. 15

7. Write short note on the following : $2 \times 7.5 = 15$

(a) AVL Tree

(b) B + Tree

UNIT – IV

8. Explain Heap Sort with relevant example. Also, write the algorithm for same. 15

9. What is minimum cost spanning tree ? Explain Prim's and Kruskal's Algorithm for MCST. 15