

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*

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*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.*

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**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