

Roll No. ....

**3031**

**B. Tech. 3rd Semester (CSE)**

**Examination – March, 2021**

**DATA STRUCTURES & ALGORITHMS**

**Paper : PCC-CSE-203-G**

***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. Explain the following :

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- (a) Define graph data structure.
- (b) Differentiate between Linear search and Binary search techniques.
- (c) What is AVL tree ?
- (d) What is sorting ? What are the properties of sorting algorithm ?

- (e) Explain postfix notation.
- (f) Define traversal of graph.
- (g) What is circular queue ?
- (h) How to design and develop algorithms ? Explain.

#### UNIT – I

- 2. How to measure complexity of algorithm ? What are the types of notations used for it ? Explain in detail. 15
- 3. Write an algorithm to implement binary search technique. Also find the complexity of algorithm. 15

#### UNIT – II

- 4. What is Queue ? Explain array representation of queue. Also discuss the applications of queue. 15
- 5. What is Stack ? Explain linked list representation of stack with example. 15

#### UNIT – III

- 6. What is linked list ? Explain in detail about doubly linked list and operations on doubly linked list with example. 15
- 7. What is Binary Tree ? Also explain dynamic implementation of it. 15

#### UNIT – IV

- 8. Write an algorithm to implement quick sort in detail. Explain with example. 15
- 9. Write an algorithm for Depth First traversal of a graph. Explain with example. 15