

Roll No.

3031

**B. Tech 3rd Semester (CSE)
Examination – December, 2019**

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 Number 1 is *compulsory*. All questions carry equal marks.

1. Explain the following : 15

- (a) Define Big - O notation.
- (b) Differentiate between array and linked list.
- (c) What is binary search tree ?
- (d) What is sorting ? What are the properties of sorting algorithm ?

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

UNIT - I

- 2. What is data structure ? How we can choose the right data structure ? 15
- 3. How do we develop and design algorithm ? Also explain time and space complexity of an algorithm. Explain with example. 15

UNIT - II

- 4. What are the advantages of using circular queue ? How it is different from normal queue ? Also explain its algorithm. 15
- 5. Write an algorithm to transform from prefix to postfix expression using stack operations. 15

UNIT - III

- 6. Write short note on : 15
 - (i) AVL Tree
 - (ii) Threaded Binary Tree
- 7. What is doubly linked list ? Write an algorithm to perform insertion and deletion in a doubly linked list. 15

UNIT – IV

8. What do you mean by sorting ? Write an algorithm to implement merge sort technique and also compute complexity of algorithm. 15
 9. What is graph traversal ? Write an algorithm to insert an edge into a directed graph represented using suitable example. 15
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