

Roll No.

3039

**B. Tech. 3rd Semester (ECE)
Examination – March, 2021**

DATA STRUCTURES

Paper : PCC-CSE-221-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 Section. Question No. 1 is compulsory. All questions carry equal marks.

1. (a) What do you mean by the term Data Structure ?
 $2.5 \times 6 = 15$
- (b) What is two dimensional array ?
- (c) What is Dequeue ?
- (d) What are main three properties of heap sort ?
- (e) What is binary tree ?
- (f) What is Doubly linked list ? Write the application of doubly linked list ?

SECTION - A

2. What is Binary search technique ? Write an algorithm to search an element by using binary search technique, Explain with suitable example ? 15
3. (a) How do we design an algorithm ? Write an algorithm to calculate simple interest. 8
(b) What is Data Structure ? Explain the importance of data structure in computer science. 7

SECTION - B

4. Define a "Stack" ? Explain its typical three applications and also write algorithm for PUSH and POP operations on a stack ? 15
5. (a) What is queue ? Explain the concept of circular queue in detail. 8
(b) What is Dequeue ? How many operations can be performed on a Dequeue ? 7

SECTION - C

6. Define Tree. What do you mean by traversing binary tree ? Explain by suitable example. 15
7. What is linked list ? Explain in detail about doubly linked list and operations on doubly linked list with example. 15

SECTION - D

8. (a) Write an algorithm on selection sort ? Explain the selection sort with suitable example. 8
(b) What is Insertion Sort ? Describe insertion sort with suitable example. 7
9. Explain Quick Sort. Write an algorithm to sort a list by using quick sort technique. 15
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