



### End Term Examinations (December 2018)

**School :** School of Engineering

**Program:** B.Tech. Computer

**Course:** Data Structure

**Course Code:**CSC232

**Semester:** III

**Max Marks:** 50

**Duration (mins) :** 120

#### Q1. ATTEMPT ANY SIX FROM THE FOLLOWING. EACH QUESTION CARRIES 2 MARKS

(12)

- Define complexity and classify it.
- State limitations of the Big 'O' notation.
- Define searching and enlist its types.
- Stack is a linear data structure. Yes/ No? Justify your answer.
- Sketch the representation of queue as an array.
- Define linked list with diagrammatic example.
- Differentiate between tree and graph (Min. 2 points).
- What is in-degree and out-degree of a node in a graph?

#### Q2. ATTEMPT ANY SIX FROM THE FOLLOWING. EACH QUESTION CARRIES 5 MARKS

(30)

- Explain the concept of binary search tree. Create a binary search tree with the following input

98	02	48	12	56	32	04	67	23	87	23	55	46
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- Convert following expression into postfix form with illustration of all steps

$$(A / (B \wedge C)) + (D * E) - (A * C)$$

- Explain representation of graph (Adjacency Matrix and Adjacency list) in detail using proper example.

- d) Write algorithm for linear search. Find position of element 30 using linear search algorithm in given sequence.

10	05	20	25	08	30	40
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- e) Consider the queue given below which has front = 1 and rear = 5

	A	B	C	D	E				
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Now perform following operation on the queue. In each step show the pointer positions

- Add F
  - Delete two alphabets
  - Add G
  - Delete four alphabets
  - Add I
- f) Explain deletion of node from linked list:
- a. Delete first node
  - b. Delete last node
  - c. Delete node after given node
- g) Elaborate the steps for performing Insertion sort for given elements of array.

30	10	40	50	20	45
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**Q3. ATTEMPT THE FOLLOWING (COMPULSARY)**

**(08)**

Draw tree for following expression.

$$(a - 2b + 5c)^2 * (4d - 6e)^5$$

Find in-order, pre-order and post-order traversal for the tree designed.