



## DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

### B.E./ B. TECH DEGREE EXAMINATION CONTINUOUS ASSESSMENT TEST- I (Common to CSE & IT)

**Subject : Data Structures**  
**Subject code : CS8391**  
**Year/ Sem : II/III**

**Duration : 1.30 Hrs**  
**Date : 19.08.2020**  
**Max. Marks : 50**

#### PART A — (5 × 2 = 10 Marks)

**Answer all questions**

1. Discuss the advantages and disadvantages of linked lists and arrays. [U][CO1]
2. Analyze and write the array representation of a polynomial:  
$$p(x) = 4x^3 + 6x^2 + 7x + 9$$
 [A][CO1]
3. Evaluate the following postfix expression  $523+8*+$  [E][CO2]
4. Define ADT. Give any two examples. [R][CO1]
5. Develop an algorithm for displaying the elements in a Stack [C][CO2]

#### PART B — (2 x 13 = 26 Marks)

**Answer the questions**

1. a) Write a procedure to add and subtract two polynomials using linked lists [C][CO1]

**OR**

- b) What are the ways to insert a node in a linked list? Write an algorithm for inserting a node before a given node in a circular doubly linked list. [C][CO1]
2. a) i. Show the procedure to convert the infix expression to postfix expression and steps involved in evaluating the postfix expression.  
ii. Convert the expression  $A - (B / C + (D \% E * F) / G) * H$  to postfix form and evaluate the given postfix expression  $8\ 2\ 3\ * \ 7\ + \ 3\ /\$ . [AE][CO2]

**OR**

- b) Write and explain the ADT operations for linked list implementation of a stack. [R][CO2]

#### PART C — (1 x 14 = 14 Marks)

**Compulsory Question**

1. Write an ADT to perform the following in a doubly linked list. [A][CO1]
  - i) to insert an element in the beginning, middle, end of the list
  - ii) to delete an element from anywhere in the list

\*\*\*\*\*ALL THE BEST\*\*\*\*\*



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**COURSE OUTCOMES (CO)****At the end of the course the students will be able to**

R2017	CS8391-DATA STRUCTURES	L	T	P	C
		3	0	0	3
C203.1	Implement abstract data types for Linear Data Structures - List				
C203.2	Implement abstract data types for Linear Data Structures - Stacks and Queues				
C203.3	Implement abstract data types for Non Linear Data Structures - Trees				
C203.4	Implement abstract data types for Non Linear Data Structures - Graphs				
C203.5	Critically analyze the various sorting algorithms and understand appropriate hash functions that result in a collision free scenario for data storage and retrieval				