SCHOOL OF INFORMATION TECHNOLOGY AND ENGINEERING

CONTINUOUS ASSESSMENT TEST – I - WINTER SEMESTER 2019-2020

Programme Name & Branch: MTECH (SE)

Course Name Code: SWE2001

Course Name: Data Structures and Algorithms

Faculty Name(s): Prof. Dharmendra Singh Rajput , Prof Angulakshmi, Prof Pradeep Kumar Roy.

Class Number(s):VL2019205004807, VL2019205004802, VL2019205004818,

Exam Duration: 90 mins Maximum Marks: 50

Answer all the questions (5x10=50 Marks)

1) (a) Draw the stack structure in each case when the following operations are performed on an empty stack. [4]

(i) Add A, B, C, D, E, F

(ii) Delete two letters

(iii) Add G

(iv) Add H

(v) Delete four letters

(vi) Add I

b) Write the pseudo code for push () and pop () operations. [

2)a) Using stack, convert the expression (A+ (B*C-(D/E^F)*G)*H) into postfix notation and illustrates the steps by using following table format as given below. [

Input Character/Token	Operation (PUSH/POP)	Contents of Stack	Result/Output

(b) Evaluate the value of a Postfix expression in the following table format: **5 1 2 + 4 * +3 -**

Input Character/Token	Operation (PUSH/POP)	Contents of Stack

3 a) Explain the recursive algorithm for Tower of Hanoi problem for N=3 and check for its correctness. [7]

b) List out the advantages of queue data structure? [3]

4. a) Consider the circular queue of size 10 which has FRONT = 1 and REAR = 5 with input A,B, C,D,E. Show the structure of queue for the following operations on the Circular queue. [4]

(i) Add F
(ii) Delete two letters
(iii) Add G
(iv) Add H
(v) Delete four letters
(vi) Add I

b) Write the pseudo code for Enqueue and Dequeue operation of queue. [6]

5. (a) Write an Algorithm to search for an element in the singly linked list. [5]

(b) Write an Algorithm to find number of nodes in a singly linked list. [5]