Online MID Semester Examination, ODD NOV 2021-22

Department of Computer Science and Engineering

Subject: DATA STRUCTURES

Course Code: CSL 1301

Time: 1HR **Marks: 15**

- **Answer all the questions**

1. **a) Explain about Sparse Matrix? [2M]**

   b) Explain Tower of Hanoi Problem? [2M]

2. **What is Circular Queue and Explain implementation of Circular queue with example? [4M]**

3. **Convert the given expression from infix to postfix using stack?**

   Infix expression A+ (B*C-(D/E^F)*G)*H, **[3M]**

4. **Explain Double Linked List and write a program for inserting a new node at the beginning of the list? [4M]**

National Institute of Technology Mizoram

Mid – Semester Examination, Odd Semester (2022-23)

DATA STRUCTURES (CSL 1301)

3rd Semester **Full Marks: 30 marks** **Duration: 1:30 hours**

Answer all 3 (Three) Questions. All Questions Carry Same Marks

(3 * 10 = 30 Marks)

1. a) Explain about Sparse Matrix? [3m]

   b) Explain about stack using Linked list along with operations? [7m]

   OR

   a) Explain about Queue using Array along with operations? [6m]

   b) consider 25*4 matrix A, Suppose Base(A)=200, W=4 [4m]
   Calculate the address of A [12,3] using Column major order and row major order?

2. a) Explain about D-queue along with the operations? [6m]

   b) convert the infix expression to prefix using stack [4m]
   K+L-M*N+(O^P) *W/U/V*T+Q

   OR

   a) Explain about Priority Queue along with the operations? [5m]

   b) Explain about singly linked list with the operations? [5m]

3. a) Explain about double linked list along with operations? [7m]

   b) Consider the element B (3,3,3) in Where Array B(1:8,-5:5,-10:5) [3m]
   find the effective indices E1, E2, E3 and the address of element B(3,3,3)Assuming Base (B)=400 and there are W=4 words per memory location, find the column major order?

   OR

   a) Explain about Circular Queue along with operations? [5m]

   b) Explain about Tower of Hanoi problem? [3m]

   c) What is the difference between linear and nonlinear data structure? [2m]