Ahsanullah University of Science and Technology

Course No: CSE3109   **Course Name:** Digital System Design

Semester: Fall20   **Date:** 1.10.2021

Marks of each question is given in the right side of every question.

TIME: 25+10 mins

1. Suppose, X and Y are two positive numbers. You have an ALU that can perform only addition, subtraction operations on two numbers and output the result (F) and the carry-out (Cout). Now design **a flowchart** and **a state diagram** for the following: **X mod Y** Here, 'mod' means the modulo operation (remainder after a division). **Hints:** • From the initial state, q_m starts the modulation operation. • The result of subtraction, addition and the final mod should be stored in X.	06
2. What are the differences between a machine cycle and an instruction cycle? Write the control words for the fetch cycle of SAP-1 instructions. The control word has the following format: Cp CE' Li L_B' Lm L_A' E_U Ep' E_I L_O E_A S_U'	04