CSE260
Assignment 03

This assignment must be hand-written. Show ALL steps in ALL questions.

Make sure that your circuit is efficient, meaning you should use the lowest number of components. You may use external gates if required.

Question 1
Build a circuit that implements the 1's complement number system using encoder(s) and decoder(s).

Question 2:
Implement the following boolean function using **a)** single 16:1 mux **b)** single 8:1 mux
$F(A,B,C,D) = \sum(0,1,2,7,8,10,11,13, 15)$
Use external gates if required.

Question 3:
Implement the following boolean function using **a)** 4x16 decoder(s) only **b)** 2x4 decoder(s) only
$F(A,B,C,D,E) = \sum(0,1,2,7,8,10,11,13, 15,18,21,24,25)$
Use external gates if required.

Question 4:
Design a 13 person voter counting system using full and parallel adders.

Question 5:
Consider A is a 4 bit number. Design A-3 using a 4 bit parallel adder. Use external gates if required.