Homework 2
Due Friday, September 20th at 11:00pm via CMS

Notes:
(1) Submit your solution in a single PDF file named HW2.pdf
(2) Put your name and NetID on the top of the first page
(3) Show how you arrived at your answers

Problem 1.

For a 1-bit 2-to-1 mux:

(a) Draw the truth table.

(b) Draw a Karnaugh Map with the zeros from the truth table.

(c) Derive a minimum product-of-sums Boolean expression from the K-Map.

(d) Implement (c) using only NOT and NOR gates.

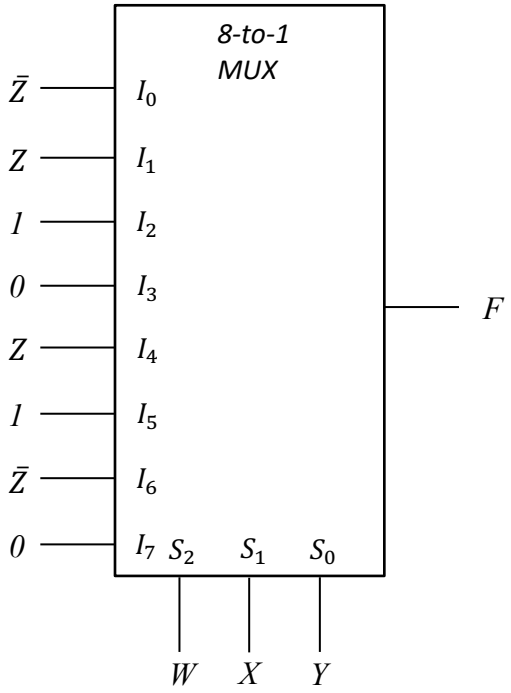
Problem 2.

Implement the truth table below using an 8-to-1 mux and no inverters.

A	B	C	D	F
0	0	0	0	0
0	0	0	1	1
0	0	1	0	0
0	0	1	1	1
0	1	0	0	1
0	1	0	1	1
0	1	1	0	1
0	1	1	1	0
1	0	0	0	1
1	0	0	1	1
1	0	1	0	1
1	0	1	1	1
1	1	0	0	1
1	1	0	1	1
1	1	1	0	1
1	1	1	1	1

Problem 3.

Determine the Boolean expression for F in SOP form (you don't need to minimize).



Problem 4.

For the following logic function draw a truth table and minimize the function using a Karnaugh Map. Implement the minimized function using NOT, AND, and OR gates. Then implement the function from the truth table using a 3-to-8 decoder and 2-input NAND and/or NOR gates.

$$F = \sum_{XYZ}(0,2,4,5)$$