ENGR-354
HW # 8

1) Assume you need an 8:1 mux but you don't have one. However you do have two 4:1 muxes and a good selection of AND, OR, NAND, NOR, and INV gates. Draw a circuit diagram showing how two 4:1 muxes, plus a small amount of other logic, can be connected to form an 8:1 mux. (the graphical symbol for a 4:1 mux is shown in fig. 6.2a in the text book).

2) A multiplexer can be used to generate a SOP function. Assume that you have three signals a, b, c. The truth table for a desired SOP function of these signals is shown below. Draw a circuit using one 8:1 multiplexer that will create the desired SOP function g.

g = a'b'c + a'b c' + a b'c + a b c' + a b c

a	b	c	g
0	0	0	1
0	0	1	0
0	1	0	1
0	1	1	0
1	0	0	0
1	0	1	1
1	1	0	1
1	1	1	1

3) Draw a circuit using one 4:1 mux and one inverter to implement the function defined by the truth table in problem 2.