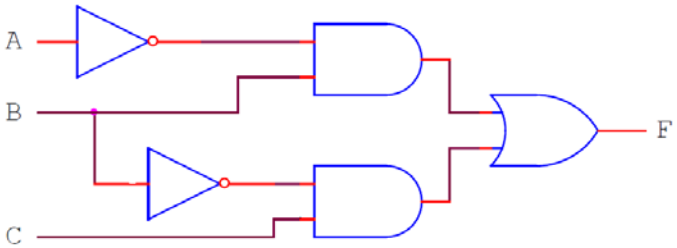
ISTM 214 Homework 5 (Due day: 11/8)

Name:_____ ID:_____

1. For the circuit shown below, derive the following formal descriptions:
   (a) F(A,B,C)
   (b) minimum SoP expression.
   (c) K-map
   (d) truth table
   (e) ON set
   (f) OFF set



2. If the function F(X,Y,Z) is represented by the ON SET $\Sigma_{X,Y,Z}(1,2,4,7)$,
   (a) express the complement of this function, $F'(X,Y,Z)$, as an ON set.
   (b) express the dual of this function, $F^D(X,Y,Z)$, as an OFF set.

3. Express the complement of the following function as an ON SET and draw a NAND-NAND circuit realization: **F(X,Y,Z) = Y + X•Z′**

4. Express the complement of the following function as an OFF SET and draw a NOR-NOR circuit realization: **F(X,Y,Z) = Y′ + X′•Z**

5. For the function mapped below:

		W′		W	
Y′		1	1	0	1	Z′
		0	0	0	1	
Y		1	1	0	0	Z
		1	1	0	1	Z′
		X′	X		X′	

   (a) Write a minimal sum-of-products expression and calculate its cost:
   (b) Write a minimal product-of-sums expression and calculate its cost: