Homework 1

Due at the beginning of your scheduled lab period

Last Name (Printed): _____ **Lab Div:** _____ **Date:** _____

E-mail: __ __ __ __ __ __ __ __ @purdue.edu **Signature:** _____

*Printed copies of these pages along with your original (**hand-annotated**, **not photocopied**) written solution in the space provided (unless otherwise indicated) are required in order to receive credit. NOTE: The purpose of homework is to provide an opportunity for practicing the kinds of problems you will be asked to solve on quizzes and exams – **copying the work of someone else does not accomplish this.***

1. [4 pts] Unsigned base conversions (LO 1-1).

   (a) $(7A2C)_{16}$ **to base 2**

   (b) $(10010110)_{2}$ **to base 10**

   (c) $(1001111100101010)_{2}$ **to base 16**

   (d) $(9274)_{10}$ **to base 16**

2. [4 pts] For the function F(X,Y,Z) = X·Y′ + Y′·Z, fill in the truth table, below, along with its dual (F^D) and complement (F′) functions (LO 1-4 & 1-5).

X	Y	Z	F(X,Y,Z)	F^D(X,Y,Z)	F′(X,Y,Z)
0	0	0			
0	0	1			
0	1	0			
0	1	1			
1	0	0			
1	0	1			
1	1	0			
1	1	1			

3. [4 pts] Prove T13 (DeMorgan's Law) for **n=3** using perfect induction (LO 1-6).

X1	X2	X3	X1·X2·X3	(X1·X2·X3)′	X1′	X2′	X3′	X1′ + X2′ + X3′
0	0	0						
0	0	1						
0	1	0						
0	1	1						
1	0	0						
1	0	1						
1	1	0						
1	1	1						

Score: _____ / 12