ECE2029 --- Introduction to Digital Circuit Design

Homework 1: Due by 12 pm Friday 8 November 2012
(place completed homework in the ECE2029 box in the ECE Office)

To ensure proper grading & return, attach the cover sheet to the FRONT of you homework

- Always complete the reading assignments *before* attempting the homework problems.
- Show *all* of your work. Underline, circle or box each result.
- *Always* write neatly. The grader can not be expected to GUESS what you meant to do!
- Points are as indicated.

Problem 1 (15 pts) = Vahid 1.9

Problem 2 (10 pts) = Vahid 1.15

Problem 3 (10 pts) = Vahid 1.22

Problem 4 (10 pts)
a) What are the ACSII codes (in HEX) for '8', 'w', and 'J' ?

b) What ASCII characters correspond to the following code values?

     i. 68 decimal   ii. 4Ah   iii. 10001000b

Problem 5 (10 pts)
Write out the rule for identifying Overflow in fixed number size addition. Now perform the following decimal arithmetic problems by first converting the numbers to two's complement form (*using a 6 bit word size for all numbers*). Then perform the 2's compliment addition. Show the result in binary indicating as in the problem above whether each result is positive or negative or overflowed,and then follow with the equivalent decimal value of the result if there was no overflow.

     a. 23 + 11   b.   −18 − 12 = -18 + -12

Problem 6 (5 pts) = Vahid 2.11

Problem 7 (10 pts) = Convert the following Boolean equations to a digital circuit.
     a. $F(x,y,z) = (\overline{x+z})(y+\overline{x}) + x\overline{y}z$
     b. $F(x,y,z) = (x'+y)z + (y'+z')(x)$
     c. $F(x,y,z) = (x+z)'y + (x+z)$

Problem 8 (10 pts) = Vahid 2.33 and b) Vahid 2.26

Problem 9 (10 pts) = Vahid 2.39

Problem 10 (10 pts) = a) Vahid 2.51 and b) Show whether $\overline{X}\cdot\overline{Y}\cdot\overline{Z} = \overline{XYZ}$ using truth tables

ECE2029 Homework #1

Submitted by:_____

ECE Box #:_____

Date:_____

Question	Grade
1 (15)	
2 (10)	
3 (10)	
4 (10)	
5 (10)	
6 (5)	
7 (10)	
8 (10)	
9 (10)	
10 (10)	
Total: (100)	