ECE2029 --- Introduction to Digital Circuit Design

Homework 2: Due by 12pm Friday Nov 15th

(place completed homework in the box outside my office, AK-011)

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 (10 pts) = Vahid 2.54 (you do not have to minimize your logic expression)

Problem 2 (10 pts) = Vahid 2.58 (you do not have to minimize your logic expression)

Problem 3 (10 pts) = Vahid 2.60 (you do not have to minimize your logic expression)

Problem 4 (10 pts) = Vahid 6.5 -- minimize using both (a) algebraic manipulation and (b) Karnough Maps

Problem 5 (10 pts) – Write out the truth table for the following expression and then determine the minimized expression using a Karnaugh Map.

$$F = XYZ + \overline{X}YZ + XY\overline{Z} + \overline{Y}Z$$

Problem 6 (15 pts)
Answer the following questions for Truth Table 1 below.

a. What is the full Sum of Minterms expression for G (you may use sigma notation)?

b. What is the full Product of Maxterms expression for G (you may use PI notation)?

c. Determine a *minimized* 2 level sum of product expression for G using Karnaugh maps

Problem 7 (15 pts)
Answer the following questions for Truth Table 2 below.

a. What is the full Sum of Minterms expression for R (you may use sigma notation)?

b. What is the full Product of Maxterms expression for R (you may use PI notation)?

c. Determine a *minimized* 2 level sum of product expression for R using Karnaugh maps

Problem 8 (10 pts) = Vahid 2.74

Truth Table 1:

M	N	P	S	G
0	0	0	0	1
0	0	0	1	1
0	0	1	0	0
0	0	1	1	0
0	1	0	0	0
0	1	0	1	1
0	1	1	0	1
0	1	1	1	1
1	0	0	0	0
1	0	0	1	0
1	0	1	0	0
1	0	1	1	0
1	1	0	0	1
1	1	0	1	1
1	1	1	0	1
1	1	1	1	1

Truth Table 2 * = Don't Care

A	B	C	D	R
0	0	0	0	1
0	0	0	1	0
0	0	1	0	0
0	0	1	1	0
0	1	0	0	1
0	1	0	1	1
0	1	1	0	0
0	1	1	1	1
1	0	0	0	0
1	0	0	1	0
1	0	1	0	*
1	0	1	1	*
1	1	0	0	*
1	1	0	1	*
1	1	1	0	*
1	1	1	1	*

ECE2029 Homework #2

Submitted by:_____

ECE Box #:_____

Date:_____

Question	Grade
1	
2	
3	
4	
5	
6	
7	
8	
Total:	