ECE380: Pre-Lab #04: K-Maps

1. Given function ***f***(a,b,c,d)= Σ m (0, 2, 3, 8, 10, 11, 15), find its minimum SOP form using a K-Map.

2. Draw a logic diagram of the minimum SOP form of ***f***(a,b,c,d) using AND, NOT and OR gates.

3. Draw a logic diagram for the minimum SOP form of ***f***(a,b,c,d) using only NAND gates.

4. Given function ***g***(a,b,c,d)= Π M (1, 4, 5, 6, 7, 9, 12, 13, 14), find its minimum POS form using a K-Map.

5. Draw a logic diagram of the minimum POS form of ***g***(a,b,c,d) using AND, NOT and OR gates.

6. Draw a logic diagram for the minimum POS form of ***g***(a,b,c,d) using only NOR gates.

7. Print out the table below for Lab #4. Do NOT fill in the blanks before the lab.

A	B	C	D	*f*	*f* min SOP	*f* NAND	*g* min POS	*g* NOR
0	0	0	0					
0	0	0	1					
0	0	1	0					
0	0	1	1					
0	1	0	0					
0	1	0	1					
0	1	1	0					
0	1	1	1					
1	0	0	0					
1	0	0	1					
1	0	1	0					
1	0	1	1					
1	1	0	0					
1	1	0	1					
1	1	1	0					
1	1	1	1					

Pre-Lab (30%)	**Score**	**TA initial**
15% K-maps		
15% Logic diagrams		

Lab Demo	**TA Initials**
f (min SOP)	
f (NAND)	
g (min POS)	
g (NOR)	

Report (70%)	
10% Introduction	
10% Procedures	
20% Results	
30% Conclusions	

Final Lab Grade	