

Homework #2
Due Sept 23, 1999

1. Minimize the following functions using Karnaugh maps using sum of products form. (10 points.)

Inputs			Functions									
A	B	C	f	g	h	i	j	k	l	m	n	p
0	0	0	1	1	1	1	1	0	0	0	1	0
0	0	1	1	0	1	0	1	1	0	1	0	1
0	1	0	0	0	0	1	1	1	1	0	0	0
0	1	1	0	1	1	0	0	1	1	0	0	1
1	0	0	1	0	0	1	1	0	0	0	1	1
1	0	1	1	1	0	0	1	0	0	0	0	1
1	1	0	0	1	1	1	1	0	0	1	1	0
1	1	1	0	0	0	0	0	0	1	1	0	0

2. Minimize the following functions using Karnaugh maps using sum of products form. (5 points)

$$F(A,B,C,D) = A'B'C'D' + A'B'C'D + A'B'CD + A'BC'D' + A'BC'D + A'BCD + ABC'D' + ABC'D + ABCD$$

$$G(k,l,m,n) = k'l'm'n' + kl'm'n' + k'l'mn' + kl'mn'$$

$$H(x,y,z,w) = xy'z'w + xy'zw + xyz'w + xyzw$$

$$K(a,b,c,d) = a'b'c'd' + a'b'cd' + a'bc'd' + a'bcd' + a'b'cd$$

$$M(a,b,c,d) = abc'd' + ab'c'd' + a'bc'd' + a'b'cd + a'b'cd' + a'b'c'd + a'b'c'd'$$

3. Express the following functions in product of sums form. Minimize your expressions using Karnaugh maps. (5 points.)

Inputs			Functions				
A	B	C	q	r	s	t	u
0	0	0	0	0	0	0	1
0	0	1	0	0	0	1	0
0	1	0	0	1	0	0	0
0	1	1	1	1	0	1	1
1	0	0	0	1	1	0	1
1	0	1	1	0	1	0	1
1	1	0	1	1	0	0	1
1	1	1	1	0	1	0	1

