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CSE 140
Rosing

CSE 140 HW 2

1) a)

CD \ AB	00	01	11	10
00	X	1	X	0
01	X	0	1	0

$\Pi M(3,4,5) + \Sigma d(2,7)$

I. Prime Implicants: $AB + \bar{A}\bar{C} + \bar{A}\bar{B}$

II. Essential Prime Implicants:
$AB + \bar{A}\bar{C}$

III. all possible minimal POS:
$(A+\bar{B})(C+\bar{A})$
$(A+\bar{B})(A+\bar{C})(\bar{A}+\bar{B})$

b) f_1

CD \ AB	00	01	11	10
00	1	0	1	0
01	1	0	0	1

$\Sigma m(0,5,6)$

f_2

CD \ AB	00	01	11	10
00	1	0	0	1
01	1	0	0	0

$\Sigma m(0,1,4)$

$f_1 \& f_2$

CD \ BA	00	01	11	10
00	1	0	0	0
01	1	0	0	0

SOP $f_1 * f_2 = \bar{A}\bar{B}$

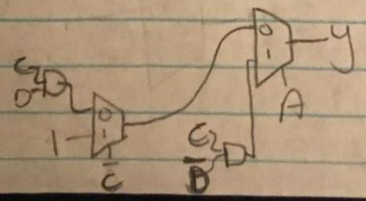
2) $f(a,b,c,d) = \Sigma m(3,4,5,10,14) + \Sigma d(1,2)$

a)

CD \ AB	00	01	11	10
00	1	1	0	0
01	X	1	0	0
11	1	X	0	0
10	0	0	1	1

$f = \bar{A}\bar{C} + C\bar{A}D + A\bar{D}C$
$= \bar{A}\bar{C} + \bar{A}CD + AC\bar{D}$

b) $\bar{A}\bar{C} + \bar{A}CD + AC\bar{D}$
$\bar{A}(\bar{C} + CD) + A(C\bar{D})$



3)

a)

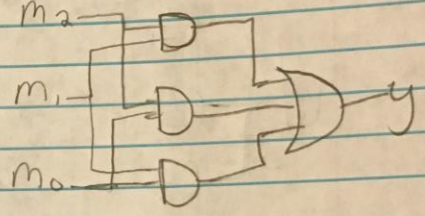
m_2	m_1	m_0	Y
0	0	0	0
0	0	1	0
0	1	0	0
0	1	1	1
1	0	0	0
1	0	1	1
1	1	0	1
1	1	1	1

b)

$m_1 m_0$ \ m_2	0	1
0	0	0
1	1	1

$m_2 m_0 + m_0 m_1 + m_2 m_1$

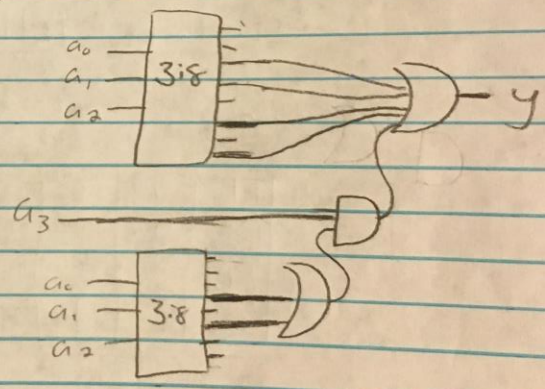
c)



4)

	a_3	a_2	a_1	a_0	y
0	0	0	0	0	0
1	0	0	0	1	0
2	0	0	1	0	1
3	0	0	1	1	1
4	0	1	0	0	0
5	0	1	0	1	1
6	0	1	1	0	0
7	0	1	1	1	1
8	1	0	0	0	0
9	1	0	0	1	0
10	1	0	1	0	0
11	1	0	1	1	1
12	1	1	0	0	0
13	1	1	0	1	1
14	1	1	1	0	0
15	1	1	1	1	0

a)



b)