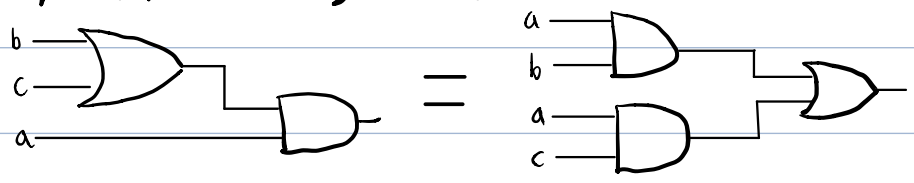
Chapter 02

page 102:

Problem 3(b)

P8a: $a(b+c) = ab+ac$



page 103:

Problem 8(e)

$x'y'z' + x'yz' + x'yz + xyz$ (2 terms, 4 literals)

$= \underline{(x'z')y' + (x'z')y} + \underline{(yz)x' + (yz)x}$ ... P1b

$= x'z' + yz$ ... P9a, P9a

page 104:

Problem 9(b)

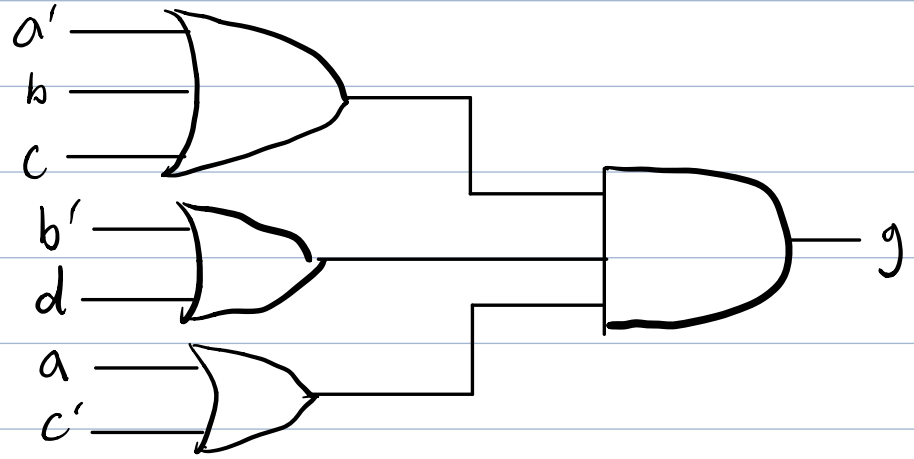
$(x+y+z)(x+y+z')(x+y'+z)(x+y'+z')$ (1 term, 1 literal)

$= \underline{[(x+y)+z][(x+y)+z']}\,\underline{[(x+y')+z][(x+y')+z']}$

$= (x+y)(x+y')$ ... P9b, P9b

$= x$ ... P9b

Problem 11 (b)



i) $g = (a'+b+c)(b'+d)(a+c')$

ii) $g = a'b'c' + bc'd + acd + ab'c$

page 105:

Problem 13

$f(x,y,z) = \Sigma m(1,3,6)$

$g(x,y,z) = \Sigma m(0,2,4,6)$

(d) $f'(x,y,z) = \Sigma m(0,2,4,5,7)$

$g'(x,y,z) = \Sigma m(1,3,5,7)$

(e) $f(x,y,z) = \Pi M(0,2,4,5,7)$

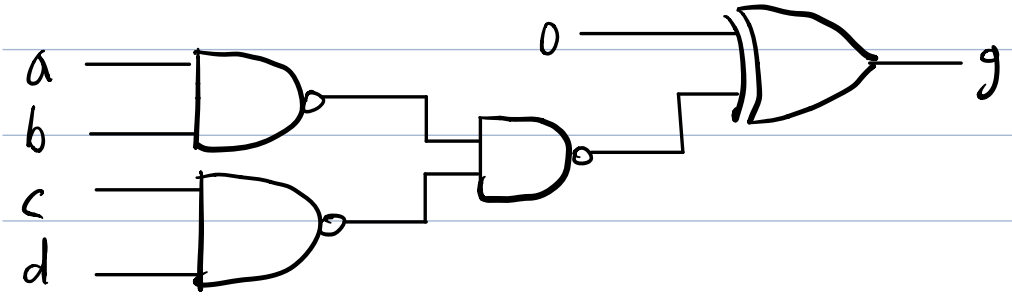
$= (x+y+z)(x+y'+z)(x'+y+z)(x'+y+z')(x'+y'+z')$

$g(x,y,z) = \Pi M(1,3,5,7)$

$= (x+y+z')(x+y'+z')(x'+y+z')(x'+y'+z')$

page 106:

Problem 17 (f)



i) $g = 0 \oplus ((a \cdot b)' \cdot (c \cdot d)')' = 0 \oplus (ab + cd) = 0 \cdot (ab+cd)' + 1 \cdot (ab+cd)$

ii) $g = ab + cd$

page 108:

Problem 25 (e)

$G = B'D'E' + A'BC'D + ACE + AC'E' + B'CE$

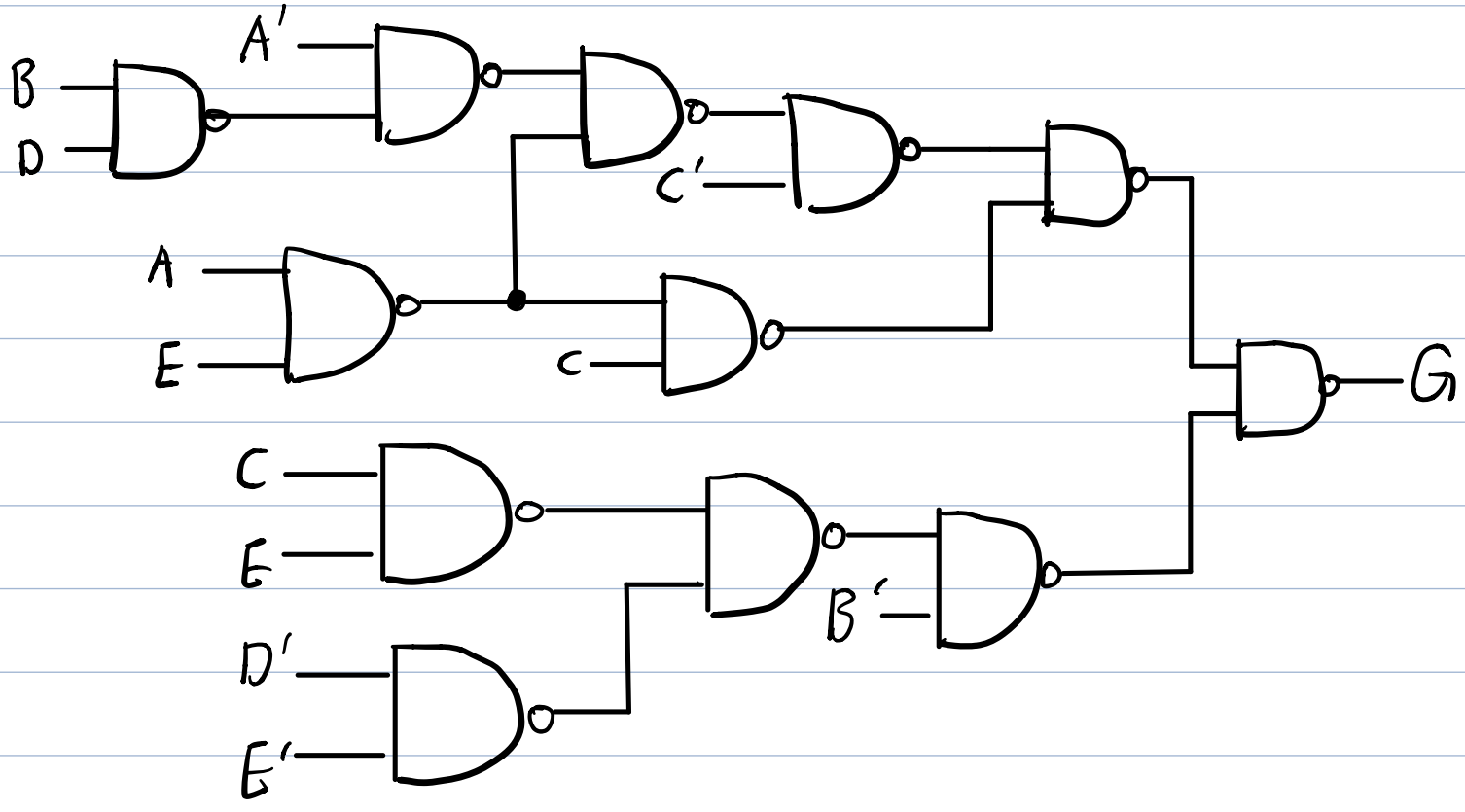
(12 gates, one of which is shared)

$G = B'D'E' + A'BC'D + ACE + AC'E' + B'CE$

$= B'(D'E' + CE) + C'(A'BD + AE') + ACE$

$= B'(D'E' + CE) + [C' + AE][C + (A' + E')(A + BD)]$

1 2 3 4 5 6 7 8 9 7 10 11 12

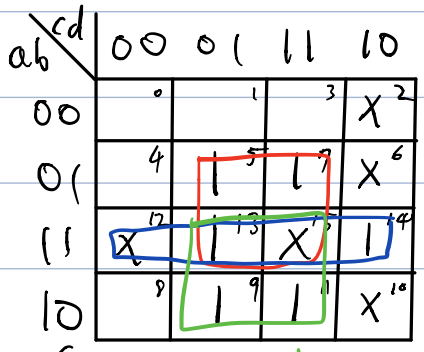


chapter 3

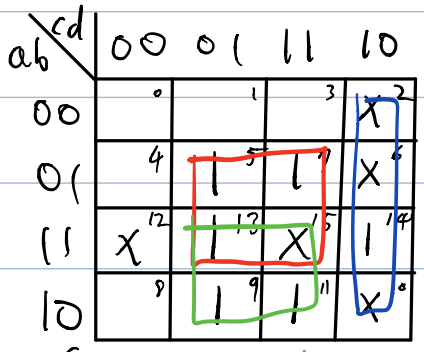
page 178:

Problem 4(d)

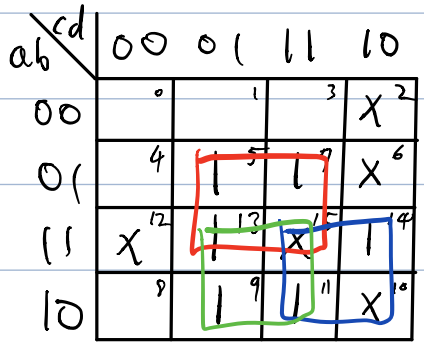
$f(a,b,c,d) = \sum m(5,7,9,11,13,14) + \sum d(2,6,10,12,15)$



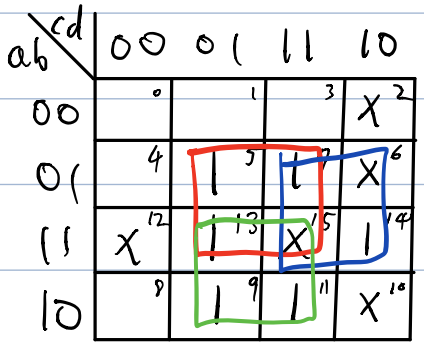
$f_1 = bd + ad + ab$



$f_1 = bd + ad + cd'$



$f_1 = bd + ad + ac$



$f_1 = bd + ad + bc$

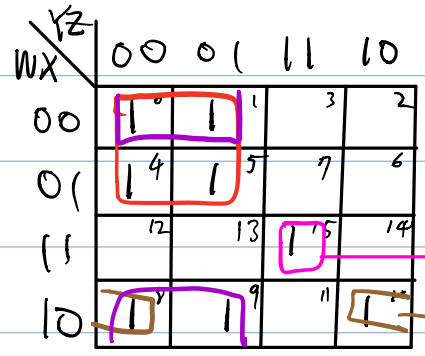
page 179:

Problem 6(d)

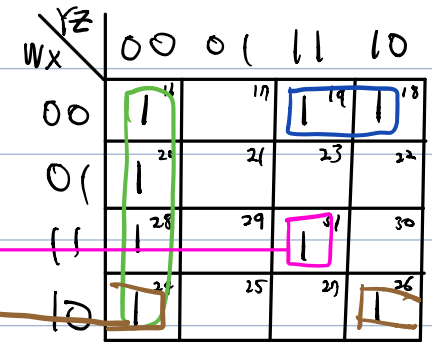
$G(V,W,X,Y,Z) = \sum m(0,1,4,5,8,9,10,15,16,18,19,20,24,26,28,31)$

V

0



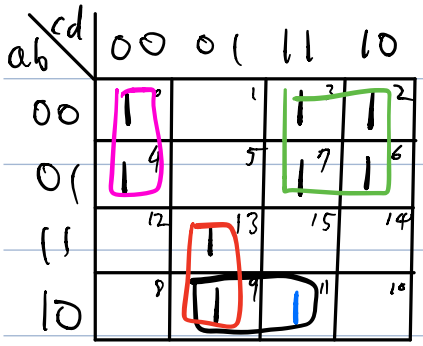
1



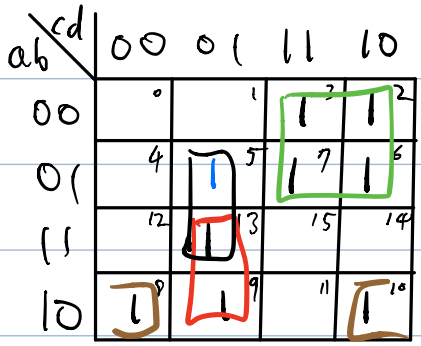
$G = V'W'Y' + VY'Z' + VWX'Y + V'X'Y' + WXYZ + WX'Z'$

Page 180 :

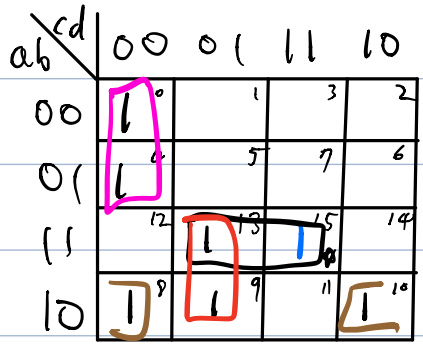
Problem 7(g)



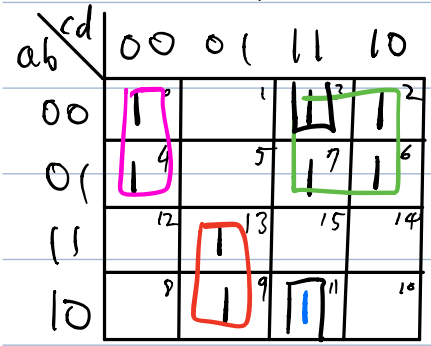
F_1



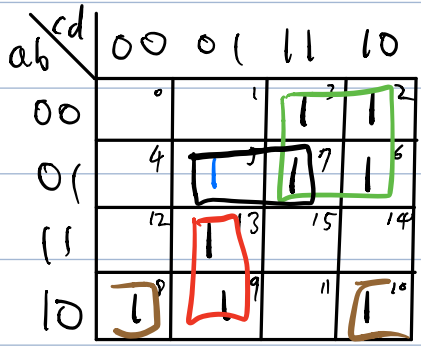
G_1



H



F_2



G_2

$f_1 = ac'd + a'c + a'c'd' + ab'd$

$f_2 = ac'd + a'c + a'c'd' + b'cd$

$g_1 = ac'd + a'c + ab'd' + bc'd$

$g_2 = ac'd + a'c + ab'd' + a''bd$

$h = ac'd + a'c'd' + ab'd' + abd$

Page 182:

Test Problem 5

cd \ ab	00	01	11	10
00	0	0	X	0
01	X	1	X	1
11	1	1	0	X
10	0	X	0	0

$f = a'd + c'd$

cd \ ab	00	01	11	10
00	0	0	X	0
01	X	1	X	1
11	1	1	0	X
10	0	X	0	0

$f = a'd + b'd$

cd \ ab	00	01	11	10
00	0	0	X	0
01	X	1	X	1
11	1	1	0	X
10	0	X	0	0

$f' = d' + ac$

$(f')' = (d' + ac)'$

$= d \cdot (ac)'$

$= d \cdot (a' + c')$

cd \ ab	00	01	11	10
00	0	0	X	0
01	X	1	X	1
11	1	1	0	X
10	0	X	0	0

$f' = d' + ab$

$(f')' = (d' + ab)'$

$= d \cdot (ab)'$

$= d \cdot (a' + b')$