ÖDEV-2

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4-)

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

$\overline{(x+y+z)} + x'y' = x'y'z' + x'y' = x'(y'z' + y') = x' + y'$

(x' — absorption law)

$x'y' \neq x'y'z' + xy'$

$x'y' \neq x(y'z' + y')$

$x'y' \neq x(y' + z')$

	x	y	z	f
0	0	0	0	1
1	0	0	1	1
2	0	1	0	1
3	0	1	1	1
4	1	0	0	1
5	1	0	1	1
6	1	1	0	0
7	1	1	1	0

$\neq$

	x	y	z	f
0	0	0	0	1
1	0	0	1	0
2	0	1	0	1
3	0	1	1	1
4	1	0	0	1
5	1	0	1	1
6	1	1	0	1
7	1	1	1	1

Eşit değil

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

Geçerli

	x	y	z	$f = x + x'yz$
0	0	0	0	0
1	0	0	1	0
2	0	1	0	0
3	0	1	1	1
4	1	0	0	1
5	1	0	1	1
6	1	1	0	1
7	1	1	1	1

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	x	y	z	$f = (x+y)(x+z)$
0	0	0	0	0
1	0	0	1	0
2	0	1	0	0
3	0	1	1	1
4	1	0	0	1
5	1	0	1	1
6	1	1	0	1
7	1	1	1	1

Eşit

c) $x(x'+y+z) = xy + xz$

$xx' + xy + xz = xy + yz$

$xy + xz = xy + xz$ ✓

$x(y+z)$

	x	y	z	$f = x(x'+y+z)$
0	0	0	0	0
1	0	0	1	0
2	0	1	0	0
3	0	1	1	0
4	1	0	0	0
5	1	0	1	1
6	1	1	0	1
7	1	1	1	1

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	x	y	z	$f = xy + xz$
0	0	0	0	0
1	0	0	1	0
2	0	1	0	0
3	0	1	1	0
4	1	0	0	0
5	1	0	1	1
6	1	1	0	1
7	1	1	1	1

Eşit

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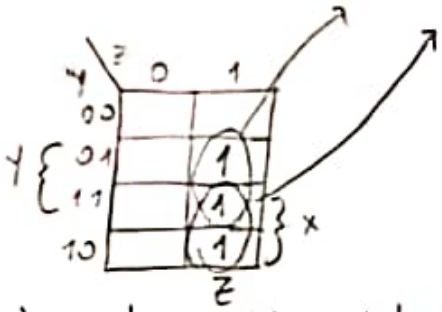
2-)

a) $ABC + A'B + ABC' = AB(C+C') + A'B = AB + A'B = B$

b) $x'yz + xz = yz + xz = z(x+y)$ → minimum number of literal 3



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

d) $xy + x(wz + wz') = xy + x(w(z+z')) = xy + xw = x(w+y)$ (z+z' = 1)

e) $(BC' + A'D)(AB' + CD')$: Min. number of literal = 3

$ABB'C' + BCC'D' + AA'B'D + A'CDD' = 0$ (0 0 0 0)

f) $(a'+c')(a+b'+c') = aa' + a'b' + a'c' + ac' + b'c' + c' = a'b' + c'$ ($aa' = 0$; $a'c' + ac' + b'c' + c' = c'$)

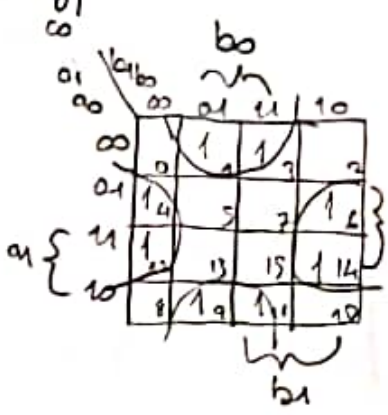
3-) a)

$c_0 = f_m(1,3,4,6,9,11,12,14) = a_1a_0'b_1'b_0 + a_1'a_0'b_1b_0 + a_1'a_0b_1'b_0 + a_1'a_0b_1b_0' + a_1a_0'b_1'b_0 + a_1a_0'b_1b_0 + a_1a_0b_1'b_0' + a_1a_0b_1b_0'$

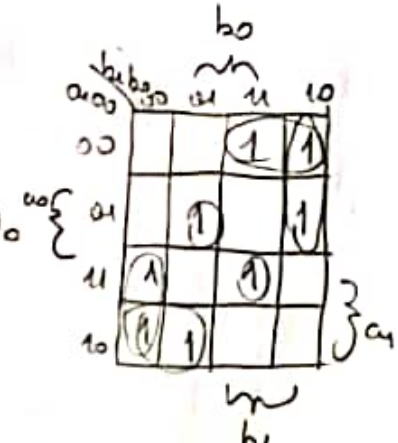
$c_1 = f_m(2,3,5,6,8,9,12,15) = a_1'a_0'b_1b_0' + a_1'a_0'b_1b_0 + a_1'a_0b_1'b_0 + a_1'a_0b_1b_0' + a_1a_0'b_1'b_0' + a_1a_0'b_1b_0 + a_1a_0b_1'b_0' + a_1a_0b_1b_0$

$c_2 = f_m(7,10,11,13,14,15) = a_1'a_0b_1b_0 + a_1a_0'b_1b_0' + a_1a_0'b_1b_0 + a_1a_0b_1'b_0 + a_1a_0b_1b_0' + a_1a_0b_1b_0$

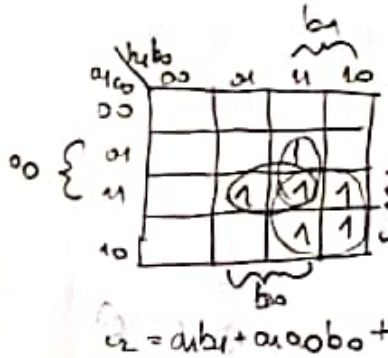
b)



$a_0 = a_0b_0' + a_0'b_0$



$c_1 = a_1\bar{b}_1\bar{b}_0 + a_1\bar{a}_0b_1 + a_1\bar{a}_0\bar{b}_1 + a_1\bar{b}_1b_0 + a_1a_0\bar{b}_1b_0 + a_1a_0b_1\bar{b}_0$



$c_2 = a_1b_1 + a_1a_0b_0 + a_0b_1b_0$