Assignment 2 çözümleri 16.10.2012

① $f(x,y,z) = \Sigma m(0,3,5,6) \Rightarrow f'(x,y,z) = \Sigma m(1,2,4,7)$

| x | y | z | f' |
|---|---|---|---|
| 0 | 0 | 0 | 0 |
| 0 | 0 | 1 | 1 |
| 0 | 1 | 0 | 1 |
| 0 | 1 | 1 | 0 |
| 1 | 0 | 0 | 1 |
| 1 | 0 | 1 | 0 |
| 1 | 1 | 0 | 0 |
| 1 | 1 | 1 | 1 |

a) $f'(x,y,z) = x'y'z + xyz' + xy'z' + xyz$

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

$= (x'y + xy')' = (x+y')(x'+y) = \cancel{xx'} + xy + y'x' + \cancel{yy'}$ (0, 0)

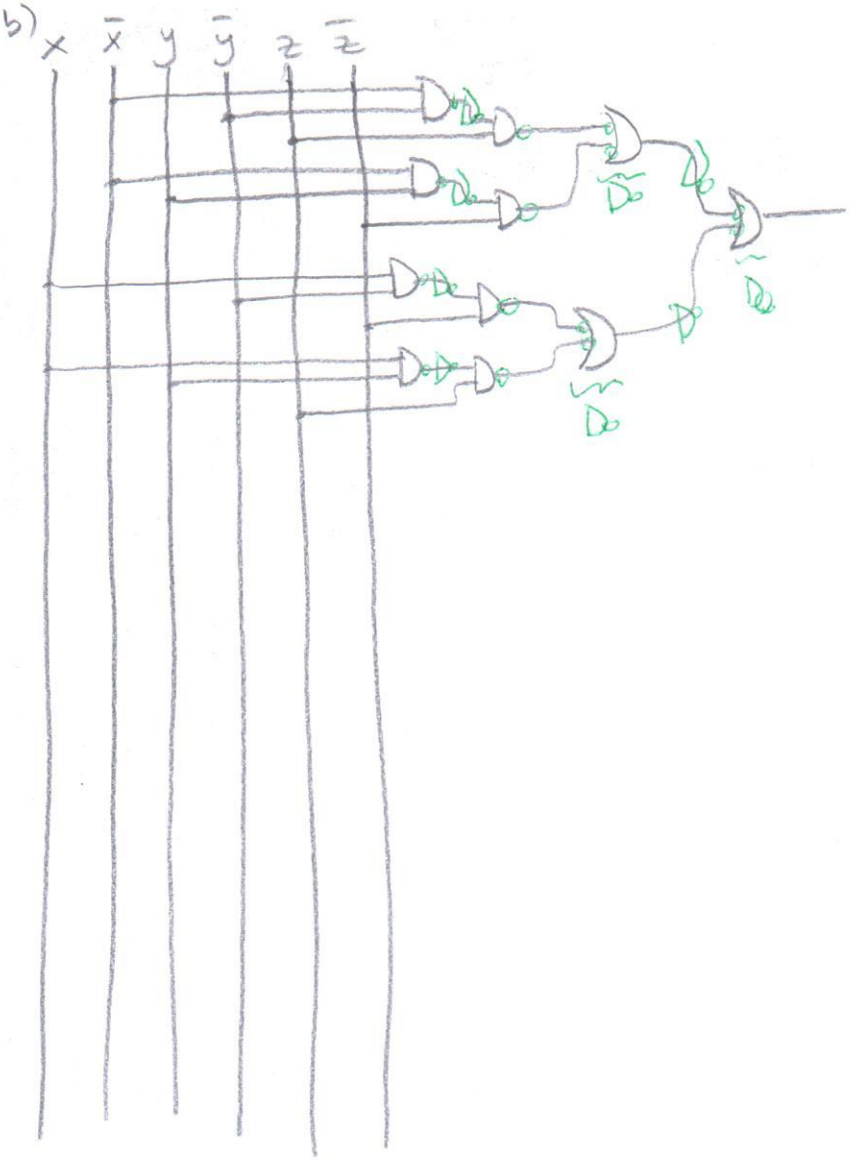
$(x'y + xy')' = y'x' + xy$

Yeni bunun tersi bu.

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

$= (x \oplus y) \oplus z$ ✓

b)



(2) $f(a,b,c,d) = \sum m(4,5,6,7,9,12,13,15) = \prod M(0,1,2,3,8,10,11,14)$

a) $f = (a+b+c+d)(a+b+c+\bar{d})(a+b+\bar{c}+d)(a+b+\bar{c}+\bar{d})$
$(\bar{a}+b+c+d)(\bar{a}+b+\bar{c}+d)(\bar{a}+b+\bar{c}+\bar{d})(\bar{a}+\bar{b}+\bar{c}+d)$

$= (a+b+c)(a+b+\bar{c})(\bar{a}+b+d)(\bar{a}+b+\bar{c}+\bar{d})(\bar{a}+\bar{b}+\bar{c}+d)$

$= (a+b)(\bar{a}+b+d)(\bar{a}+b+\bar{c}+\bar{d})(\bar{a}+\bar{b}+\bar{c}+d)(\bar{a}+b+\bar{c})$ → konsensüs

$= (a+b)(\bar{a}+b+d)(\bar{a}+\bar{b}+\bar{c}+d)(\bar{a}+b+\bar{c})$

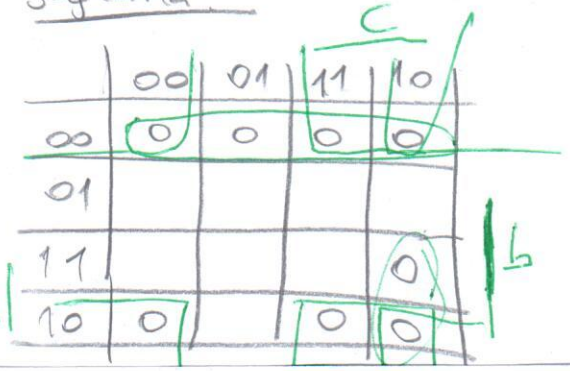
$= (a+b)(\bar{a}+b+d)(b+d)(\bar{a}+\bar{b}+\bar{c}+d)(\bar{a}+b+\bar{c})(\bar{a}+\bar{c}+d)$

$= (a+b)(b+d)(\bar{a}+b+\bar{c})(\bar{a}+\bar{c}+d)$

$= (a+b)(b+d)(\bar{a}+b+\bar{c})(b+\bar{c})(\bar{a}+\bar{c}+d)$

$= (a+b)(b+d)(b+\bar{c})(\bar{a}+\bar{c}+d)$

Sağlama:




$(a+b)(b+d)(b+\bar{c})(\bar{a}+\bar{c}+d)$

$f_{dual} = abcd + abc\bar{d} + ab\bar{c}d + ab\bar{c}\bar{d} + \bar{a}bcd + \bar{a}bc\bar{d} + \bar{a}b\bar{c}\bar{d} + \bar{a}\bar{b}\bar{c}d$

$= abc + ab\bar{c} + \bar{a}bd + \bar{a}b\bar{c}\bar{d} + \bar{a}\bar{b}\bar{c}d$

$= ab + \bar{a}bd + \bar{a}b\bar{c}\bar{d} + \bar{a}\bar{b}\bar{c}d$

$= ab + \bar{a}bd + \bar{a}b\bar{c}\bar{d} + \bar{a}b\bar{c} + \bar{a}\bar{b}\bar{c}d$

$= ab + \bar{a}bd + bd + \bar{a}b\bar{c} + \bar{a}\bar{b}\bar{c}d$

$= ab + bd + \bar{a}b\bar{c} + b\bar{c} + \bar{a}\bar{b}\bar{c}d$

$= ab + bd + b\bar{c} + \bar{a}\bar{b}\bar{c}d$

$= ab + bd + b\bar{c} + \bar{a}\bar{b}\bar{c}d + \bar{a}\bar{c}d$

$= ab + bd + b\bar{c} + \bar{a}\bar{c}d \Rightarrow (a+b)(b+d)(b+\bar{c})(\bar{a}+\bar{c}+d)$