16/12/19

מע' ספרתיות

מימוש NAND ($\overline{x\cdot y\cdot z}$) על התרגיל

$f(x,y,z)=\overline{xy+(\overline{x}+z)}=\overline{xy}\cdot\overline{\overline{x}}\cdot\overline{z}=\overline{xy}\cdot x\cdot\overline{z}$

מימוש בעזרת NOR

$a+\overline{a}b=a+b$

$f(x,y,z)=xy+(\overline{x}+z)=$

$xy=\overline{\overline{xy}}=\overline{\overline{x}+\overline{y}}$

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

מפות קרנו

$f(w,x,y,z)=\Sigma(1,2,4,5,10,12,13)$

wx \ yz	00	01	11	10
00	0	1	0	1
01	1	1	0	0
11	1	1	0	0
10	0	0	0	1

sop $f=\overline{x}y\overline{z}+\overline{w}\overline{y}\overline{z}+x\overline{y}$

$f(w,x,y,z)=\Sigma(0,1,4,5,6,7,10,11,12,13,14,15)$

wx \ yz	00	01	11	10
00	1	1	0	0
01	1	1	1	1
11	1	1	1	1
10	0	0	1	1

לפי 1

sop $f=yw+\overline{w}\overline{y}+x$

pos $f=(\overline{w}+x+y)\cdot(w+x+\overline{y})$

לפי 0

$f(w,x,y,z) = \Sigma(0,2,5,7,8,10,13,15)$

wx \ yz	00	01	11	10
00	1 (0)	0 (1)	0 (3)	1 (2)
01	0 (4)	1 (5)	1 (7)	0 (6)
11	0 (12)	1 (13)	1 (15)	0 (14)
10	1 (8)	0 (9)	0 (11)	1 (10)

$f = \bar{X}\bar{Z} + XZ = X \odot Z$

Don't Care

$f(w,x,y,z) = \Sigma(4,6,7,15) + \Sigma_d(2,3,5,11)$

d ← don't care

wx \ yz	00	01	11	10
00	0 (0)	0 (1)	Ø (3)	Ø (2)
01	1 (4)	Ø (5)	1 (7)	1 (6)
11	0 (12)	0 (13)	1 (15)	0 (14)
10	0 (8)	0 (9)	Ø (11)	0 (10)

$f_{SOP} = yz + \bar{w}x$

$f_{POS} = x(\bar{w}+z)(\bar{w}+y)$

הפונק׳ לא שווה כאשר יש don't care.