

- به تالار -

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۹۹۴۶۲۱۴۸

1)

Cell) cd

| | | | | |
|------|----|----|----|----|
| ab | 00 | 01 | 11 | 10 |
| 00 | 1 | 1 | - | 0 |
| 01 | 1 | 1 | 0 | 1 |
| 11 | 0 | 0 | - | 1 |
| 10 | 0 | 1 | 0 | 0 |

(30p) wPI

(30p) $wEPI$

+3

$\bar{a}\bar{c}$

$\bar{b}\bar{c}d$

bcd

$\bar{a}\bar{c}$

$\bar{b}\bar{c}d$

bcd

+1.5

-0.5 for surplus EPI

-2 for missed PIs

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

← 30p

+4

$wPI (pos)$

$wEPI (pos)$

$(b + \bar{c})$

$(b + \bar{c})$

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

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

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

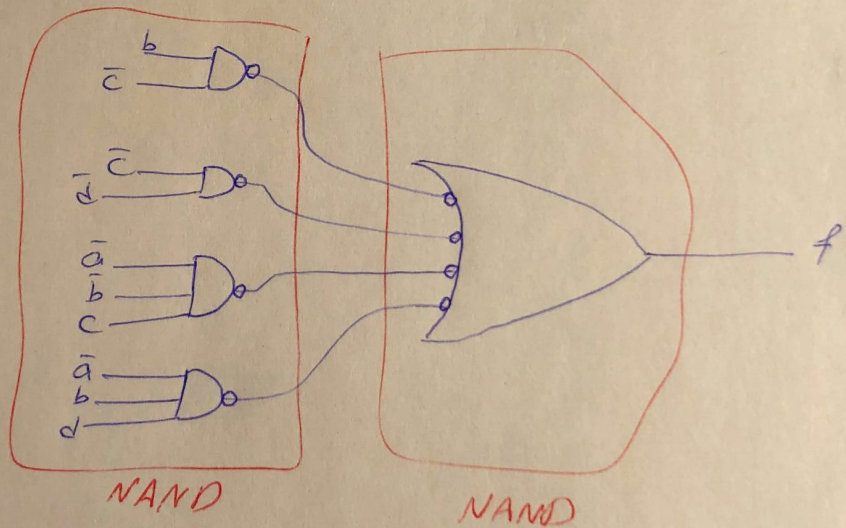
$(\bar{a} + \bar{b} + c)$

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

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

9)

NAND-NAND



-5

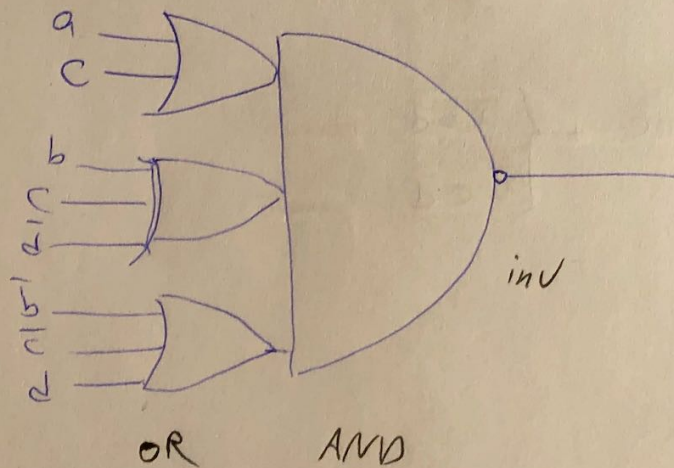
OR - AND - INV

من 0, 1 POS مع 1 في

$$\bar{f}(a, b, c, d) = \prod M(0, 1, 4, 5, 6, 9, 14) \cdot D(3, 15)$$

| cd \ ab | 00 | 01 | 11 | 10 |
|---------|----|----|----|----|
| 00 | 0 | 0 | - | |
| 01 | 0 | 0 | | 0 |
| 11 | | | - | 0 |
| 10 | | 0 | | |

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



+5

2.)

| | |
|-------------|--------------------------|
| $\sqrt{2}$ | $\sqrt{(2,3)} \quad 1$ |
| $\sqrt{8}$ | $\sqrt{(2,10)} \quad 8$ |
| | $(8,10) \quad 2$ |
| $\sqrt{3}$ | $(8,12) \quad 4$ |
| $\sqrt{10}$ | $\sqrt{(3,7)} \quad 4$ |
| $\sqrt{12}$ | $\sqrt{(3,11)} \quad 8$ |
| $\sqrt{7}$ | $\sqrt{(10,11)} \quad 1$ |
| $\sqrt{11}$ | $(12,13) \quad 1$ |
| $\sqrt{13}$ | |
| $\sqrt{15}$ | $\sqrt{(7,15)} \quad 8$ |
| | $\sqrt{(11,15)} \quad 4$ |
| | $(13,15) \quad 2$ |

| |
|---------------------------|
| $(2,3,10,11) \quad (1,8)$ |
| $(2,10,3,11) \quad (8,1)$ |
| $(3,7,11,15) \quad (4,8)$ |
| $(3,11,7,15) \quad (8,4)$ |

+8

| <u>WPI</u> | |
|--------------------------------|-------|
| $(\bar{a}+b+d)$ | 8,10 |
| $(\bar{a}+c+d)$ | 8,12 |
| $(\bar{a}+\bar{b}+c)$ | 12,13 |
| $-1 (\bar{a}+\bar{b}+\bar{c})$ | 13,15 |
| $(b+\bar{c})$ | |
| $(\bar{c}+\bar{d})$ | |

+5

~~2,3,10,11~~

3,7,11,15

| $\begin{matrix} m_i \\ P_j \end{matrix}$ | 2 | 3 | 7 | 8 | 10 | 11 | 12 | 13 | 15 |
|--|---|---|---|---|----|----|----|----|----|
| $(\bar{a}+b+d)$ | | | | X | X | | | | |
| $(\bar{a}+c+d)$ | | | | X | | | X | | |
| $(\bar{a}+\bar{b}+c)$ | | | | | | | X | X | |
| $(\bar{a}+\bar{b}+\bar{c})$ | | | | | | | | X | X |
| $(b+\bar{c})$ | X | X | | | X | X | | | |
| $(\bar{c}+\bar{d})$ | X | X | X | | | X | | | X |
| | ✓ | ✓ | ✓ | ○ | ✓ | ✓ | ○ | ○ | ✓ |

+6

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