

$$F(a, b, c, d) = \prod M(1, 5, 10, 11, 12, 13) \quad \text{B}(3, 10)$$

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

$$\text{LPI: } \bar{a}\bar{c} + bcd + \bar{b}\bar{c}d + \bar{a}b\bar{d} + abc + \bar{a}\bar{b}d$$

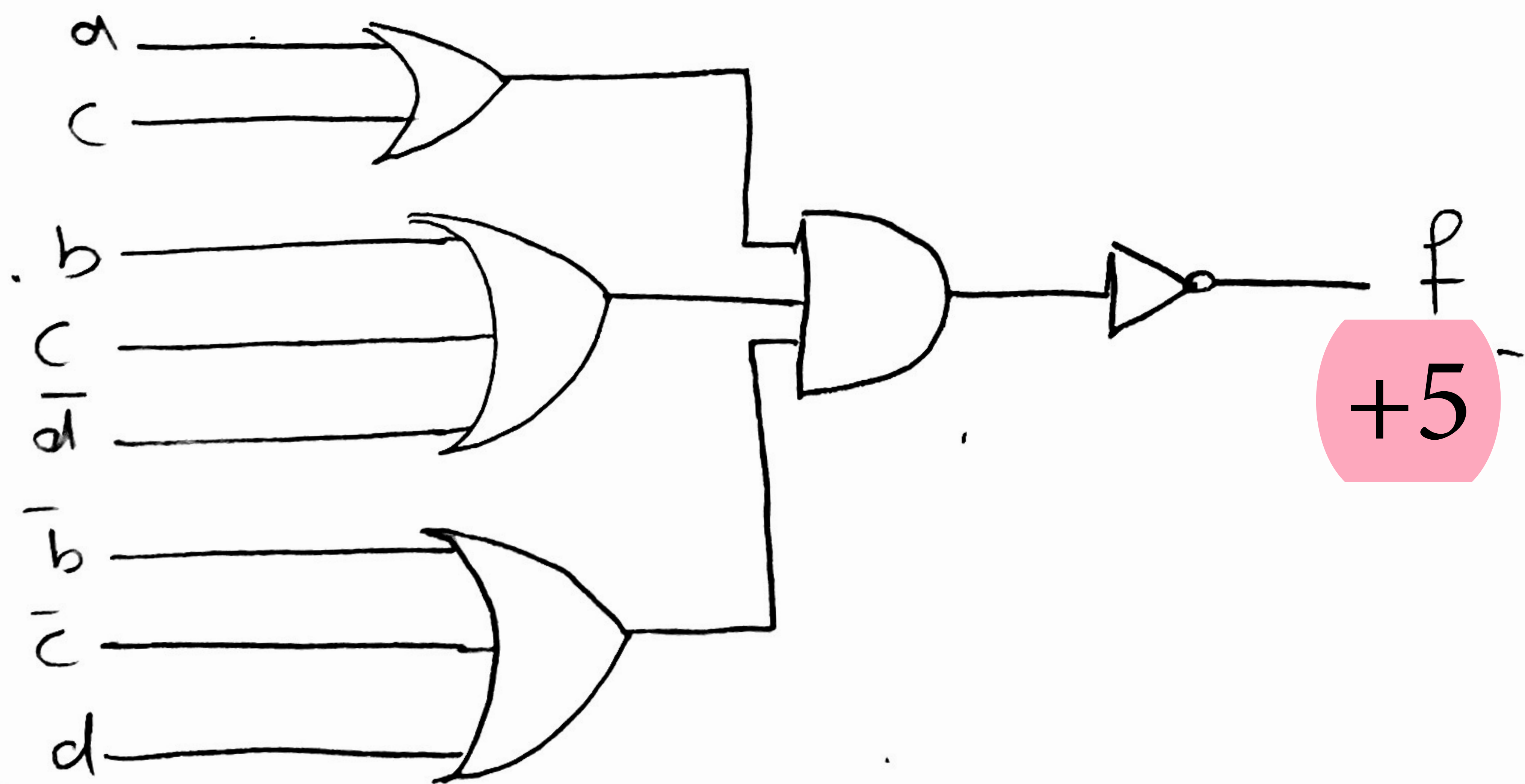
$$\text{LPI: } \bar{a}\bar{c} + \bar{b}\bar{c}d$$

$$F_2 \bar{a}\bar{c} + \bar{b}\bar{c}d + bcd$$

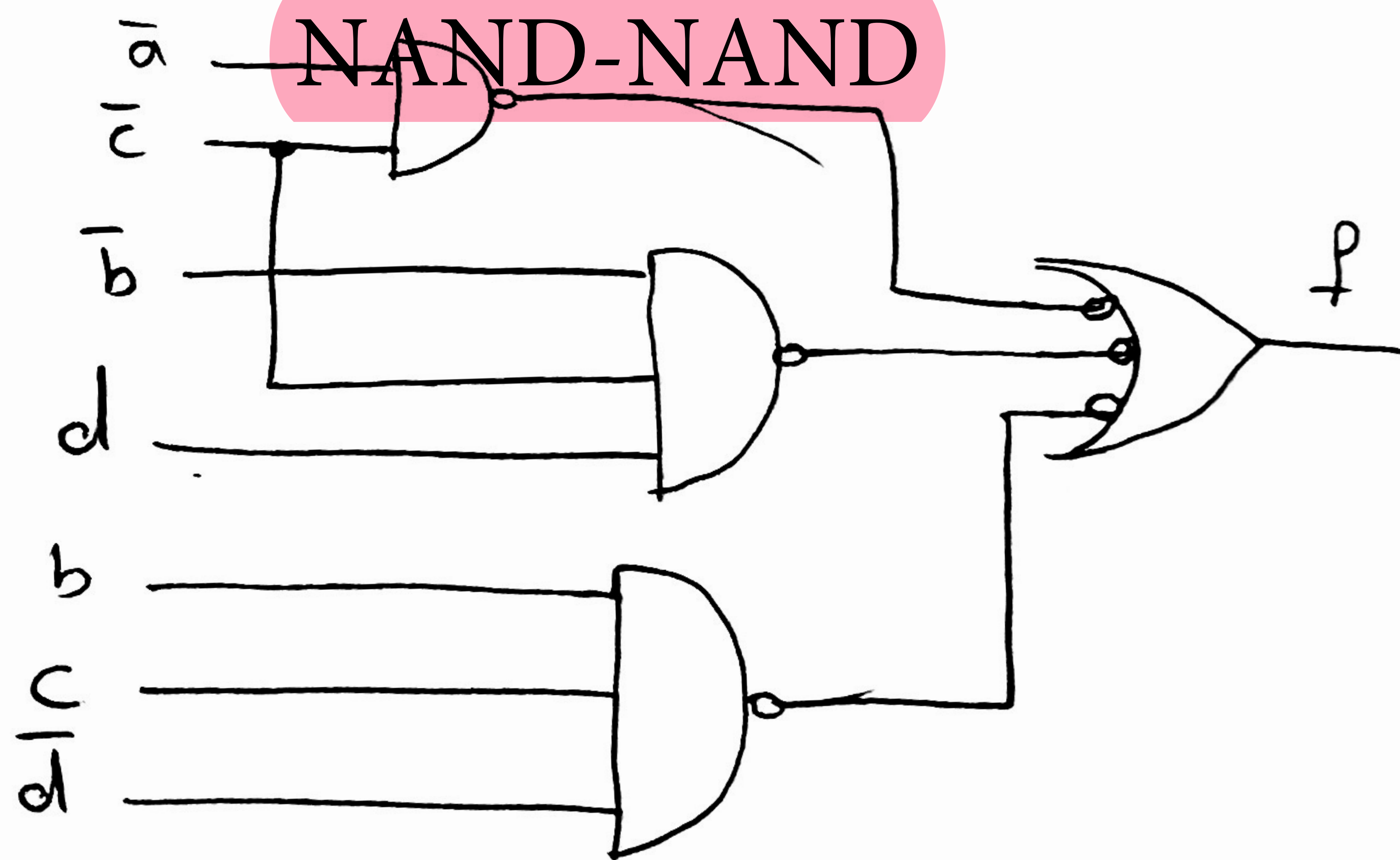
$$u = \bar{a}\bar{c} + \bar{b}\bar{c}d + abc + \left\{ \begin{array}{l} \bar{a}b\bar{d} \\ \text{or} \\ bcd \end{array} \right\}$$

$$\text{NAND-NAND: } F_2 \bar{a}\bar{c} + \bar{b}\bar{c}d + bcd$$

$$\text{OR-AND-INV: } \bar{F}_2 (a+c)(b+c+d)(\bar{b}+\bar{c}+d)$$



-2 for didn't convert to
NAND-NAND



$$C) f(a, b, c, d) = \sum m(0, 1, 4, 5, 9, 14) \cdot d(3, 15)$$

0
1
4
5
9
14
15

✓ 1 (0, 1)
✓ 4 (0, 4)
5 (1, 5)
✓ 9 (1, 9)
✓ 14 (4, 14)
5 (4, 9)
14 (9, 14)
1 (14, 15)

$$(0, 1, 4, 5) (1, 4)$$

$$(0, 1, 4, 5) (4, 1)$$

+8

+6

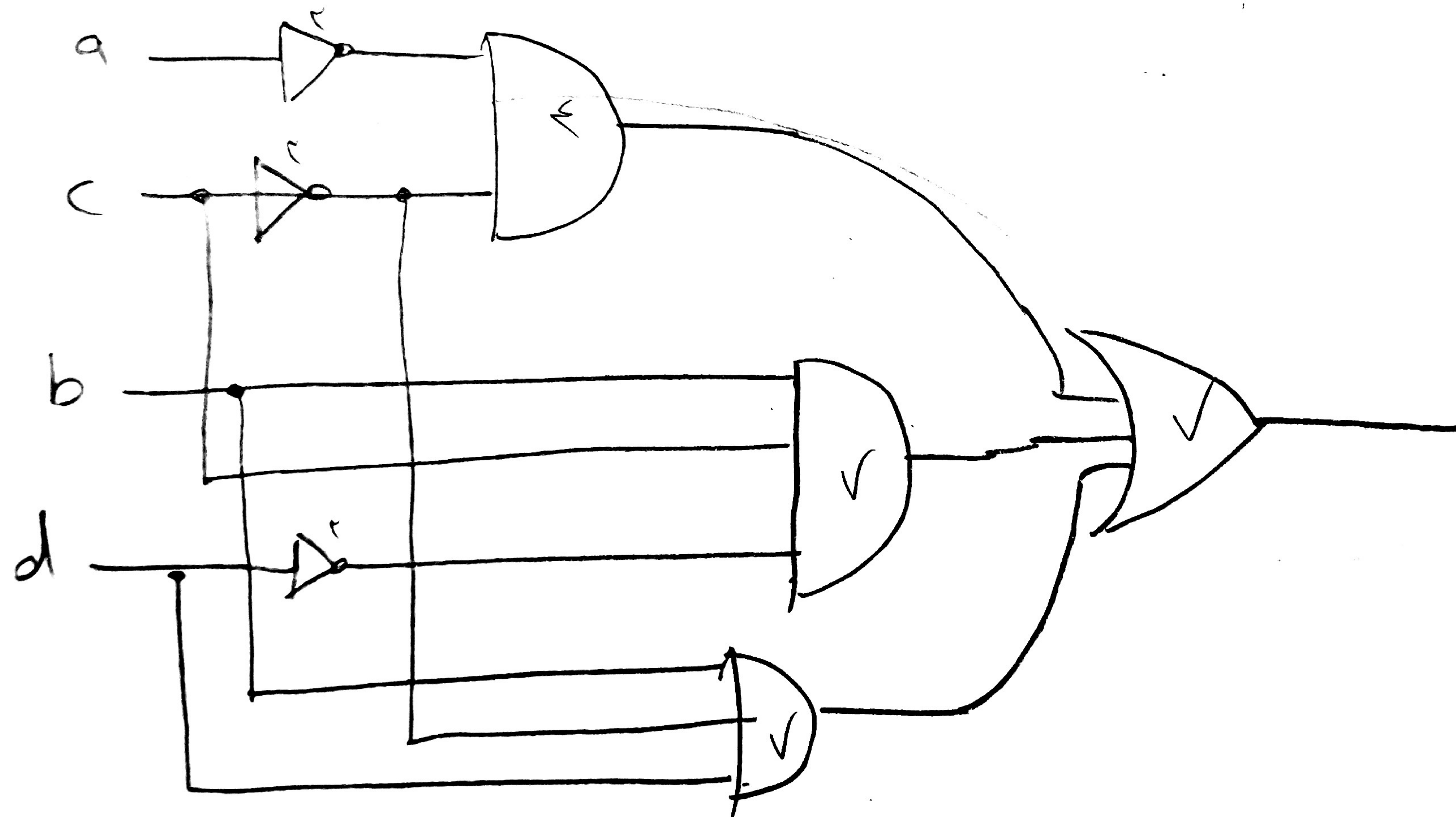
$$WPI: \bar{a}\bar{b}d + \bar{b}\bar{c}d + \bar{a}b\bar{d} + bcd + abc + \bar{a}\bar{c}$$

	0	1	4	5	9	14
$\bar{a}\bar{b}d$	✓	X	✓	✓		
$\bar{b}\bar{c}d$		X				
$\bar{a}b\bar{d}$					X	
bcd			X	X		
abc				X		X
$\bar{a}\bar{c}$	X	X	X	X		X

$$EPI = \bar{a}\bar{c} + bcd + b\bar{c}d$$

-6

$$5) \bar{a}\bar{c} + bc\bar{d} + b\bar{c}d$$



-12