

۲) الف)

آزاده دیرجی ۹۹۴۶۳۱۳۶

$$F(a, b, c, d) = \prod M(0, 1, 2, 3, 4, 5, 6, 8, 9, 10)$$

$$D(11, 12)$$

$$F(a, b, c, d) = \sum m(7, 9, 13, 14, 15)$$

$$D(11, 12)$$

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

6 PI
 bcd
 ab
 ad

+4.5

6 EPI: bcd, ab, ad

+4.5

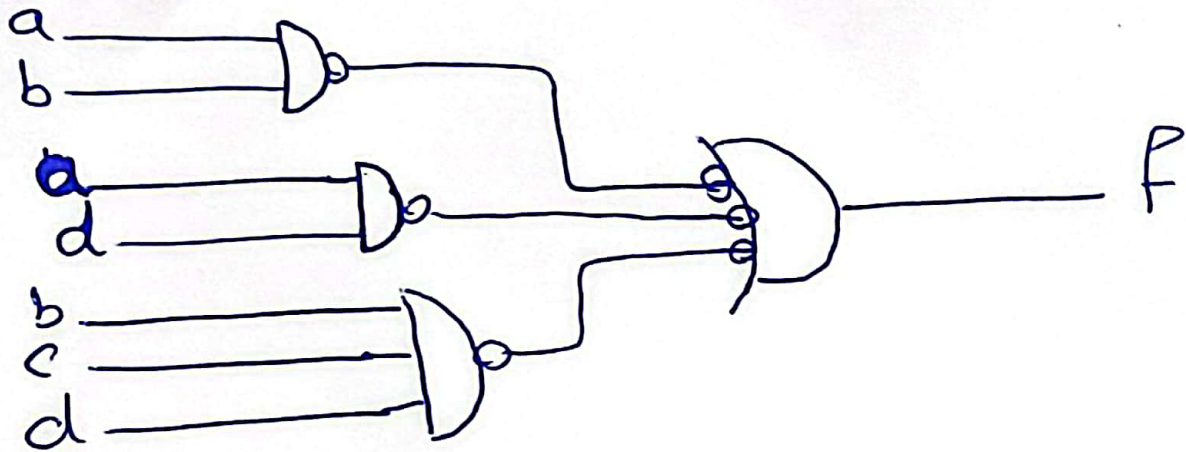
$$f(a, b, c, d) = ab + ad + bcd$$

+2

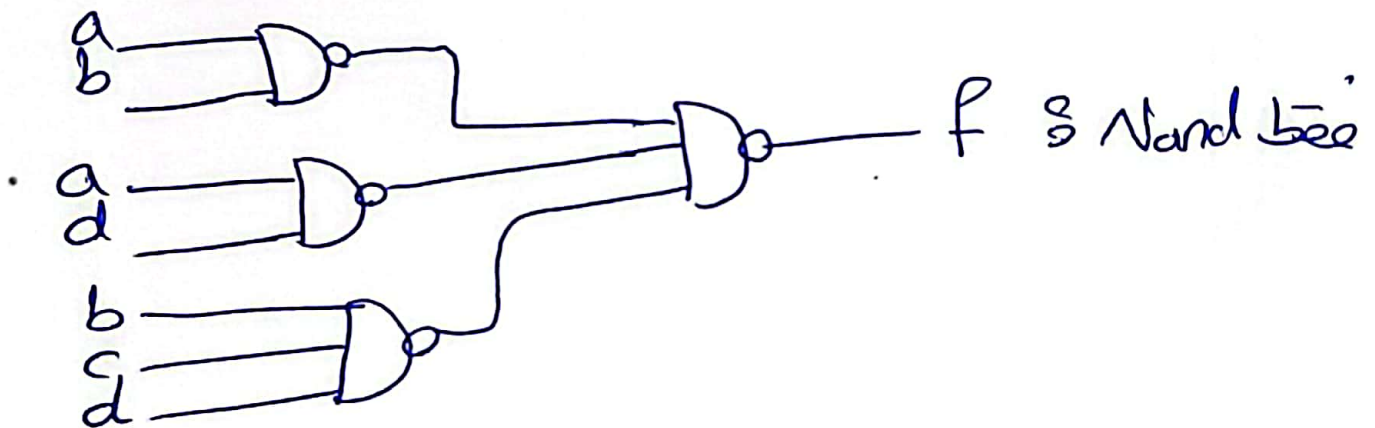
آزاده دسیرچی لو 99463136

$$f(a, b, c, d) = ab + ad + bcd$$

NAND-NAND (پ) (۴)



+5



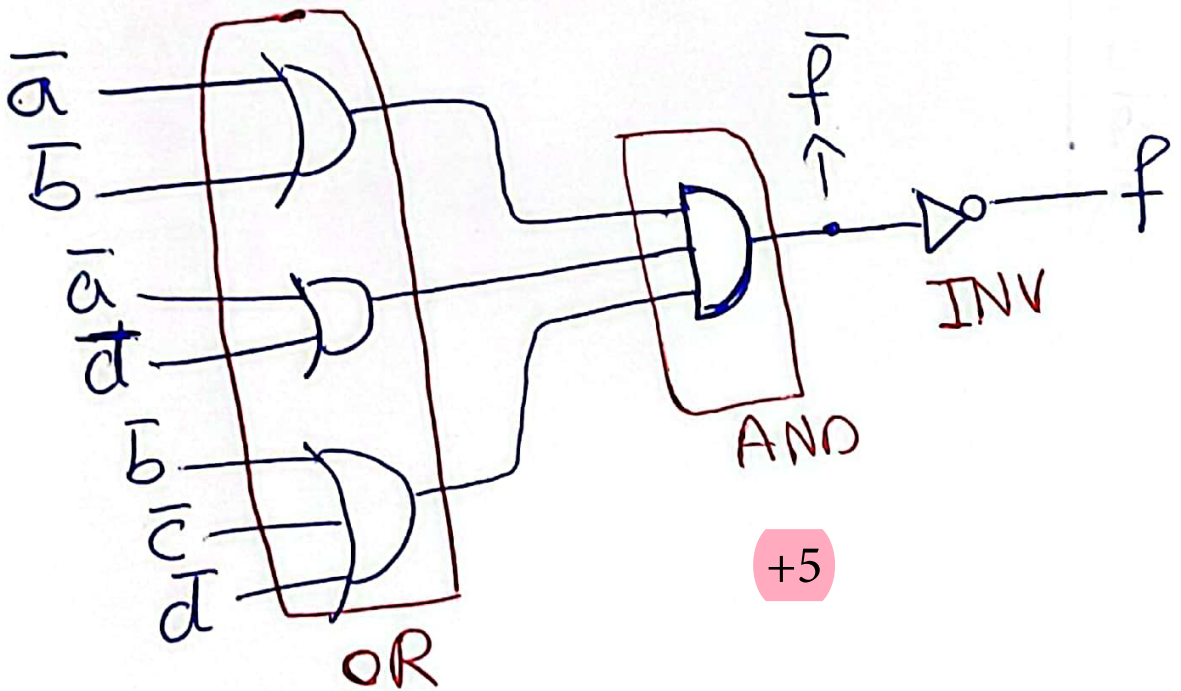
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OR-AND-INV (2)

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

$$\leftarrow \bar{F}(a, b, c, d)$$

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



۲) ۲

آزاده دسرچی ۹۹۴۶۳۱۳۶

$$F(a, b, c, d) = \sum m(7, 9, 13, 14, 15)$$

$$\cancel{1011} - \cancel{1100}$$

$$D(11, 12)$$

$$\cancel{0111} - \cancel{1001} - \cancel{1101} - \cancel{1110} - 1111$$

✓ 9

✓ 12

✓ 7

✓ 11

✓ 13

✓ 14

✓ 15

+8

✓ (9, 11)	2
✓ (9, 13)	4
✓ (12, 13)	1
(12, 14)	2
(7, 15)	8
✓ (11, 15)	4
✓ (13, 15)	2
✓ (14, 15)	1

(9, 11, 13, 15) (2, 4)
 (12, 14, 13, 15) (2, 1)
~~(9, 13, 11, 15) (4, 2)~~
~~(12, 13, 14, 15) (1, 4)~~

Σ P I

bcd

ad

ab

+6

Σ P I	7	9	13	14	15
bcd	X				X
ad		X	X		X
ab			X	X	X

+6

$$f(a, b, c, d) = bcd + ad + ab$$