

سارا حسینی؛ آید ۹۹۴۴۳۱۶۸

کویز دوم مدار منطقی

سوال ۱- الف) $F(a, b, c, d) = \prod M(2, 3, 5, 7, 8, 10, 11, 12, 13, 14, 15)$

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

برای این تابع PL ها و EPL ها بنویسید

SOP را بنویسید.

+6 PL ها: $\bar{a}\bar{b}\bar{c}$, $\bar{a}\bar{c}\bar{d}$

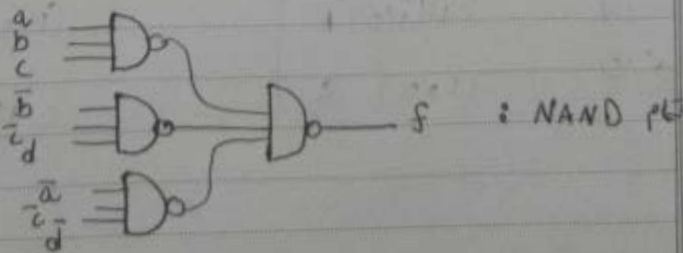
bcd , $\bar{a}b\bar{d}$, abc , $\bar{b}\bar{c}d$

+2 EPL ها: abc , $\bar{b}\bar{c}d$

+3 $F(a, b, c, d) = abc + \bar{b}\bar{c}d + \bar{a}\bar{c}\bar{d}$

ب) برای پیاده سازی $NAND-NAND$ تابع را بصورت SOP ساده و علیت آن را بنویسید.

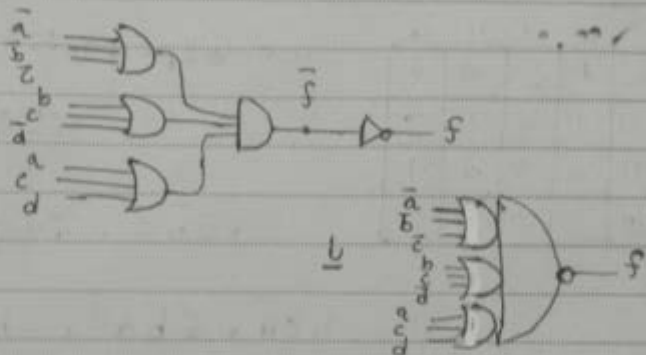
+5



ادامه ب) برای OR-AND-INV و 1) POS و 2) SOP

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

+5



$$F(a, b, c, d) = \sum m(0, 1, 4, 9, 14, 15) + d(6, 7) \quad (2)$$

✓ 0	(0, 1) 1
✓ 1	(0, 4) 4
✓ 4	(4, 6) 2
✓ 6	(6, 14) 8
9	(14, 15) 1
✓ 14	(1, 9) 8
✓ 15	

+8

و 1) $a\bar{b}\bar{c}d$ و 2) $\bar{a}\bar{b}\bar{c}$

$\bar{a}\bar{b}\bar{c}$ (0, 1) و $\bar{a}\bar{b}\bar{c}d$ (0, 4)

$\bar{a}b\bar{d}$ (4, 6) و bcd (6, 14)

abc (14, 15)

$\bar{b}\bar{c}d$ (1, 9)

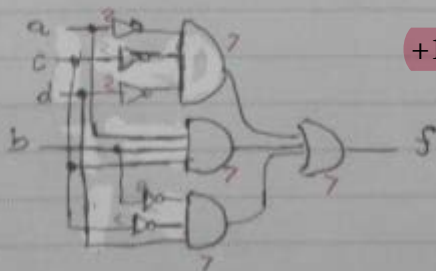
+7

ادامه سوال ج)

PL	0	1	4	9	14	15
$\bar{a}\bar{b}\bar{c}d$				x		
$\bar{a}b\bar{c}$	x	x				
$\bar{a}\bar{c}d$	x		x			
$\bar{a}b\bar{d}$			x			
$b\bar{c}d$					x	
$\bar{a}b\bar{c}$					x	x
$\bar{b}\bar{c}d$		x		x		
	✓	✓	✓	✓	✓	✓

-5

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



+18

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

\overline{abcd} $abcd$

0000 \longleftrightarrow 0001

logical

potential static 1 Hazard

$$S_{\text{مربوط}} = 16 - 14 = 2$$

Subject:

Year:

Month:

Date:

سارا محمد دتراده

$$f(a, b, c, d) = abc + \bar{b}\bar{c}d + \bar{a}\bar{c}\bar{d} + \bar{a}\bar{b}\bar{c} \quad (9)$$

