

Questión Plan Viejo (41) y nuevo (54)

2004. 1^{er} S. A. 13

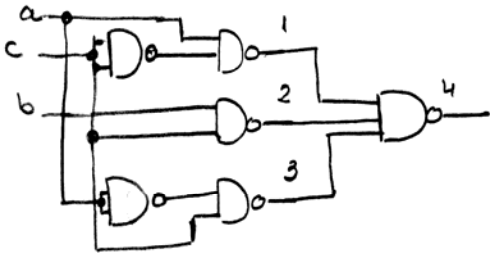
Simplificar $a + abc + \bar{a}bc + ad + a\bar{d} + \bar{a}c$

$$f(a,b,c) = a + abc + \bar{a}bc + ad + a\bar{d} + \bar{a}c = a(1 + bc + \bar{d}) + \bar{a}(bc + c) =$$

$$= a + \bar{a}(c(b+1)) = a + \bar{a}c = \underbrace{(a + \bar{a})}_{1} (a + c) = a + c \Rightarrow \underline{a + c}$$

2004. 1^{er} S. A. 16

Indicar la función lógica asociada al circuito



$$\textcircled{1} = a\bar{c}$$

$$\textcircled{2} = bc$$

$$\textcircled{3} = \bar{a}c$$

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

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Obtener la función en minterm

$$f(a,b,c,d) = m_1, m_2, m_4, m_5, m_7, m_9, m_{10}, m_{11}, m_{13}, m_{14}$$

$$\overline{f(a,b,c,d)} = m_0, m_3, m_6, m_8, m_{12}, m_{15}$$

$$f(a,b,c,d) = \overline{m_0 m_3 m_6 m_8 m_{12} m_{15}} = \overline{m_0} + \overline{m_3} + \overline{m_6} + \overline{m_8} + \overline{m_{12}} + \overline{m_{15}}$$

$$f(a,b,c,d) = m_0 + m_3 + m_7 + m_9 + m_{12} + m_{15} \Rightarrow \underline{d}$$

2004. 2^{er} S. A. 13

Simplificar $f(x,y,z) = x\bar{z}y + (x\bar{z}y + z\bar{x})(y(z+x) + \bar{y}z + \bar{y}x\bar{z})$

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

$$x\bar{z}y \cdot yz = \emptyset \quad x\bar{z}y \cdot xy = x\bar{z}y \quad x\bar{z}y \cdot \bar{y}z = \emptyset \quad x\bar{z}y \cdot x\bar{y}\bar{z} = \emptyset \quad z\bar{x} \cdot yz = \bar{x}yz$$

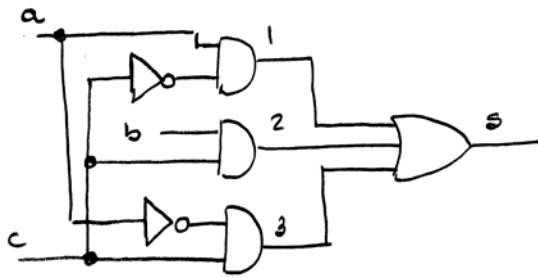
$$\bar{x}z \cdot xy = \emptyset \quad \bar{x}z \cdot \bar{y}z = \bar{x}z\bar{y}z \quad \bar{x}z \cdot x\bar{y}\bar{z} = \emptyset$$

$$f(x,y,z) = \underbrace{x\bar{z}y + x\bar{z}y}_{x\bar{z}y} + \bar{x}yz + \bar{x}z\bar{y}z = x\bar{z}y + \bar{x}z(y + \bar{y}) = x\bar{z}y + \bar{x}z$$

2004.2^oS. Δ16

!!!

Indicar la función lógica del circuito



① = $a\bar{c}$

② = bc

③ = $\bar{a}c$

$S(a,b,c) = a\bar{c} + bc + \bar{a}c$

$S(a,b,c) = \overline{\overline{a\bar{c} + bc + \bar{a}c}}$

$S(a,b,c) = \overline{\overline{a\bar{c}} \cdot \overline{bc} + \overline{\bar{a}c}} \Rightarrow \underline{c}$

2004.2^oS. Δ17

Obtener la función max term

$f(a,b,c,d) = m_0 + m_1 + m_4 + m_5 + m_7 + m_8 + m_9 + m_{11} + m_{12} + m_{15}$

$\overline{f(a,b,c,d)} = m_2 + m_3 + m_6 + m_{10} + m_{13} + m_{14}$

$f(a,b,c,d) = \overline{m_2 + m_3 + m_6 + m_{10} + m_{13} + m_{14}} = \overline{m_2} \cdot \overline{m_3} \cdot \overline{m_6} \cdot \overline{m_{10}} \cdot \overline{m_{13}} \cdot \overline{m_{14}}$

$f(a,b,c,d) = m_1 \cdot m_2 \cdot m_5 \cdot m_9 \cdot m_{12} \cdot m_{13} \Rightarrow \underline{c}$

2004. S. Δ. 11

Simplificar la función:

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

$= (ab\bar{c} + abd + \underbrace{c\bar{c}}_0 + cd + \underbrace{dd}_d)(\bar{c} + d + e)$

$ab\bar{c} + d(\underbrace{1+ab+c}_1)$

$= (ab\bar{c} + d)(\bar{c} + d + e) = ab\bar{c}\bar{c} + ab\bar{c}d + ab\bar{c}e + \bar{c}d + \underbrace{dd}_d + de$

$= ab\bar{c} + ab\bar{c}e + d(ab\bar{c} + \bar{c} + e + 1) = ab\bar{c}(1+e) + d =$

$= ab\bar{c} + d \Rightarrow \underline{b}$

2004.S.A.16

Obtener el minterm

$$f(a,b,c,d) = M_1 \cdot M_2 \cdot M_5 \cdot M_9 \cdot M_{12} \cdot M_{13}$$

$$\overline{f(a,b,c,d)} = M_0 \cdot M_3 \cdot M_4 \cdot M_6 \cdot M_7 \cdot M_8 \cdot M_{10} \cdot M_{11} \cdot M_{14} \cdot M_{15}$$

$$f(a,b,c,d) = \overline{M_0 \cdot M_3 \cdot \dots \cdot M_{15}} = \overline{M_0 + M_3 + M_4 + M_6 + M_7 + M_8 + M_{10} + M_{11} + M_{14} + M_{15}}$$

$$f(a,b,c,d) = m_{15} + m_{12} + m_{11} + m_9 + m_8 + m_7 + m_5 + m_4 + m_1 + m_0$$

\Downarrow
c

2004.S.R.D.12

Simplificar $f(a,b,c) = \overline{((\bar{a}+b)\bar{c} + a + b + c + d)} \overline{(\bar{c}\bar{b})}$!!!

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

$$b(1+\bar{c}) = b$$

$$\bar{a}\bar{c} + a = \underbrace{(\bar{a}+a)}_1 (a+\bar{c})$$

$$\overline{a + \bar{c} + b + c + d}$$

$$c + \bar{c} = 1$$

$$\Downarrow$$

$$1 \Rightarrow \bar{1} = 0$$

$$0 \cdot (b+c) = 0 \Rightarrow \underline{\underline{a}}$$

2004.S.R.D.13

Expresar en minterms

$$f(a,b,c) = \overline{a+b} (b+c) = \overline{(\bar{a} \cdot \bar{b})} (b+c) = \overline{\bar{a}\bar{b}b} + \overline{\bar{a}\bar{b}c} = \bar{a}\bar{b}c =$$

$$f(a,b,c) = a + b + \bar{c} = \frac{a\bar{b}\bar{c}}{4} + \frac{a\bar{b}c}{5} + \frac{a b \bar{c}}{6} + \frac{a b c}{7} + \frac{\bar{a} b \bar{c}}{2} + \frac{\bar{a} b c}{3} + \frac{a \bar{b} \bar{c}}{6} + \frac{a \bar{b} c}{7} + \frac{\bar{a} \bar{b} \bar{c}}{0} + \frac{\bar{a} \bar{b} c}{2} + \frac{a \bar{b} \bar{c}}{5} + \frac{a \bar{b} c}{6}$$

$$f(a,b,c) = m_0 + m_2 + m_3 + m_4 + m_5 + m_6 + m_7 = \sum m(0,2,3,4,5,6,7)$$

 \Downarrow
a

2004. SR. D.16

!!!

Cuál de las funciones S_0, S_1, S_2 de la tabla de la verdad es equivalente a la función $f(x,y,z) = xy(z+\bar{z}) + x\bar{y}z$

x	y	z	S_0	S_1	S_2
0	0	0	0	0	0
0	0	1	0	0	0
0	1	0	0	0	0
0	1	1	0	0	0
1	0	0	0	0	0
1	0	1	1	1	0
1	1	0	1	0	1
1	1	1	1	0	1

$$f(x,y,z) = \frac{xyz}{7} + \frac{xy\bar{z}}{6} + \frac{x\bar{y}z}{5}$$

$$f(x,y,z) = \sum m(5,6,7) \Rightarrow S_0 \Rightarrow \underline{\underline{a}}$$

Sistemas Plan viejo (40)

2004. 1º S. A.12 / 2004. S. A13

Hallar la 2ª forma canónica de

$$f(a,b) = \overline{\bar{a} + a\bar{b}} = a \cdot \overline{a\bar{b}} = a(\bar{a} + b) = \underbrace{a \cdot \bar{a}}_0 + ab = ab$$

$$f(a,b) = ab = m_3 \Rightarrow \overline{f(a,b)} = m_0 + m_1 + m_2$$

$$f(a,b) = \overline{m_0 + m_1 + m_2} = \bar{m}_0 \cdot \bar{m}_1 \cdot \bar{m}_2 = M_3 \cdot M_2 \cdot M_1 \Rightarrow \underline{\underline{a}}$$

2004. 2º S. C.12

$$\text{Simplificar } f(a,b,c) = \frac{(a+a\bar{b})}{a(1+\bar{b})} \frac{(b+ac)(b+ac)+\bar{b}}{b+\bar{b}+\dots = 1}$$

$$a \cdot 1 = a$$

⇓

$$\bar{a} \Rightarrow \underline{\underline{c}}$$

2004. SR A. 14

Simplificar la función

$$f(a,b,c,d) = M_0 \cdot M_2 \cdot M_4 \cdot M_5 \cdot M_6 \cdot M_7 \cdot M_8 \cdot M_{10} \cdot M_{12} \cdot M_{13} \cdot M_{14} \cdot M_{15}$$

$$\overline{f(a,b,c,d)} = M_1 \cdot M_3 \cdot M_9 \cdot M_{11} \Rightarrow f(a,b,c,d) = \overline{M_1 \cdot M_3 \cdot M_9 \cdot M_{11}} = \overline{M_1} + \overline{M_3} + \overline{M_9} + \overline{M_{11}}$$

$$f(a,b,c,d) = m_{14} + m_{12} + m_6 + m_5 = \underbrace{abc\bar{d}} + \underbrace{ab\bar{c}d} + \underbrace{\bar{a}bcd} + \underbrace{\bar{a}b\bar{c}d}$$

		\bar{a}	a	
		\bar{c}	c	\bar{c}
\bar{b}	\bar{a}			
	d			
	\bar{d}			
b	d			
	\bar{d}	1	1	1

$$f(a,b,c,d) = b\bar{d} \Rightarrow \underline{a}$$

Sistemas Plan Nuevo (53)

2004. 1^{er} S. A. 10

2^{er} forma canónica de $f = m_0 + m_2 + m_4 + m_5$

5 Términos \Rightarrow 3 variables ($2^3 = 8$) $\Rightarrow f(a,b,c) = m_0 + m_2 + m_4 + m_5$

$$\overline{f(a,b,c)} = m_1 + m_3 + m_6 + m_7 \Rightarrow \overline{f(a,b,c)} = \overline{m_1 + m_3 + m_6 + m_7}$$

$$f(a,b,c) = \overline{m_1} \cdot \overline{m_3} \cdot \overline{m_6} \cdot \overline{m_7} = M_6 \cdot M_4 \cdot M_1 \cdot M_0 \Rightarrow \underline{b}$$

2004. 2^{er} S. D. 3

1^{er} forma canónica de $f = M_0 \cdot M_3 \cdot M_6 \Rightarrow 2^3 = 8 \Rightarrow 3$ varia.

$$\overline{f} = M_1 \cdot M_2 \cdot M_4 \cdot M_5 \cdot M_7 \Rightarrow \overline{f} = \overline{M_1 \cdot M_2 \cdot M_4 \cdot M_5 \cdot M_7}$$

$$f = \overline{M_1} + \overline{M_2} + \overline{M_4} + \overline{M_5} + \overline{M_7} = m_6 + m_5 + m_3 + m_2 + m_0 \Rightarrow \underline{d}$$

2004.S.A.3

$$f(a,b,c) = m_1 + m_4 + m_7 \rightarrow 2^{\text{ª}} \text{ forma canónica}$$

$$\overline{f(a,b,c)} = m_0 + m_2 + m_3 + m_5 + m_6 \Rightarrow f(a,b,c) = \overline{m_0 + m_2 + m_3 + m_5 + m_6}$$

$$f(a,b,c) = \overline{m_0} \cdot \overline{m_2} \cdot \overline{m_3} \cdot \overline{m_5} \cdot \overline{m_6} = M_7 \cdot M_5 \cdot M_4 \cdot M_2 \cdot M_1 \Rightarrow \underline{\underline{d}}$$