Deber Multiprocesamiento.

Nombre: Luis Enrique Pérez Señalin

1

a) $FQ = (\bar{Z}X + Z\bar{X}) + \bar{Y} \mid \bar{Z}X + Z\bar{X} + W$ XOR

$\overline{(\bar{Z}X + Z\bar{X} + \bar{Y}) \cdot (\bar{Z}X + Z\bar{X} + W)} + (\bar{Z}X + Z\bar{X} + \bar{Y}) \cdot \overline{(\bar{Z}X + Z\bar{X} + W)}$

b) $F1 = (\bar{Z}X + Z\bar{X} + \bar{Y} + W) \mid \overline{(\bar{X} + \bar{Z})} = X \cdot \bar{Z}$ XOR

$\overline{((\bar{Z}X + Z\bar{X} + \bar{Y} + W) \cdot X\bar{Z})} + (\bar{Z}X + Z\bar{X} + \bar{Y} + W) \cdot \overline{X\bar{Z}}) \ldots ?)$

$((\bar{Z}X + Z\bar{X} + \bar{Y} + W) + (\bar{X} + Z)) \cdot \overline{((\bar{Z}X + Z\bar{X} + \bar{Y} + W) + X\bar{Z}}$

c) $F_2 = \bar{Z}\bar{Y}W + Z\overline{\bar{Y}W} + \bar{Z}X + Z\bar{X} \mid Z \rightarrow$ XOR

$(\bar{Z} + Y + \bar{W}) \cdot (\bar{Z} + \bar{Y}W) \cdot (Z + \bar{X}) \cdot (\bar{Z} + X) \cdot Z + (\bar{Z}\bar{Y}W + Z\overline{\bar{Y}W} + \bar{Z}X \ldots$

$+ Z\bar{X}) \cdot \overline{\bar{Z}}$

d) Reduciendo FQ

$\overline{(\bar{Z}X + Z\bar{X} + \bar{Y}) \cdot (\bar{Z}X + Z\bar{X} + W)} + (\bar{Z}X + Z\bar{X} + \bar{Y}) \cdot \overline{(\bar{Z}X + Z\bar{X} + W)}$

$FQ = ((Z + \bar{X}) \cdot (\bar{Z} + X) \cdot Y) \cdot ((\bar{Z}X + Z\bar{X}) + W) + ((\bar{Z}X + Z\bar{X}) + \bar{Y}) \cdot ((Z + \bar{X}) \cdot$

$(\bar{Z} + X) \cdot \bar{W}) \rightarrow$ Agrupación.

$FQ = A = (Z + \bar{X}) \cdot (\bar{Z} + X) \quad B = (\bar{Z}X + Z\bar{X}) \rightarrow$ Cambio de variable

$A = \bar{B} \quad B = \bar{A} \rightarrow \overline{(Z + \bar{X}) \cdot (\bar{Z} + X)} = (\bar{Z}X + Z\bar{X})$

$FQ = (A \cdot Y) \cdot (\bar{A} + W) + ((\bar{A} + \bar{Y}) \cdot (A \cdot \bar{W})) \rightarrow$ Remplazo.

$= (A\bar{A}Y + AYW) + (\bar{A}A\bar{W} + \bar{Y}A\bar{W}) \rightarrow$ Distributiva

F(x): $AYW + A\bar{Y}\bar{W}$ → Identidad $A\bar{A} = 0$ $Y \cdot 0 = 0$

$= A(YW + \bar{Y}\bar{W})$ → Asociativa

$= \overline{(\bar{Z}+X)} \cdot \overline{(Z+\bar{X})}\,(YW + \bar{Y}\bar{W})$ → Reemplazando A

$= \overline{(Z \oplus X)} \cdot \overline{(Y \oplus W)} \rightarrow (YW + \bar{Y}\bar{W}) = \overline{Y \oplus W}$

- Nuevo diagrama lógico.

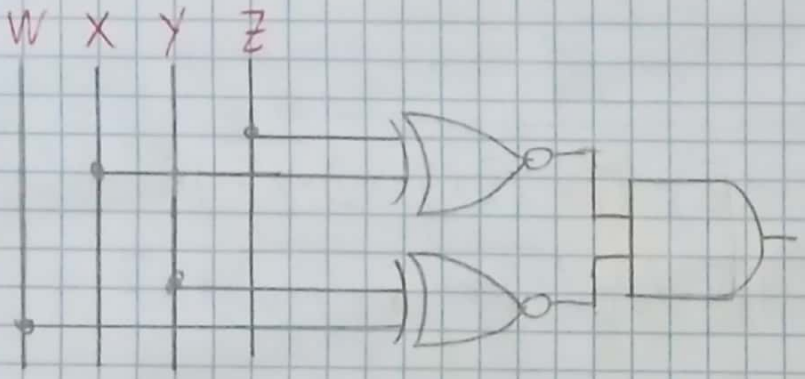
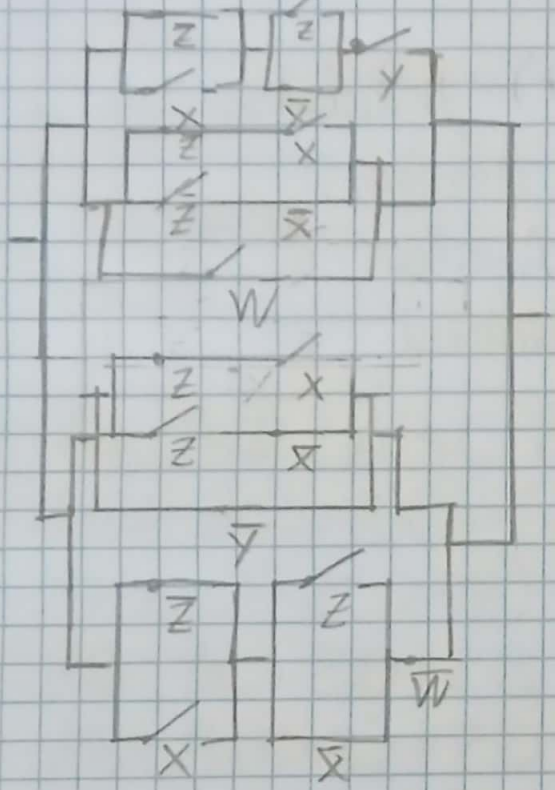


Tabla de verdad.

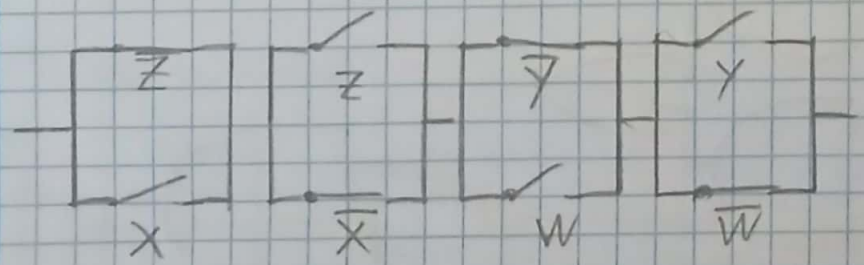
W	X	Y	Z	$\overline{Z \oplus X}$	$\overline{Y \oplus W}$	R
0	0	0	0	1	1	1
0	0	0	1	0	1	0
0	0	1	0	1	0	0
0	0	1	1	0	0	0
0	1	0	0	0	1	0
0	1	0	1	1	1	1
0	1	1	0	0	0	0
0	1	1	1	1	0	0
1	0	0	0	1	0	0
1	0	0	1	0	0	0
1	0	1	0	0	1	0
1	0	1	1	1	1	1
1	1	0	0	0	0	0
1	1	0	1	1	0	0
1	1	1	0	0	1	0
1	1	1	1	1	1	1

- Diagrama de circuitos

a) $(z \oplus x) + \bar{y} \oplus (z \oplus x) + w$



b) $\overline{(z \oplus x)} \cdot \overline{(y \oplus w)} = (\bar{z}+x)\cdot(z+\bar{x})\cdot(\bar{y}+w)\cdot(y+\bar{w})$



e)

$F: ((r \cdot (r+q)) + ((p+q) \cdot qr) \cdot p \cdot (q+r)$

$F: (r + rq + pqr + qr) \cdot (pq + pr)$ → Distributiva.

$= (r(1+pq) + rq) \cdot (pq + pr)$ → Asociativa.

$(r(1+pq+q)) \cdot (pq + pr)$ → Asociativa.

$(r(1)) \cdot (pq + pr)$ → Ley de Identidad.

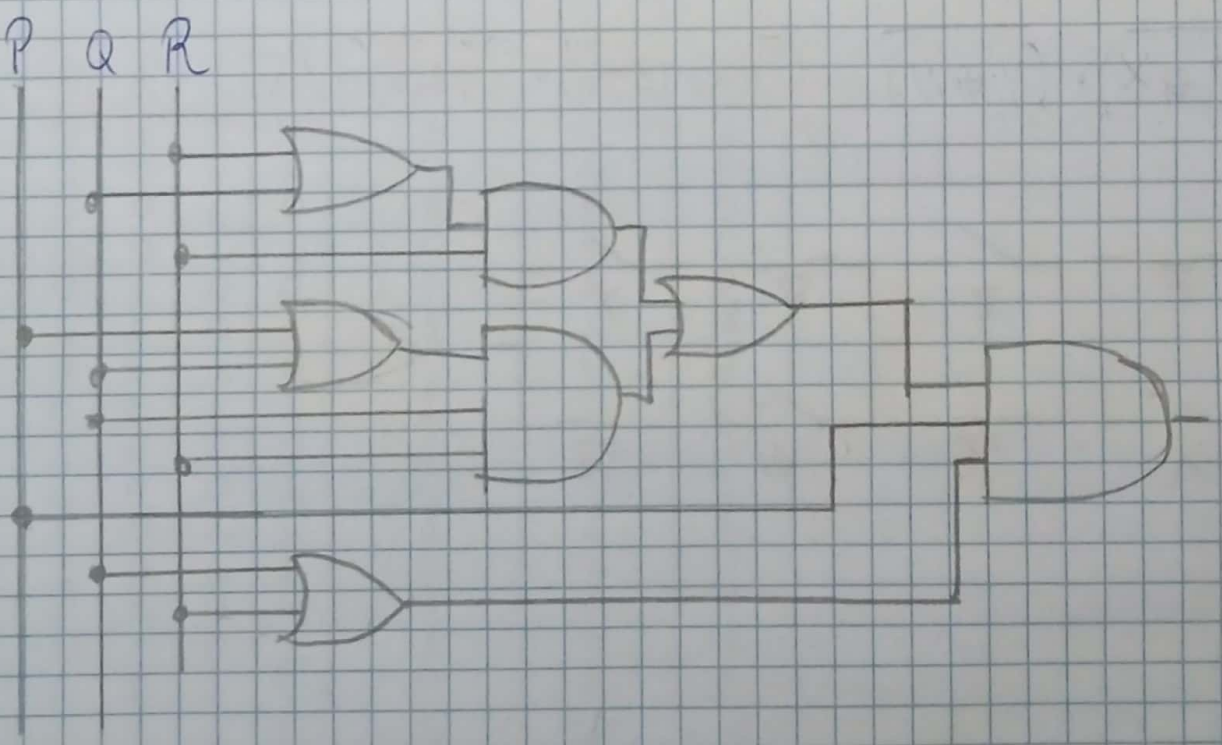
$pqr + pr$ → Distributiva

$pr(1+q)$ → Asociativa.

$pr(1)$ → Ley de identidad.

pr.

- Diagrama lógico. antes



-Diagrama lógico después

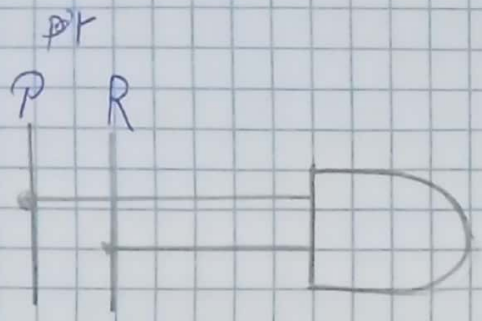
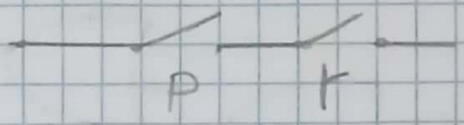


Diagrama de circuitos



f)

$AB + B\bar{C}\bar{D} + \bar{A}BC + \bar{C}D = B + \bar{C}D$

$B(A + \bar{A}C) + \bar{C}(D + \bar{D}B) \rightarrow$ Asociativa

$B(A + C) + \bar{C}(D + B) \rightarrow$ Absorción

$AB + BC + \bar{C}D + \bar{C}B \rightarrow$ Distributiva

$AB + B(C + \bar{C}) + \bar{C}D \rightarrow$ Asociativa

$AB + B + \bar{C}D \rightarrow$ Absorción y Elemento neutro

$B(A + 1) + \bar{C}D \rightarrow$ Asociativa

$B + \bar{C}D \rightarrow$ Identidad

-Diagrama lógico

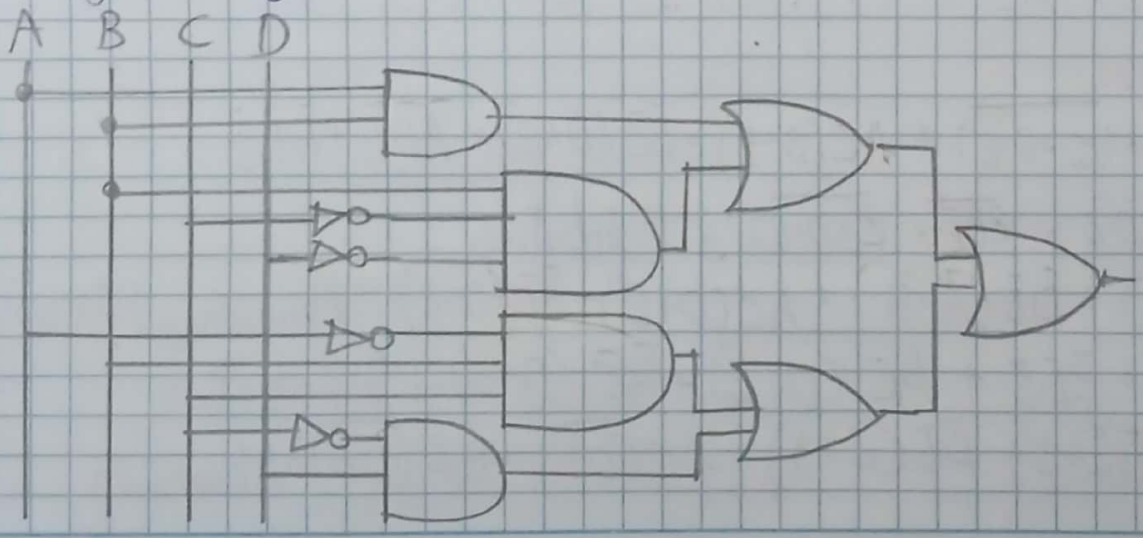


Diagrama de circuitos lógico

- $B + \bar{C}D$

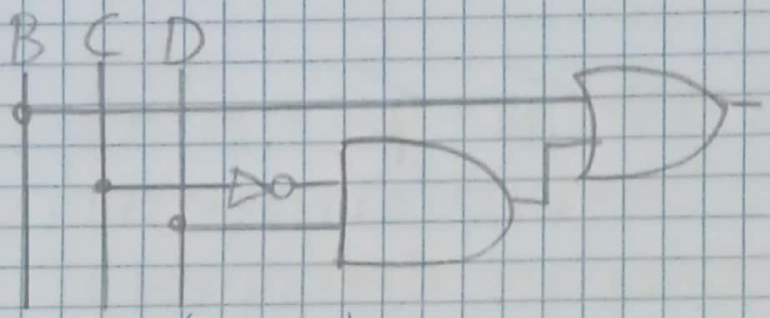
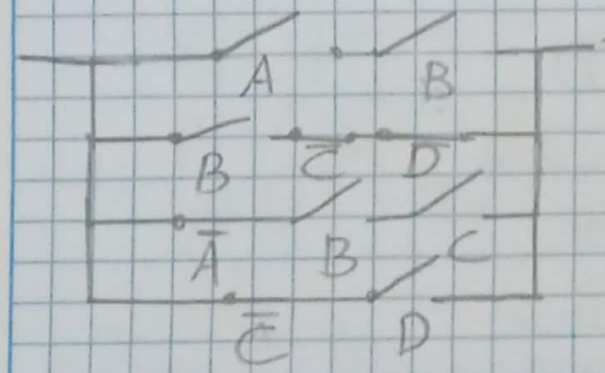
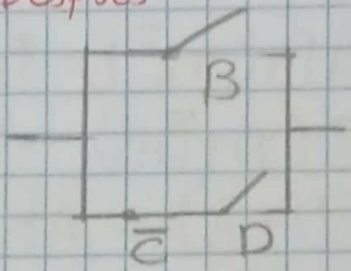


Diagrama de circuitos.



Después



g) $WY + \bar{W}Y\bar{Z} + WX\bar{Z} + \bar{W}X\bar{Y}$

h) $ABC + ABD + AB\bar{E} + ACD + AC\bar{E} + \overline{(A+D+\bar{E})} + \bar{B}\bar{C}D + \bar{B}\bar{C}\bar{E} + \bar{B}\bar{D}\bar{E} + \bar{C}\bar{D}\bar{E}$

$-AB(C+D+E) + AC(D+E) + \overline{(A+D+E)} + \bar{B}\bar{C}(D+E) + \bar{B}\bar{D}\bar{E} + \bar{C}\bar{D}\bar{E}$,

↳ Distributiva.

$AB(C+D+E) + \overline{(C+D+E)} + AC(D+E) + \bar{B}\bar{C}(D+\bar{E}) + \bar{A}\bar{D}\bar{E} + \bar{B}\bar{D}\bar{E}$

↳ Negar $\bar{C}\bar{D}\bar{E} = \overline{CDE} = \overline{(C+D+E)}$ y Distributiva.

$AB + \overline{(C+D+E)} + \bar{D}\bar{E}(\bar{A}+\bar{B}) + AC(D+E) + \bar{B}\bar{C}(D+E)$ → Absorción y distributiva.

$AB + \bar{A}\bar{B}(\bar{D}\bar{E}) + \bar{C}\bar{D}\bar{E} + AC(D+E) + \bar{B}\bar{C}(D+E)$ → Distributiva.

$AB + \bar{E}(\cancel{\bar{D}\bar{E}+1})\ \bar{D}\bar{E}(\bar{C}+1) + AC(\overline{\bar{D}\bar{E}}) + \bar{B}\bar{C}(\overline{\bar{D}\bar{E}})$ → Absorción

$AB + \bar{D}\bar{E} + AC(\overline{\bar{D}\bar{E}}) + \bar{B}\bar{C}(\overline{\bar{D}\bar{E}}) \rightarrow$ Identidad.

$AB + \bar{D}\bar{E} + AC + \bar{B}\bar{C} \rightarrow$ Absorción.

$A(B + C) + \bar{B}\bar{C} + \bar{D}\bar{E} \rightarrow$ Distributiva.