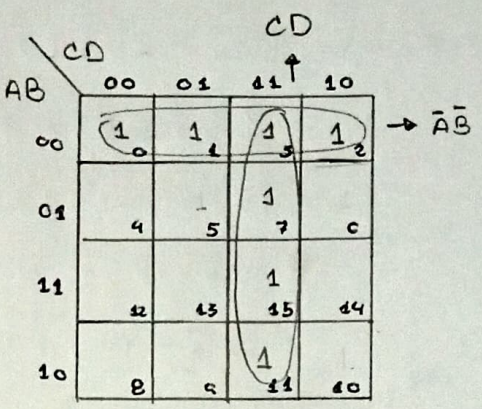
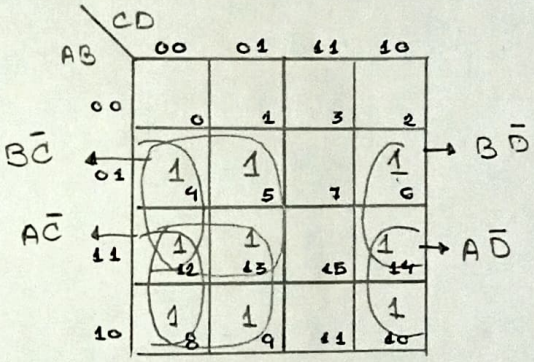
Ejercicio 1:

Ecuación para $E/O = CD + [(C+D)\bar{A}\bar{B}] + \bar{A}\bar{B}\bar{C}\bar{D}$

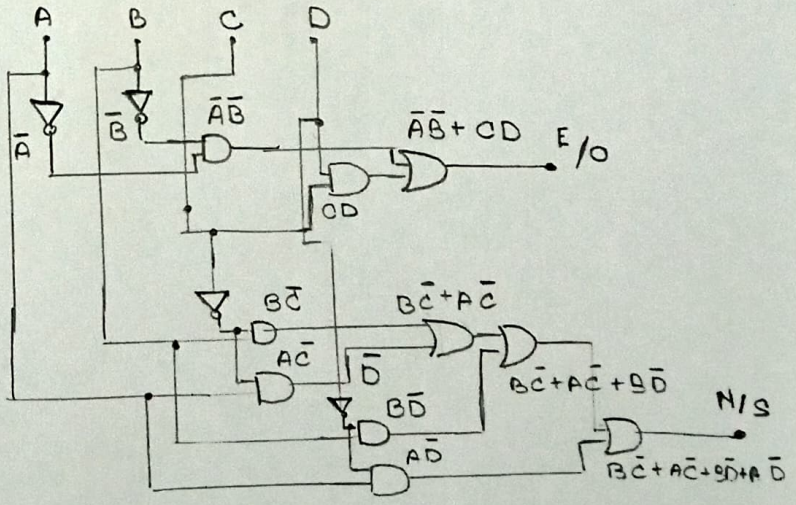
	Entradas				Salidas			
	A	B	C	D	EO	NS		
0	0	0	0	0	1	0		
1	0	0	0	1	1	0		
2	0	0	1	0	1	0		
3	0	0	1	1	1	0		
4	0	1	0	0	0	1		
5	0	1	0	1	0	1		
6	0	1	1	0	0	1		
7	0	1	1	1	1	0		
8	1	0	0	0	0	1		
9	1	0	0	1	0	1		
10	1	0	1	0	0	1		
11	1	0	1	1	1	0		
12	1	1	0	0	0	1		
13	1	1	0	1	0	1		
14	1	1	1	0	0	1		
15	1	1	1	1	1	0		



$E/O = \bar{A}\bar{B} + CD$



$N/S = B\bar{C} + A\bar{C} + B\bar{D} + A\bar{D}$



Ejercicio 2 :

a. Tabla de verdad

	S	L	V	F	Br
0	0	0	0	0	0
1	0	0	0	1	0
2	0	0	1	0	1
3	0	0	1	1	1
4	0	1	0	0	1
5	0	1	0	1	1
6	0	1	1	0	1
7	0	1	1	1	1
8	1	0	0	0	1
9	1	0	0	1	0
10	1	0	1	0	1
11	1	0	1	1	0
12	1	1	0	0	0
13	1	1	0	1	0
14	1	1	1	0	0
15	1	1	1	1	0

b. Expresión reducida en suma de productos y producto de sumas

- Suma de productos

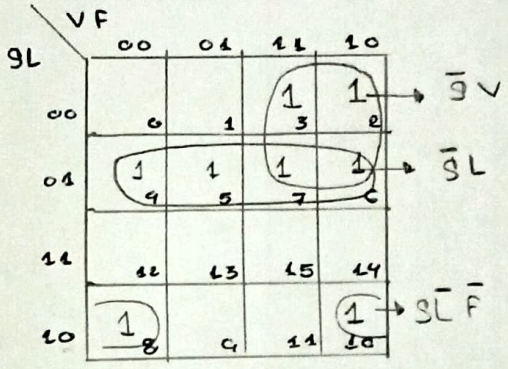
$Br = \sum m(2,3,4,5,6,7,8,10)$

$Br = \bar{S}\bar{L}V\bar{F} + \bar{S}\bar{L}VF + \bar{S}L\bar{V}\bar{F} + \bar{S}LV\bar{F} + \bar{S}LVF + S\bar{L}\bar{V}\bar{F} + S\bar{L}V\bar{F}$

- Producto de sumas

$Br = (S+L+V+F)(S+L+V+\bar{F})(\bar{S}+L+V+\bar{F})(\bar{S}+L+\bar{V}+\bar{F})$
$(\bar{S}+\bar{L}+V+F)(\bar{S}+\bar{L}+V+\bar{F})(\bar{S}+\bar{L}+\bar{V}+F)(\bar{S}+L+\bar{V}+\bar{F})$

Reducciones :



$Br = \bar{S}L + \bar{S}V + S\bar{L}\bar{F}$ → suma de productos reducida

producto de sumas reducida

$= (S+L+V)(\bar{S}+L+\bar{F})(\bar{S}+\bar{L}+V)(\bar{S}+\bar{L}+\bar{V})$

$= (S+L+V)(\bar{S}+L+\bar{F})(\bar{S}+\bar{L})$

$= (S+L+V)(\bar{S}\bar{S} + \bar{S}\bar{L} + \bar{S}\bar{F} + \bar{L}\bar{S} + L\bar{L} + \bar{L}\bar{F})$

$= (S+L+V)(\bar{S} + \bar{S}F + \bar{L}\bar{F})$

$= (S+L+V)(\bar{S} + \bar{L}\bar{F})$

$= \cancel{S\bar{S}} + S\bar{L}\bar{F} + L\bar{S} + L\bar{L}F + V\bar{S} + V\bar{L}\bar{F}$

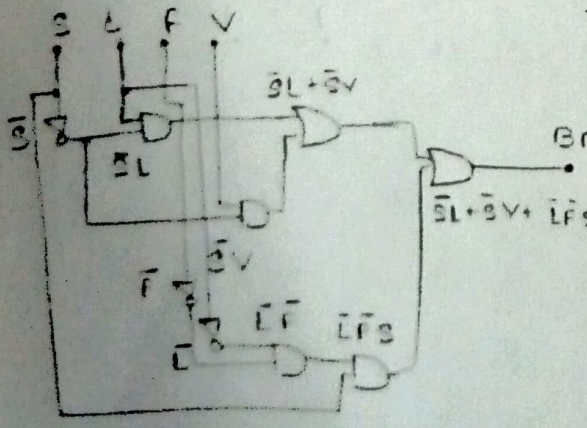
$= \bar{S}L + \bar{S}V + \bar{L}\bar{F}S + \bar{L}\bar{F}V$

$= \bar{S}L + \bar{S}V + \bar{L}S\bar{F}$

comprobación

$\bar{S}L + \bar{S}V + S\bar{L}\bar{F} = \bar{S}L + \bar{S}V + S\bar{L}\bar{F}$

c. Circuito :



Ejercicio 3:

1. $F(A,B,C,D) = \overline{A(\bar{B}+C) + \bar{B}\bar{D} + A(\bar{C}+\bar{D})\bar{B}(C+B)A}$

$= (\overline{A(\bar{B}+C)}) \cdot \overline{\bar{B}\bar{D}} \cdot (\overline{A(\bar{C}+\bar{D})\bar{B}}) \cdot (\overline{(C+B)A})$

$= (\bar{A} + (\overline{\bar{B}+C})) \cdot (\bar{B}+\bar{D}) \cdot (\bar{A} + \overline{(\bar{C}+\bar{D})} + \bar{B}) \cdot ((\bar{C}\bar{B}) + \bar{A})$

$= (\bar{A} + \bar{B}C) \cdot (B+D) \cdot (\bar{A} + (\bar{C}\bar{D}) + B) \cdot (\bar{C}\bar{B} + \bar{A})$

$= (\bar{A} + B\bar{C})(B+D)(\bar{A} + CD + B)(\bar{C}\bar{B} + \bar{A})$

$= \bar{C}\bar{B}(\bar{A} + B\bar{C})(B+D)(\bar{A} + CD + B) + \bar{A}(\bar{A} + B\bar{C})(B+D)(\bar{A} + CD + B)$

$= \bar{C}\bar{B}(\bar{A} + B\bar{C})(B+D)(\bar{A} + CD + B) + \bar{A}(B+D)(\bar{A} + CD + B)$

$= \bar{C}\bar{B}(\bar{A} + B\bar{C})(B+D)(\bar{A} + CD + B) + \bar{A}(\bar{B}+D)$

$= (\bar{A}\bar{B}\bar{C} + B\bar{B}C)(B+D)(\bar{A} + CD + B) + \bar{A}(\bar{B}+D)$

$= (\bar{A}\bar{B}\bar{C})(B+D)(\bar{A} + CD + B)(\bar{A} + C + B + D)$

$= (\bar{A}\bar{B}\bar{B}\bar{C} + \bar{A}\bar{B}\bar{C}D)(\bar{A} + CD + B) + \bar{A}(B+D)$

$= (\bar{A}\bar{B}\bar{C}D)(\bar{A} + CD + B) + \bar{A}(B+D)$

$= \bar{A}\bar{B}\bar{C}D + \bar{A}\bar{B}\bar{C}DC + \bar{A}\bar{B}\bar{C}DB$

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

$= \bar{A}B + \bar{A}D$

2. $F(A,B,C,D,E,F,G,H) = \overline{(\overline{A+B}) + (\overline{C+D})(\overline{E+F})(\overline{G+H})}$

$= \overline{(\overline{A+B}) + (\overline{C+D}) + (\overline{E+F})(\overline{G+H})}$ Simplificamos la doble negación

$= (\overline{A+B}) + (\overline{C+D}) + (\overline{E+F})(\overline{G+H})$

$= \bar{A}\bar{B} + \bar{C}\bar{D} + \bar{E}\bar{F}\bar{G}\bar{H}$

3. $F(x,y,z,w) = (\overline{zv} + zv)(\bar{x}+y)w + \overline{(\bar{x}+y)}wzv$

$= 1(\bar{x}+y)w + (\bar{\bar{x}}\bar{y})wzv$

$= (\bar{x}+y)w + (x\bar{y})wzv$

$= w\bar{x} + wy + wx\bar{y}zv$ Ley de consensos

$= w\bar{x} + wy + w\bar{z}v$

4. $F(x,y,z) =$