

5. Minimice la función de conmutación

$$F(a, b, c, d) = \sum (0, 1, 2, 3, 4, 6, 7, 8, 9, 11, 15)$$

mediante el algoritmo de Quine-McCluskey y el de los mapas de Karnaugh.

→ Forme normal disyuntiva

a	b	c	d	F
0	0	0	0	1
0	0	0	1	1
0	0	1	0	1
0	0	1	1	1
0	1	0	0	1
0	1	0	1	0
0	1	1	0	1
0	1	1	1	1
1	0	0	0	1
1	0	0	1	1
1	0	1	0	0
1	0	1	1	1
1	1	0	0	0
1	1	0	1	0
1	1	1	0	0
1	1	1	1	1

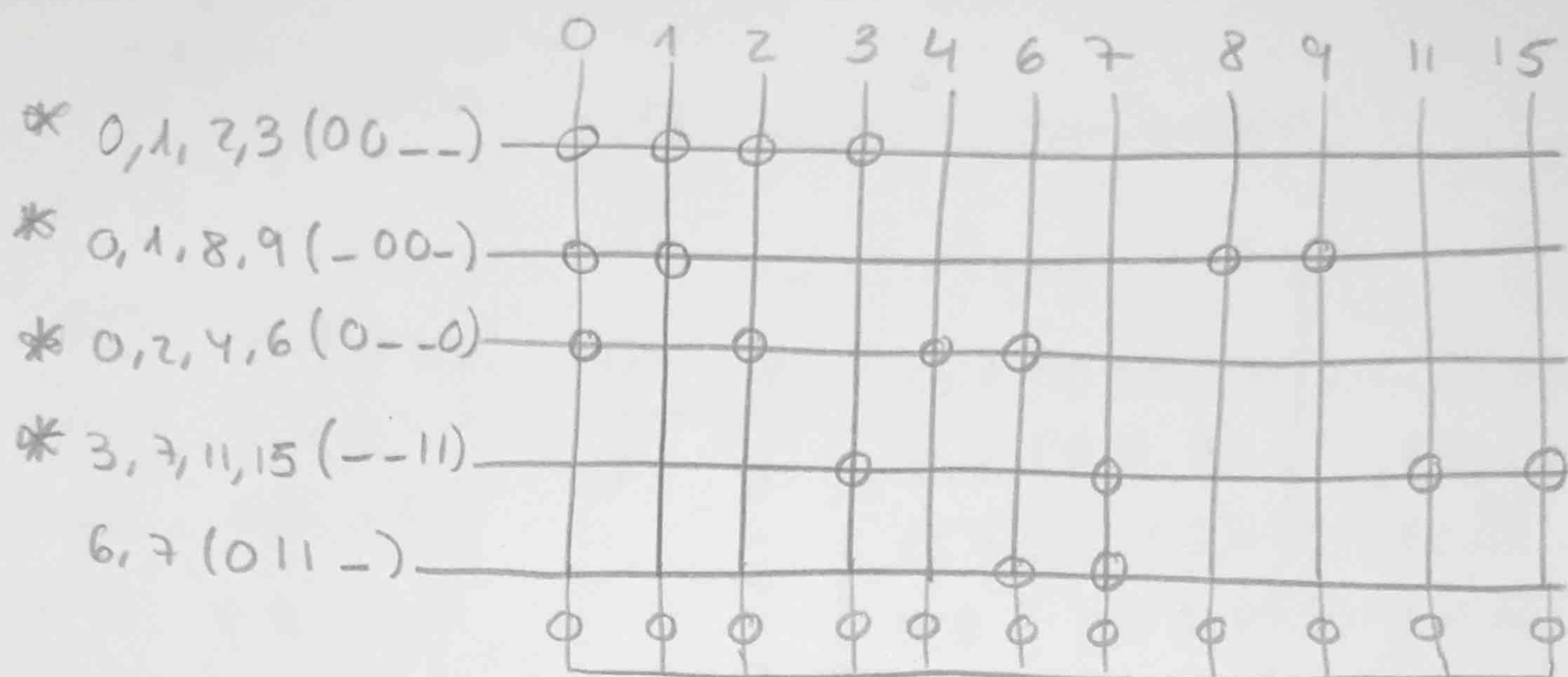
MAPA DE KARNAUGH

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

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

ALGORITMO DE QUINE-MCCLUSKEY

→ 0	0 0 0 0 /	0	0	0, 1 (0 0 0 -) ✓	0, 1, 2, 3 (0 0 - -) ✗
→ 1	0 0 0 1 /	1	1	0, 2 (0 0 - 0) ✓	0, 1, 8, 9 (- 0 0 -) ✗
→ 2	0 0 1 0 /		2	0, 4 (0 - 0 0) ✓	0, 2, 4, 6 (0 - - 0) ✗
→ 3	0 0 1 1 /		4	0, 8 (- 0 0 0) ✓	3, 7, 11, 15 (- - 1 1) ✗
→ 4	0 1 0 0 /		8	1, 3 (0 0 - 1) ✓	
5	0 1 0 1	2	3	1, 9 (- 0 0 1) ✓	
→ 6	0 1 1 0 /		6	2, 3 (0 0 1 -) ✓	
→ 7	0 1 1 1 /		9	2, 6 (0 - 1 0) ✓	
→ 8	1 0 0 0 /	3	7	4, 6 (0 1 - 0) ✓	
→ 9	1 0 0 1 /		11	8, 9 (1 0 0 -) ✓	
10	1 0 1 0	4	15	3, 7 (0 - 1 1) ✓	
→ 11	1 0 1 1			3, 11 (- 0 1 1) ✓	
12	1 1 0 0			6, 7 (0 1 1 -) ✗	
13	1 1 0 1			7, 15 (- 1 1 1) ✓	
14	1 1 1 0			11, 15 (1 - 1 1) ✓	
→ 15	1 1 1 1				



Implicante	Patrón	Producto
0, 1, 2, 3	00--	$\bar{a}\bar{b}$
0, 1, 8, 9	-00-	$\bar{b}\bar{c}$
0, 2, 4, 6	0--0	$\bar{a}\bar{d}$
3, 7, 11, 15	--11	cd

$$f = \bar{a}\bar{b} + \bar{b}\bar{c} + \bar{a}\bar{d} + cd$$