

## Guia 08 – Simplificações Ludmily

1)

$f(a, b, c, d) = \text{SoP} (m(2, 3, 5, 6, 7, 9, 11, 13, 14, 15))$

GRUPOS	GRUPO DE 2 TERMOS
1 bit	(2, 3) = 001_ A
2 - 0010	(3, 7) = 0_11 B
2 bits	(5, 7) = 01_1 C
3 - 0011	(5, 13) = _101 D
5 - 0101	(6, 7) = 011_ E
6 - 0110	(9, 13) = 1_01 F
9 - 1001	(7, 15) = _111 G
3 bits	(13, 15) = 11_1 H
7 - 0111	(14, 15) = 111_ I
13 - 1101	GRUPOS DE 4 TERMOS
14 - 1110	(2, 3, 6, 7) = 0_1_ J
4 bits	(5, 7, 13, 15) = _1_1 K
15 - 1111	(5, 13, 7, 15) = _1_1
	(6, 7, 14, 15) = _11_ L

	2	3	5	6	7	9	13	14	15
A	X	X							
B		X			X				
C			X		X				
D			X				X		
E				X	X				
F						X	X		
G					X				X
H							X		X
I								X	X
J	X	X		X	X				
K			X		X		X		X
L				X	X			X	X

$$f = F + J + K + L = ac'd + a'c + bd + bc$$

2)

$f(a, b, c, d) = \text{SoP} (m(0, 2, 4, 6, 8, 9, 11, 13, 15))$

GRUPOS	GRUPO DE 2 TERMOS
0 bit	(0, 2) = 00_0 A
0 - 0000	(0, 4) = 0_00 B
1 bit	(0, 8) = 01_1 C
2 - 0010	(2, 6) = 0_10 D
4 - 0100	(4, 6) = 01_0 E
8 - 1000	(8, 9) = 100_ F
2 bits	(9, 11) = 10_1 G
6 - 0110	(9, 13) = 1_01 H
9 - 1001	(11, 15) = 1_11 I
3 bits	(13, 15) = 11_1 J
11 - 1011	GRUPOS DE 4 TERMOS
13 - 1101	(0, 2, 4, 6) = 0__0 K
4 bits	(9, 11, 13, 15) = 1__1 L
15 - 1111	(0, 13, 11, 15) = 1__1

	0	2	4	6	8	9	11	13	15
A	X	X							
B	X		X						
C	X				X				
D		X		X					
E			X	X					
F					X	X			
G						X	X		
H						X		X	
I							X		X
J								X	X
K	X	X	X	X					
L						X	X	X	X

$$f = F + K + L = ab'c' + a'd' + ad$$

3)

	de	de	de	de
abc	00	01	11	10
000	1	1	1	0
001	0	1	1	0
011	0	1	1	0
010	1	1	0	0

$$F = \text{PoS} (M(2, 4, 6, 10, 11, 12, 14))$$

GRUPOS
2 bits
11 - 01011
14 - 01110
3 bits
6 - 00100
10 - 01010
12 - 01100
4 bits
2 - 00010
4 - 00100

GRUPO DE 2 TERMOS
(11, 10) = 0101_ A
(14, 6) = 0_110 B
(14, 10) = 01_10 C
(14, 12) = 011_0 D
(6, 2) = 00_10 E
(6, 4) = 001_0 F
GRUPOS DE 4 TERMOS
(14, 10, 6, 2) = 0__10 G
(14, 12, 6, 4) = 0_1_0 H

	2	4	6	10	11	12	14
A				X	X		
B			X				X
C				X			X
D						X	X
E	X		X				
F		X	X				
G	X		X	X			X
H		X	X			X	X

$$F = ABH = A+B'+C+D' \cdot A+C'+D'+E \cdot A+C'+E$$

	de	de	de	de
abc	00	01	11	10
100	0	1	1	1
101	1	1	1	0
111	1	1	1	0
110	0	0	0	0

$$F = \text{PoS} (M(16, 22, 24, 25, 26, 27, 30))$$

GRUPOS
27 - 11011
30 - 11110
2 bits
22 - 10110
25 - 11001
26 - 11010
3 bits
24 - 11000
4 bits
16 - 00010 A

GRUPO DE 2 TERMOS
(27, 25) = 110_1 B
(27, 26) = 1101_ C
(30, 22) = 1_110 D
(30, 26) = 11_10 E
(25, 24) = 1100_ F
(26, 24) = 110_0 G
GRUPOS DE 4 TERMOS
(27, 25, 26, 24) = 110__
(27, 26, 25, 24) = 110__ H

	11	16	22	24	25	26	27	30
A		X						
B					X		X	
C								
D			X					X
E						X		X
F	X				X			
G	X					X		
H	X				X	X	X	

$$F = ADH = A' + B + C + D + E \cdot A' + C' + D' + E \cdot A' + B' + C$$