Universidad de San Carlos
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Documentación

Práctica 1

Grupo # 4

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Circuitos con compuertas creadas por transistores

1. ((A OR B) AND C)XOR((D AND NOT C)

					W	X	Y	Z
A	**B**	**C**	**D**	**NOT C**	**A OR B**	**W AND C**	**D AND NOT C**	**X XOR Y**
0	0	0	0	1	0	0	0	0
0	0	0	1	1	0	0	1	1
0	0	1	0	0	0	0	0	0
0	0	1	1	0	0	0	0	0
0	1	0	0	1	1	0	0	0
0	1	0	1	1	1	0	1	1
0	1	1	0	0	1	1	0	1
0	1	1	1	0	1	1	0	1
1	0	0	0	1	1	0	0	0
1	0	0	1	1	1	0	1	1
1	0	1	0	0	1	1	0	1
1	0	1	1	0	1	1	0	1
1	1	0	0	1	1	0	0	0
1	1	0	1	1	1	0	1	1
1	1	1	0	0	1	1	0	1
1	1	1	1	0	1	1	0	1

2. (A NAND B) NOR (NOT A NAND C)

				H	J	K
A	**B**	**C**	**NOT A**	**A NAND B**	**NOT A NAND C**	**W NOR X**
0	0	0	1	1	1	0
0	0	1	1	1	0	0
0	1	0	1	1	1	0
0	1	1	1	1	0	0
1	0	0	0	1	1	0
1	0	1	0	1	1	0
1	1	0	0	0	1	0
1	1	1	0	0	1	0

3. (A NOR B) NAND (A NOR NOT C)

				L	M	N
A	**B**	**C**	**NOT C**	**A NOR B**	**A NOR NOT C**	**W NAND X**
0	0	0	1	1	0	1
0	0	1	0	1	1	0
0	1	0	1	0	0	1
0	1	1	0	0	1	1
1	0	0	1	0	0	1
1	0	1	0	0	0	1
1	1	0	1	0	0	1
1	1	1	0	0	0	1

4. (NOT A OR A) AND (B OR NOT B) AND C

			V	W	X	Y	Z	
A	**B**	**C**	**NOT A**	**NOT B**	**V OR A**	**B OR W**	**X AND Y**	**Z AND C**
0	0	0	1	1	1	1	1	0
0	0	1	1	1	1	1	1	1
0	1	0	1	0	1	1	1	0
0	1	1	1	0	1	1	1	1
1	0	0	0	1	1	1	1	0
1	0	1	0	1	1	1	1	1
1	1	0	0	0	1	1	1	0
1	1	1	0	0	1	1	1	1

5. NOT ((A AND B) OR (NOT A AND C)

			W	X	Y	Z	
A	**B**	**C**	**A AND B**	**NOT A**	**X AND C**	**W OR Y**	**NOT Z**
0	0	0	0	1	0	0	1
0	0	1	0	1	1	1	0
0	1	0	0	1	0	0	1
0	1	1	0	1	1	1	0
1	0	0	0	0	0	0	1
1	0	1	0	0	0	0	1
1	1	0	1	0	0	1	0
1	1	1	1	0	0	1	0

Circuitos con compuertas tradicionales

1. ((A AND B) XOR C) NAND (NOT A XOR (C NOR B))

			U	V	W	X	Y	
A	**B**	**C**	**NOT A**	**A AND B**	**V XOR C**	**C NOR B**	**U XOR X**	**W NAND Y**
0	0	0	1	0	0	1	0	1
0	0	1	1	0	1	0	1	0
0	1	0	1	0	0	0	1	1
0	1	1	1	0	1	0	1	0
1	0	0	0	0	0	1	1	1
1	0	1	0	0	1	0	0	1
1	1	0	0	1	1	0	0	1
1	1	1	0	1	0	0	0	1

2. ((B AND A) XOR (C OR B)) OR (C XOR (B NAND NOT A))

			1	2	4			5	
C	**B**	**A**	**B AND A**	**C OR B**	**1 xor 2**	**NOT A**	**B NAND NOT A**	**cxor(bnandnota)**	**4 or 5**
0	0	0	0	0	0	1	1	1	1
0	0	1	0	0	0	0	1	1	1
0	1	0	0	1	1	1	0	0	1
0	1	1	1	1	0	0	1	1	1
1	0	0	0	1	1	1	1	0	1
1	0	1	0	1	1	0	1	0	1
1	1	0	0	1	1	1	0	1	1
1	1	1	1	1	0	0	1	0	0

3. ((A OR B OR C) AND (A OR C)) AND NOT((A OR B OR C) AND (A OR C))

				1	2	3	4	
A	**B**	**C**	**A OR B**	**A OR B OR C**	**A OR C**	**1 AND 2**	**NOT 3**	**3 AND 4**
0	0	0	0	0	0	0	1	0
0	0	1	0	1	1	1	0	0
0	1	0	1	1	0	0	1	0
0	1	1	1	1	1	1	0	0
1	0	0	1	1	1	1	0	0
1	0	1	1	1	1	1	0	0
1	1	0	1	1	1	1	0	0
1	1	1	1	1	1	1	0	0

4. NOT(A OR (B AND NOT C)) AND NOT((A AND NOT B) OR (B NOR C))

						G	H	I	J	K	L	M	N	O	P	Q
A	**B**	**C**	**A'**	**B'**	**C'**	**A + B**	**G + C**	**G + C'**	**A' + B**	**J + C**	**A' + B'**	**L + C**	**H * I**	**N * H**	**O * M**	**P * K**
0	0	0	1	1	1	0	0	1	1	1	1	1	0	0	0	0
0	0	1	1	1	0	0	1	0	1	1	1	1	0	0	0	0
0	1	0	1	0	1	1	1	1	1	1	1	1	1	1	1	1
0	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1
1	0	0	0	1	1	1	1	1	0	0	1	1	1	1	0	0
1	0	1	0	1	0	1	1	1	0	1	1	1	1	1	1	1
1	1	0	0	0	1	1	1	1	1	1	0	0	1	1	0	0
1	1	1	0	0	0	1	1	1	1	1	0	1	1	1	1	1

5. (A OR B OR C) AND (A OR B OR NOT C) AND (A OR B OR C) AND (NOT A OR B OR C) AND (NOT A OR NOT B OR C)

					F	G	H	I		K		M
A	**B**	**C**	**B'**	**C'**	**B * C'**	**A * B'**	**(B + C) '**	**A + F**	**I'**	**G + H**	**K'**	**I' * K'**
0	0	0	1	1	0	0	1	0	1	1	0	0
0	0	1	1	0	0	0	0	0	1	0	1	1
0	1	0	0	1	1	0	0	1	0	0	1	0
0	1	1	0	0	0	0	0	0	1	0	1	1
1	0	0	1	1	0	1	1	1	0	1	0	0
1	0	1	1	0	0	1	0	1	0	1	0	0
1	1	0	0	1	1	0	0	1	0	0	1	0
1	1	1	0	0	0	0	0	1	0	0	1	0