Curs de Reavaluació d'IC – Sessió 2

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Activitat 2

Realitza els següents problemes i entrega les solucions en un document PDF a l'espai reservat a Atenea.

Problema 1

Escriu els 8 bits de menor pes del vector de bits resultant d'efectuar les següents sumes en binari i indica si el resultat és representable usant 8 bits o no.

a) 10011111+01101111. 0100001110
b) 10101011+01010101. 100000000
c) 01011101+01110111. 011010100

Problema 2

Escriu els 8 bits de menor pes del vector de bits resultant d'efectuar les següents restes en binari i indica si el resultat és representable usant 8 bits o no.

a) 10101101-01011101. 01010000 Sí
b) 10100000-10000001. 011111 Sí
c) 10100011-10111111. -011100 Sí

Problema 3

Escriu els 8 bits de menor pes del vector de bits resultant de les següents multiplicacions de nombres binaris per potències de 2 i digues si el resultat és representable en 8 bits o no.

a) 00010110 per 2^4. 01100000 no
b) 00101010 per 2^3. 01010000 no
c) 00000111 per 2^5. 11100000 si

Problema 4

Escriu els 8 bits de menor pes del vector de bits resultant de les següents divisions de nombres binaris per potències de 2.

a) 00000111 entre 2^1. 00000011
b) 00110101 entre 2^3. 00000110
c) 00010001 entre 2^0. 00010001
d) 00101111 entre 2^7. 00000000

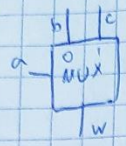
Problema 5

Indica una operació entre dos vectors de 4 bits que:

a) la suma de dos valors positius no doni overflow 0001 + 0010
b) la suma de dos valors positius doni overflow 0100 + 0110
c) la suma de dos valors negatius no doni overflow 1111 + 1101
d) la suma de dos valors negatius doni overflow 1000 + 1000
e) la suma d'un nombre positiu amb un de negatiu no doni overflow 0011 +1010

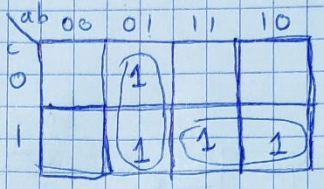
Problema 6

a)

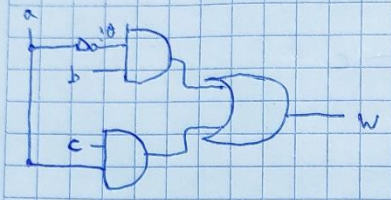


a	b	c	w
0	0	0	0
0	0	1	0
0	1	0	1
0	1	1	1
1	0	0	0
1	0	1	1
1	1	0	0
1	1	1	1

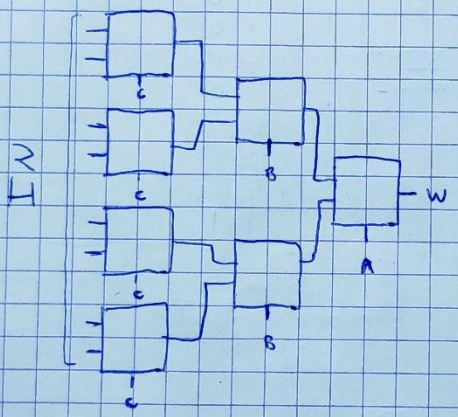
!ab!c + !abc + a!bc + abc



!ab + ac

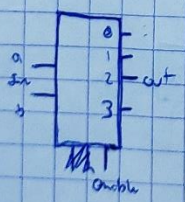


b)



Problema 7

a)



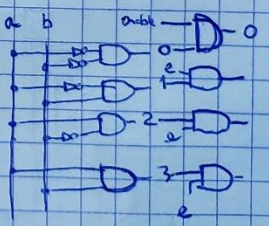
a	b	0	1	2	3
0	0	1	0	0	0
0	1	0	1	0	0
1	0	0	0	1	0
1	1	0	0	0	1

0 = !a!b

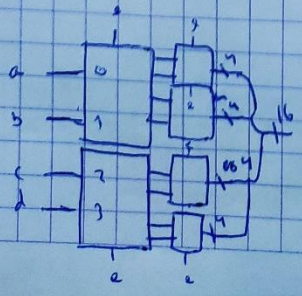
1 = !ab

2 = a!b

3 = ab

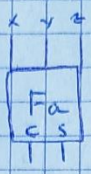


b)

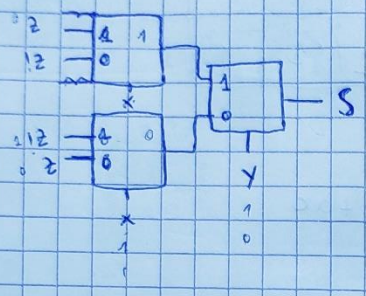


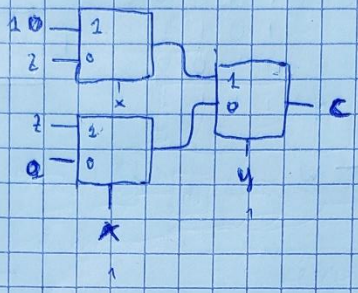
Problema 8

a)

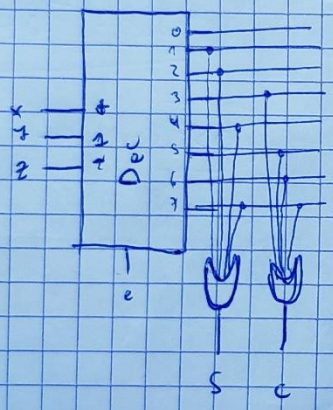


x	y	z	s	c
0	0	0	0	0
0	0	1	1	0
0	1	0	1	0
0	1	1	0	1
1	0	0	1	0
1	0	1	0	1
1	1	0	0	1
1	1	1	1	1

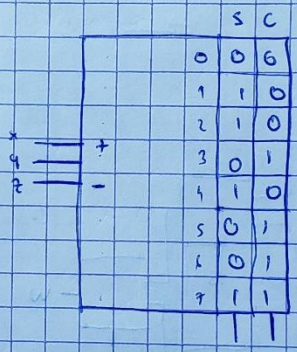




b)

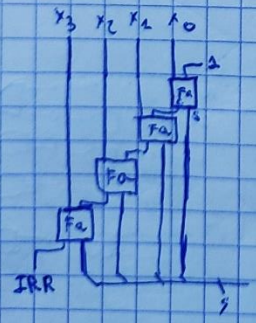


c)

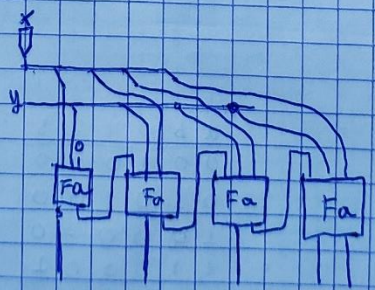


	s	c
0	0	0
1	1	0
2	1	0
3	0	1
4	1	0
5	0	1
6	0	1
7	1	1

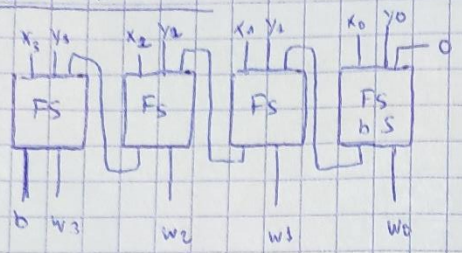
Problema 9



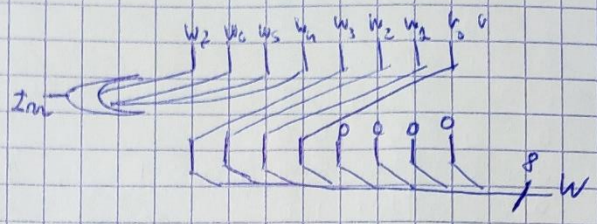
Problema 10



Problema 11

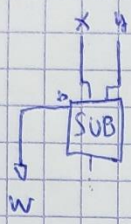


Problema 12



Problema 13

a)



b) 0

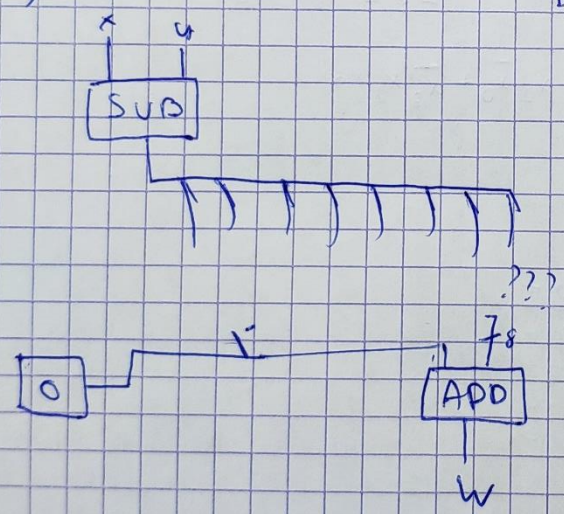
Problema 14

a)

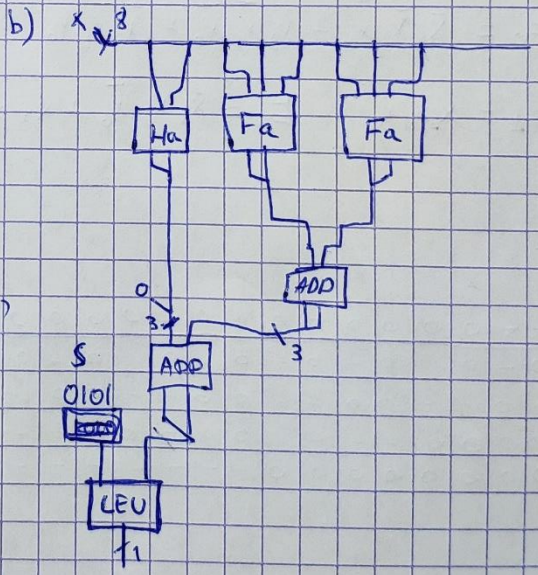
b) 1

Problema 15

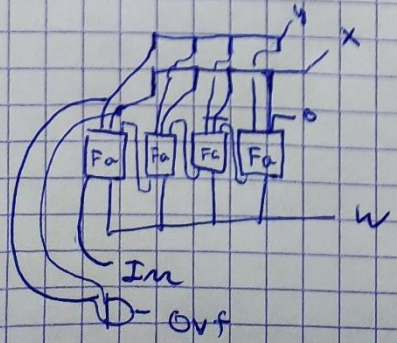
a)



b)

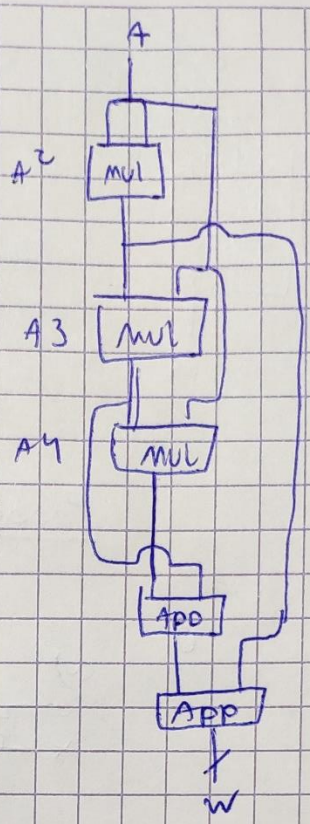


Problema 16



Problema 17

a_1	a_0	b_1	b_0	m_3	m_2	m_1	m_0
0	0	0	0	0	0	0	0
0	0	0	1	0	0	0	0
0	0	1	0	0	0	0	0
0	0	1	1	0	0	0	0
0	1	0	0	0	0	0	0
0	1	0	1	0	0	0	1
0	1	1	0	1	1	1	0
0	1	1	1	1	1	1	1
1	0	0	0	0	0	0	0
1	0	0	1	1	1	1	0
1	0	1	0	0	1	0	0
1	0	1	1	0	0	1	0
1	1	0	0	0	0	0	0
1	1	0	1	1	1	1	1
1	1	1	0	0	0	1	0
1	1	1	1	0	0	0	1



0 0 1 1
0 1 0 4

Problema 18

$$E_0 = \bar{x}_3 \bar{x}_1 \bar{x}_0 + x_3 \bar{x}_1 \bar{x}_0 + \bar{x}_3 \bar{x}_1 x_0 \qquad E_3 = x_3 x_1 x_0$$

$$E_1 = x_3 x_1 x_0 \qquad E_2 = \bar{x}_3 x_1 \bar{x}_0 + x_3 x_1 \bar{x}_0 + \bar{x}_3 x_1 x_0$$

E															
x_0	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1
x_1	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1
x_2	0	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1
x_3	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1