

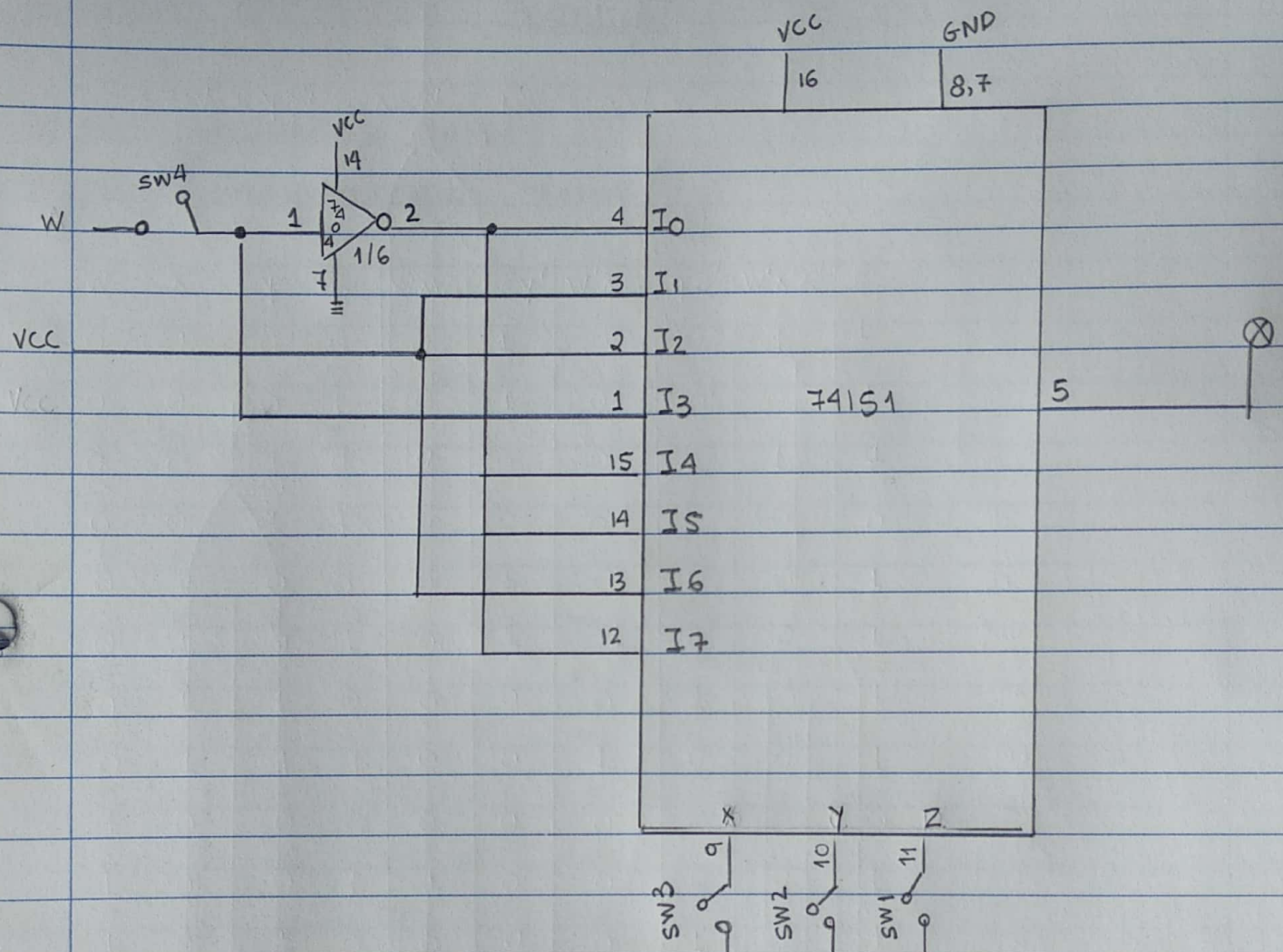
'Aern6n 1

$$F = x'zw + y'w' + xzw' + yz' + x'w'z'$$

w	x	y	z	wx'z	w'y'	w'xz	yz'	w'x'z'	F	
0	0	0	0	0	1	0	0	1	1	m0
0	0	0	1	0	1	0	0	0	1	m1
0	0	1	0	0	0	0	1	1	1	m2
0	0	1	1	0	0	0	0	0	0	m3
0	1	0	0	0	1	0	0	0	1	m4
0	1	0	1	0	1	1	0	0	1	m5
0	1	1	0	0	0	0	1	0	1	m6
0	1	1	1	0	0	1	0	0	1	m7
1	0	0	0	0	0	0	0	0	0	m8
1	0	0	1	1	0	0	0	0	1	m9
1	0	1	0	0	0	0	1	0	1	m10
1	0	1	1	1	0	0	0	0	1	m11
1	1	0	0	0	0	0	0	0	0	m12
1	1	0	1	0	0	0	0	0	0	m13
1	1	1	0	0	0	0	1	0	1	m14
1	1	1	1	0	0	0	0	0	0	m15

apa $F(w,x,y,z) = \sum (0,1,2,4,5,6,7,9,10,11,14)$

	I0	I1	I2	I3	I4	I5	I6	I7
w'	0	1	2	3	4	5	6	7
w	8	9	10	11	12	13	14	15
w'	1	1	w	w'	w'	1	w'	



Άσκηση 2

a) δύο ποzunήκτες 74151

b) ένα ανασωδικοποιητή 74155

$$S = x'y'z + x'y2' + xy'z' + xyz$$

$$C = xy + yz + xz$$

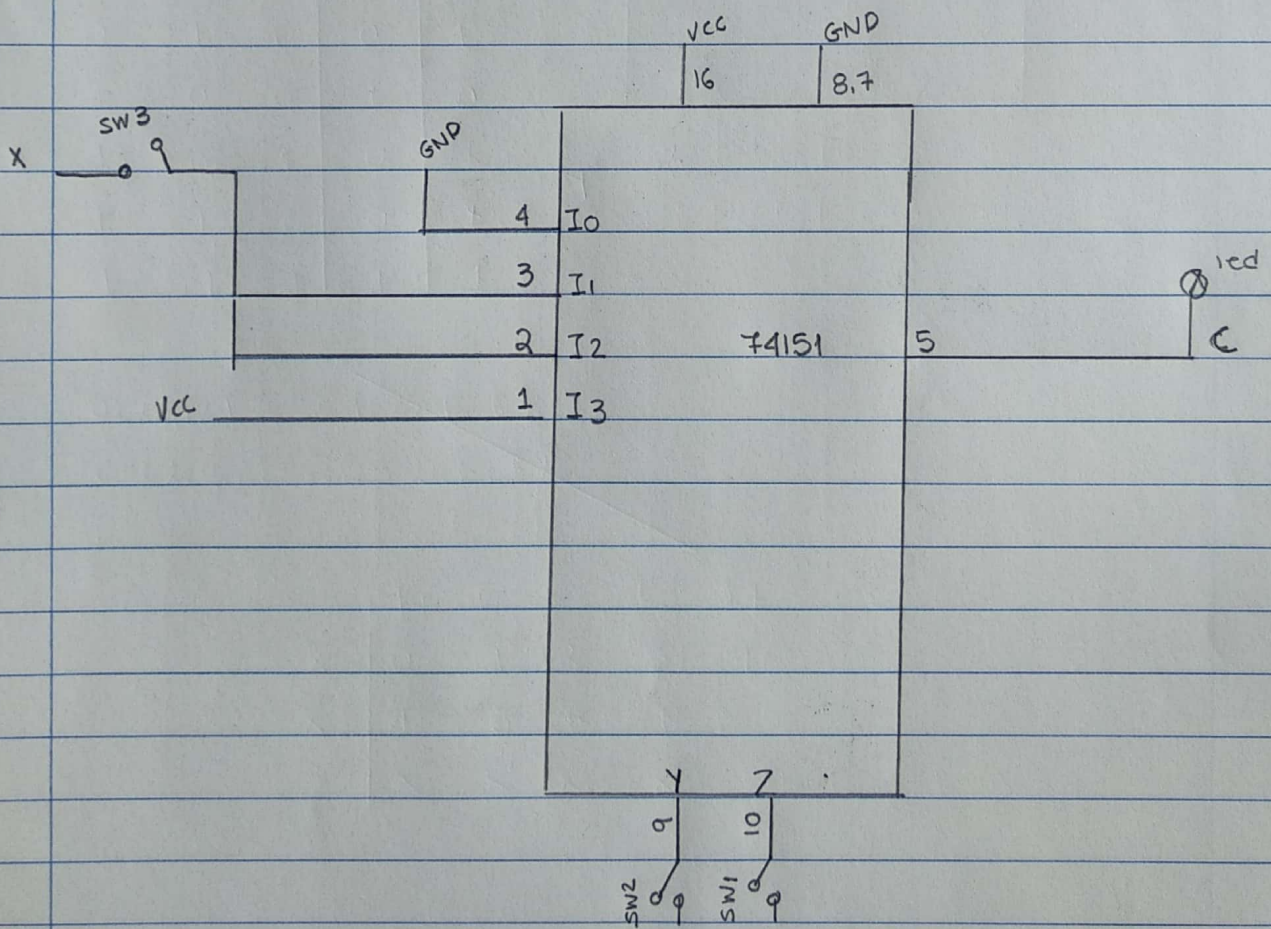
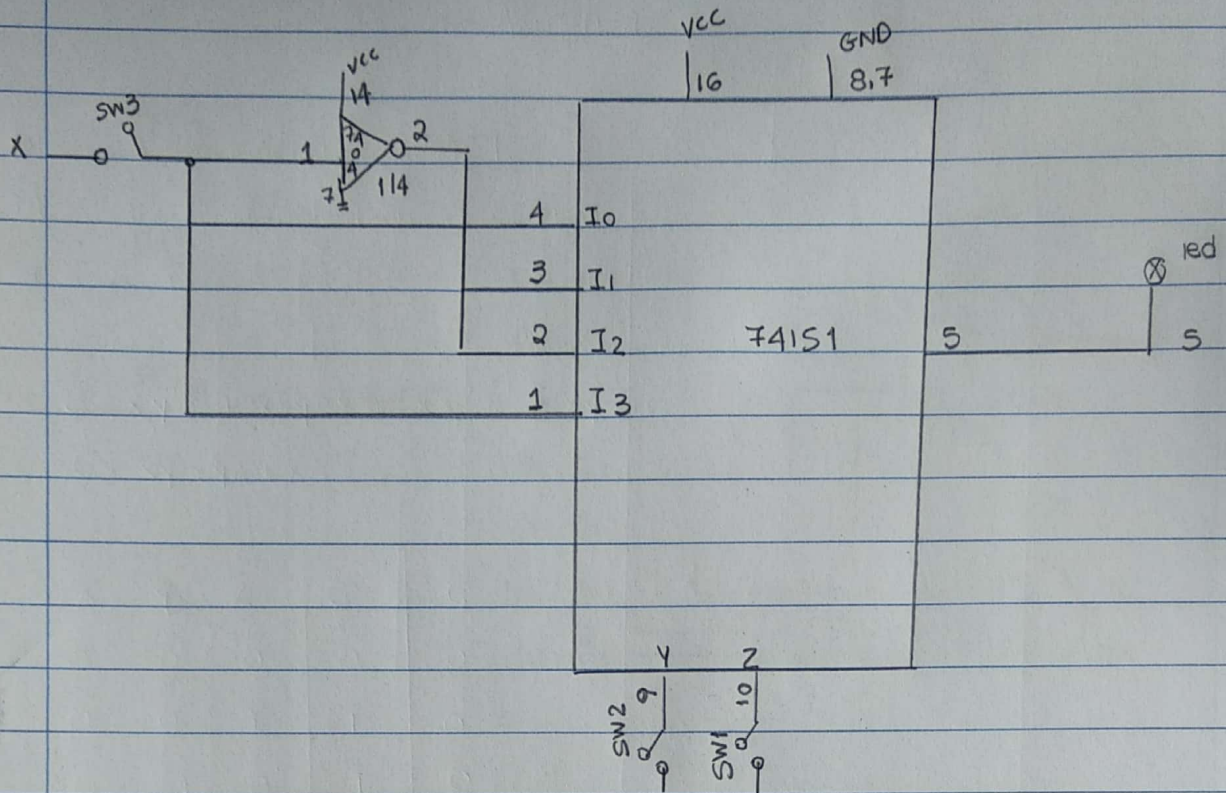
x	y	z	S	C	
0	0	0	0	0	m ₀
0	0	1	1	0	m ₁
0	1	0	1	0	m ₂
0	1	1	0	1	m ₃
1	0	0	1	0	m ₄
1	0	1	0	1	m ₅
1	1	0	0	1	m ₆
1	1	1	1	1	m ₇

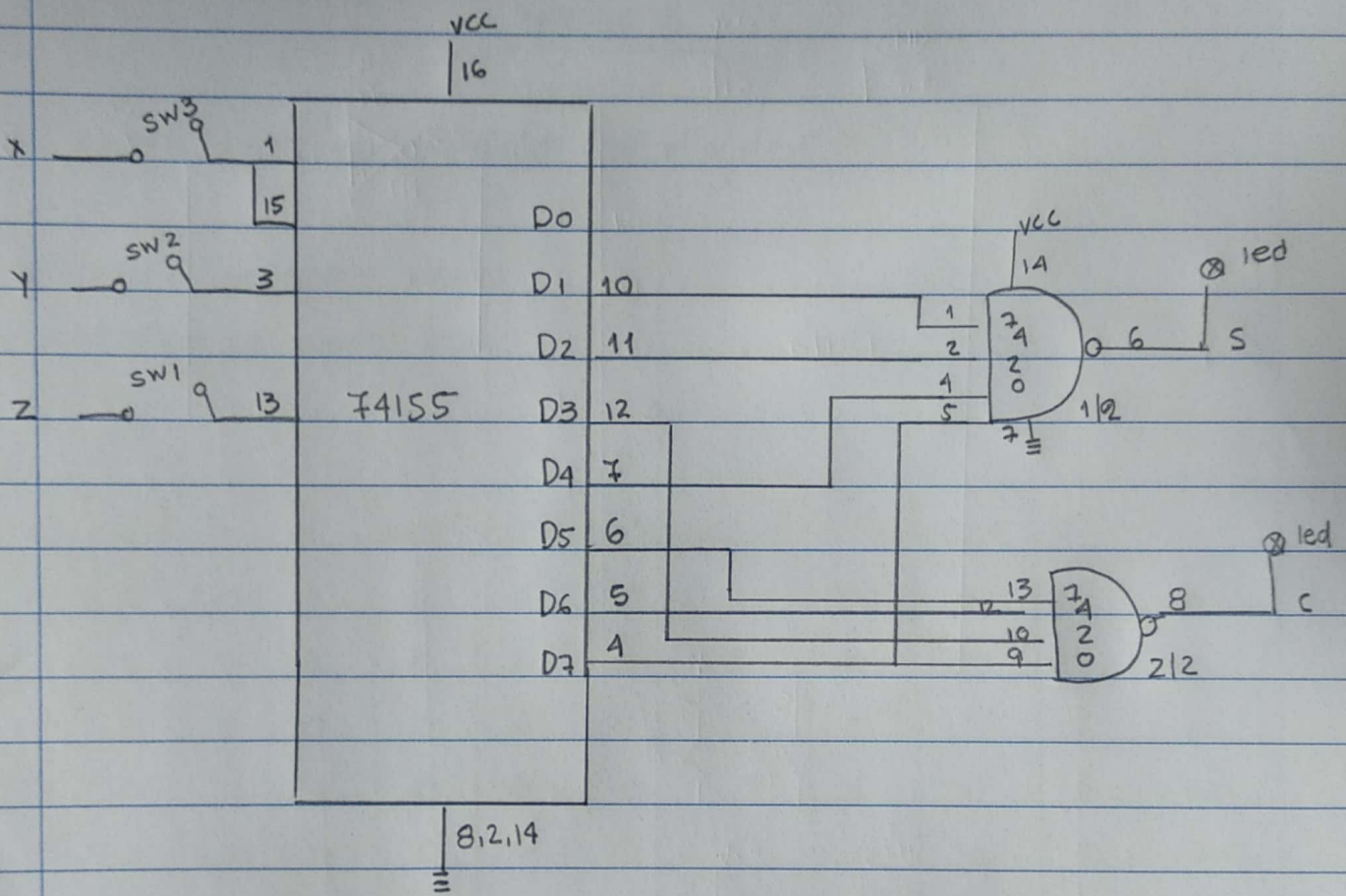
$$S(x,y,z) = \sum(1,2,4,7)$$

$$C(x,y,z) = \sum(3,5,6,7)$$

	I ₀	I ₁	I ₂	I ₃	I ₄
x'	0	①	②	3	4
x	④	5	6	⑦	
	x	x'	x'	x	

	I ₀	I ₁	I ₂	I ₃
x'	0	1	2	③
x	4	⑤	⑥	⑦
	0	x	x	1





Agenda 3

$$F_{11} = ab'd' + ab'c + bc'd' + a'c'd' + a'cb' + d'cd'$$

a) vannoninen me nutes NAND

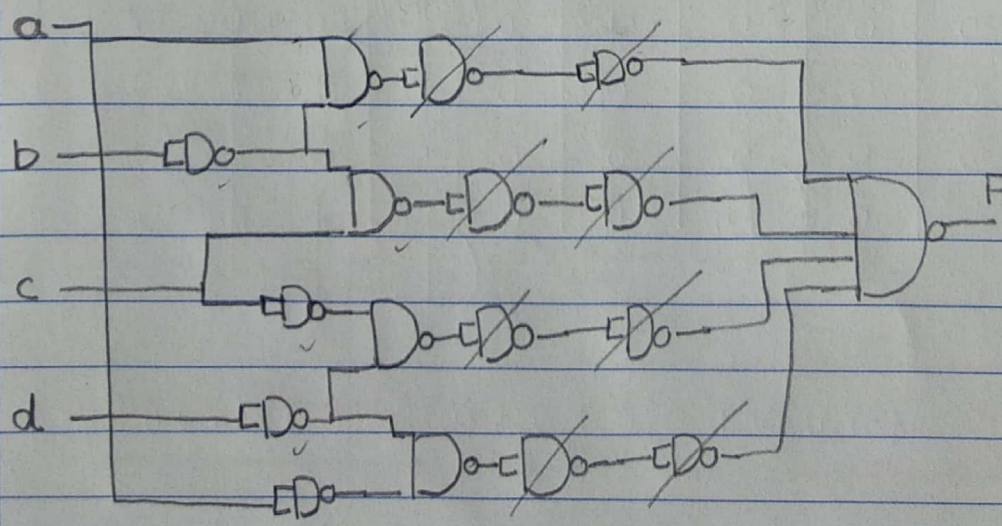
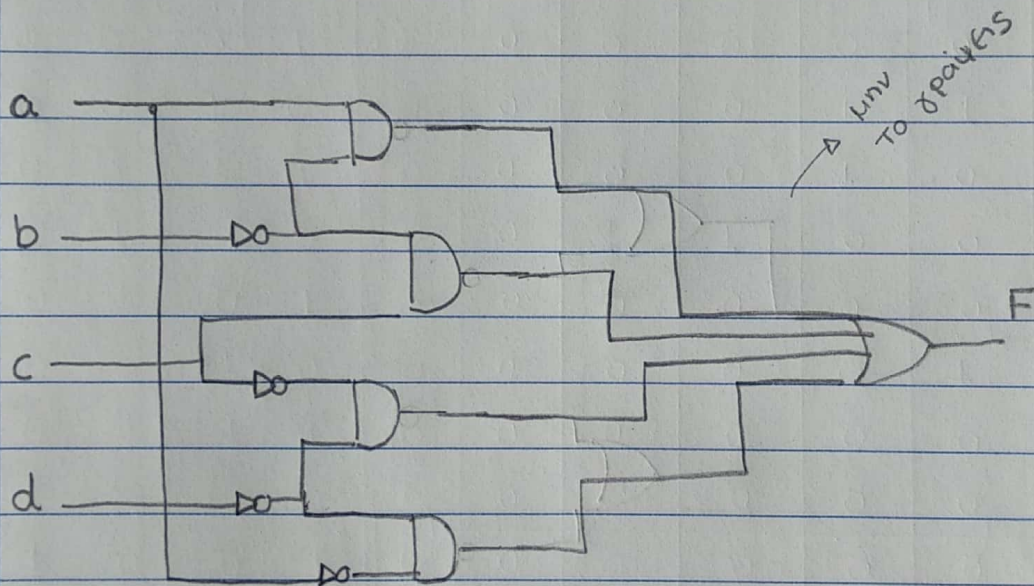
b) vannoninen me nutes NOR

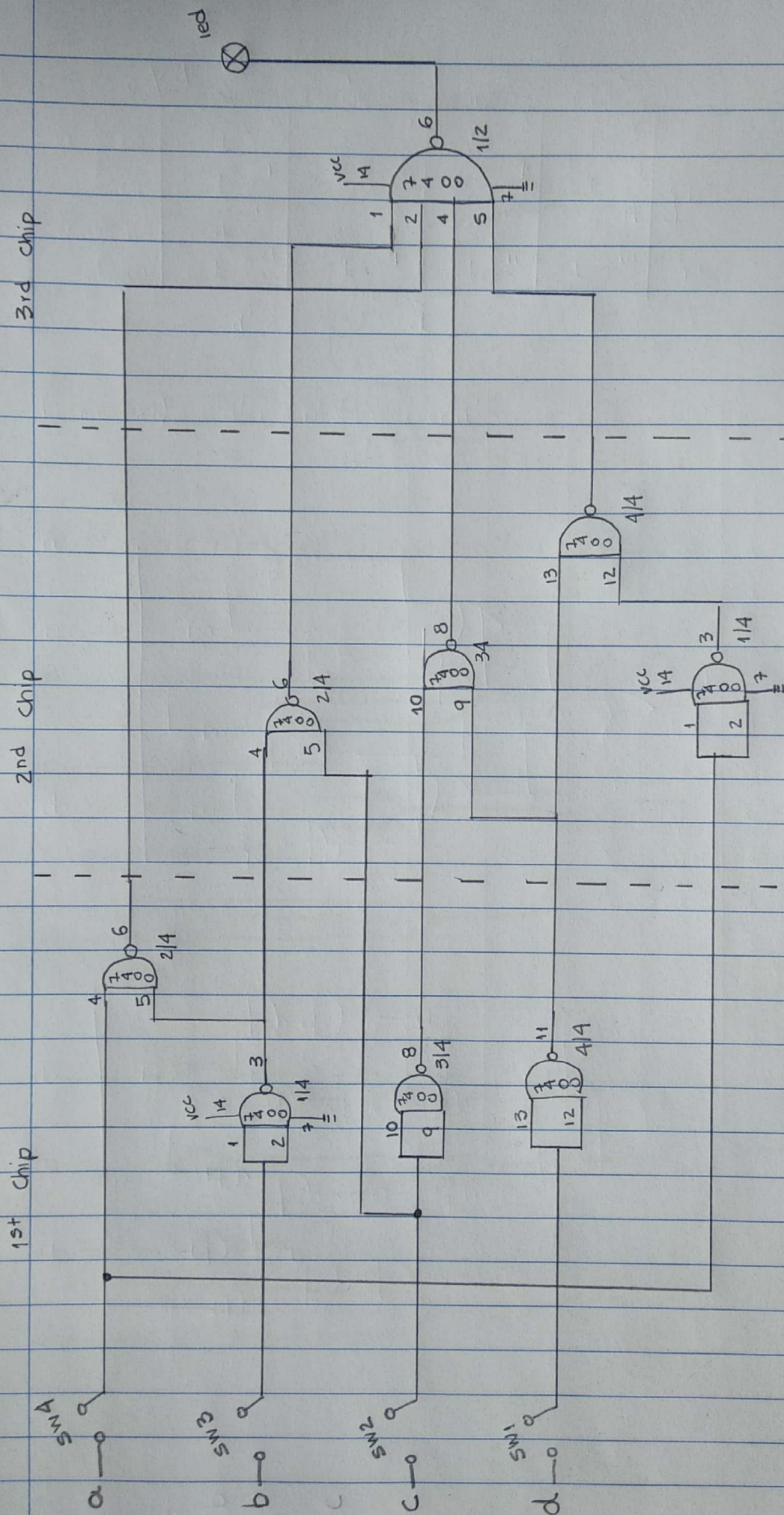
a	b	c	d	$ab'd'$	$ab'c$	$bc'd'$	$a'c'd'$	$a'b'c'$	$a'cd'$	F	
0	0	0	0	0	0	0	1	0	0	1	m0
0	0	0	1	0	0	0	0	0	0	0	m1
0	0	1	0	0	0	0	0	1	1	1	m2
0	0	1	1	0	0	0	0	1	0	1	m3
0	1	0	0	0	0	1	1	0	0	1	m4
0	1	0	1	0	0	0	0	0	0	0	m5
0	1	1	0	0	0	0	0	0	1	1	m6
0	1	1	1	0	0	0	0	0	0	0	m7
1	0	0	0	1	0	0	0	0	0	1	m8
1	0	0	1	1	0	0	0	0	0	1	m9
1	0	1	0	0	1	0	0	0	0	1	m10
1	0	1	1	0	1	0	0	0	0	1	m11
1	1	0	0	0	0	1	0	0	0	1	m12
1	1	0	1	0	0	0	0	0	0	0	m13
1	1	1	0	0	0	0	0	0	0	0	m14
1	1	1	1	0	0	0	0	0	0	0	m15

apa $F_{11}(a,b,c,d) = \Sigma(0,2,3,4,6,8,9,10,11,12)$

ab \ cd		c'		c	
		00	01	11	10
a'	00	1	0	1	1
	01	1	0	0	1
a	11	1	0	0	0
	10	1	1	1	1
		d'	d	d'	

$$F(a,b,c,d) = c'd' + ab' + b'c + a'd'$$

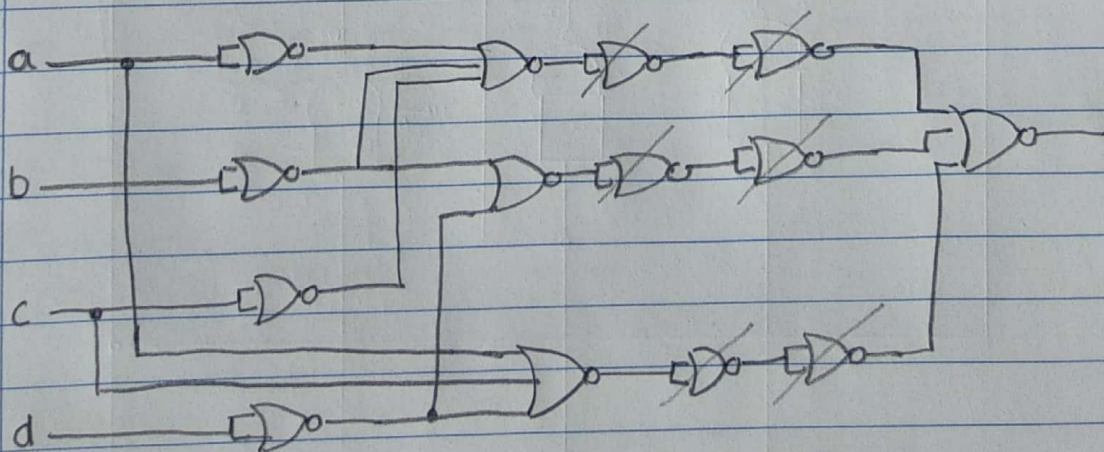
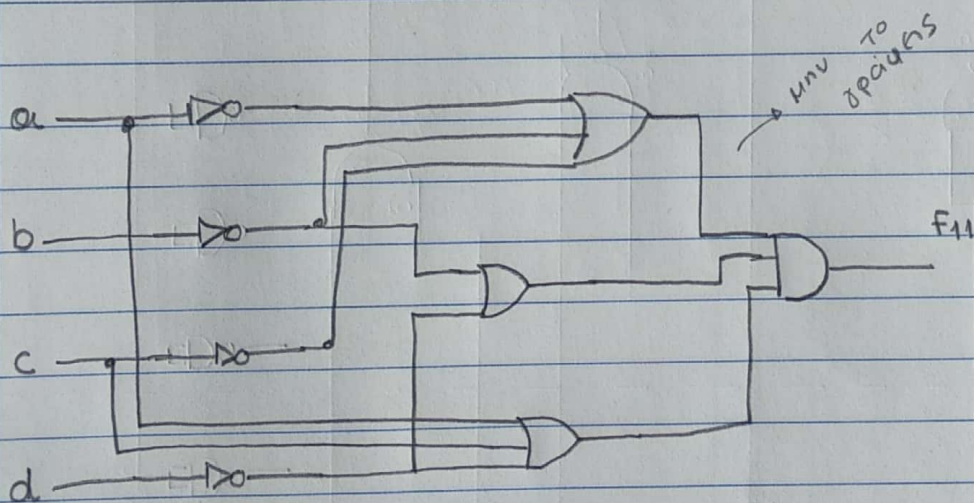


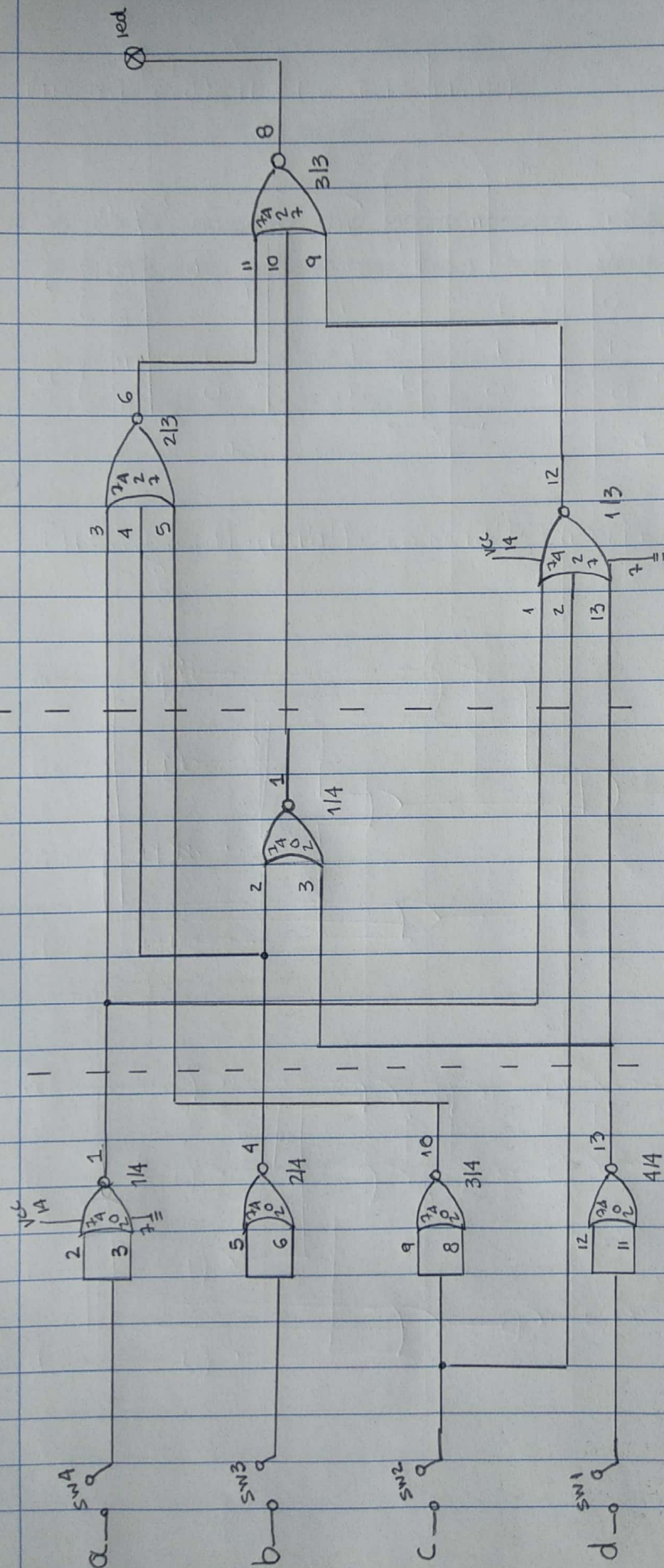


$$F_{11}(a,b,c,d) = \prod (1, 5, 7, 13, 14, 15)$$

ab \ cd		c		c'		b
		00	01	11	10	
a	00	0	1	0	0	b
	01	0	1	1	0	
a'	11	0	1	1	1	b
	10	0	0	0	0	

$$F_{11}(a,b,c,d) = (b' + d') \cdot (a + c + d') \cdot (a' + b' + c')$$





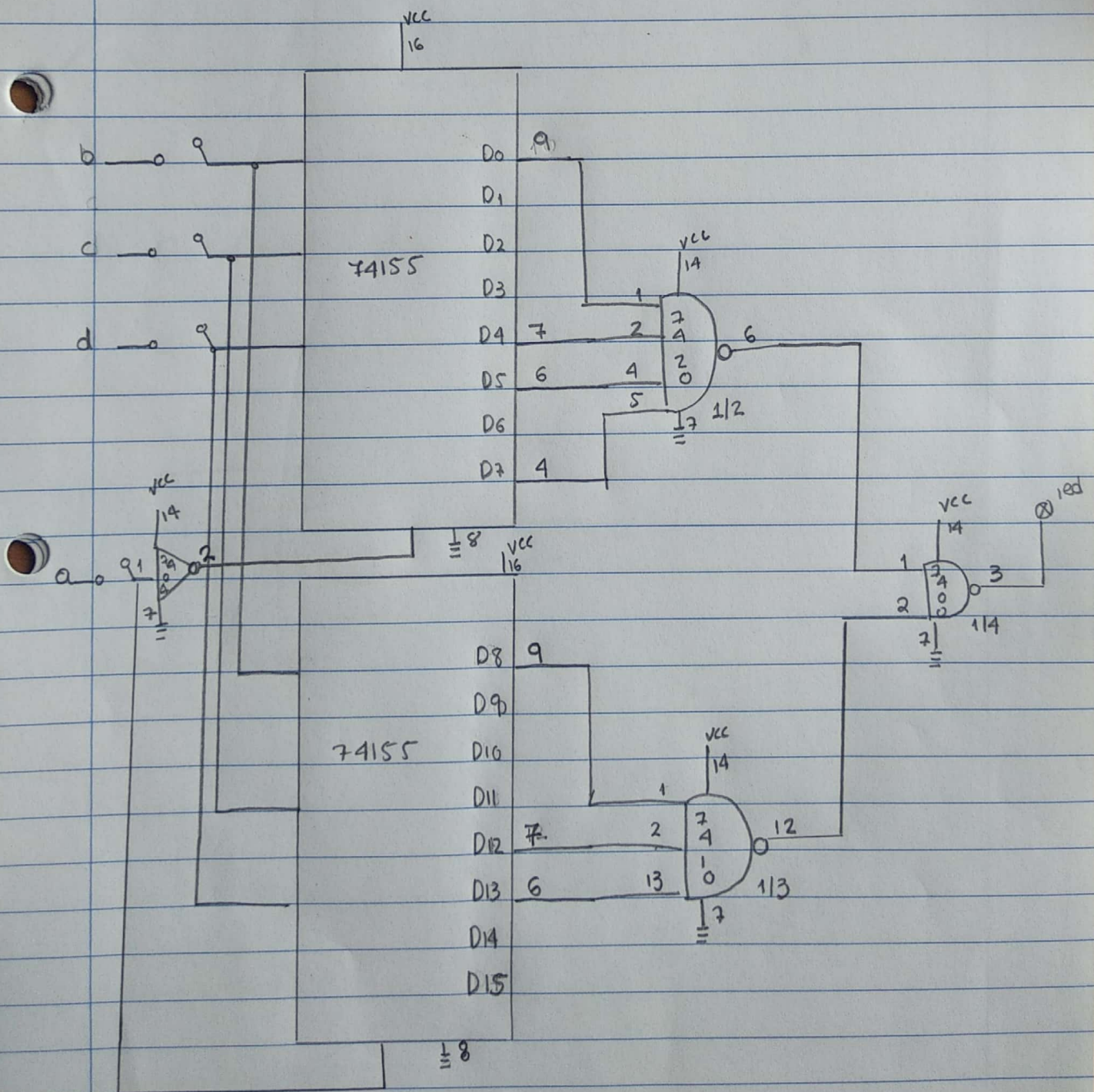
Άσκηση 4

$$F_{12} = \prod (1, 2, 3, 6, 9, 10, 11, 14)$$

- a) υλοποιήστε με χρήση chip αποκωδικοποιητή 74155 κι λογικών πυλών
b) υλοποιήστε μόνο με chip που έχουν πύλες NAND

a) $F_{12}(a, b, c, d) = \prod (1, 2, 3, 6, 9, 10, 11, 14)$

$$F_{12}(a, b, c, d) = \sum (0, 4, 5, 7, 8, 12, 13)$$



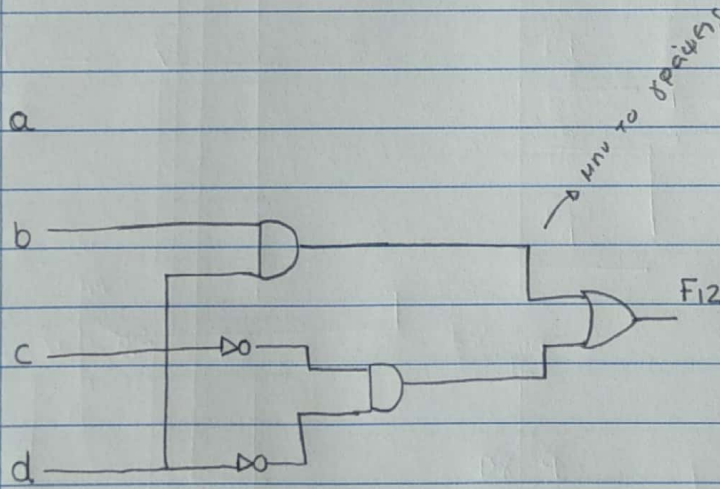
b) $F_{12}(a,b,c,d) = \prod(1, 2, 3, 6, 9, 10, 11, 14)$

$F_{12}(a,b,c,d) = \sum(0, 4, 5, 7, 8, 12, 13, 15)$

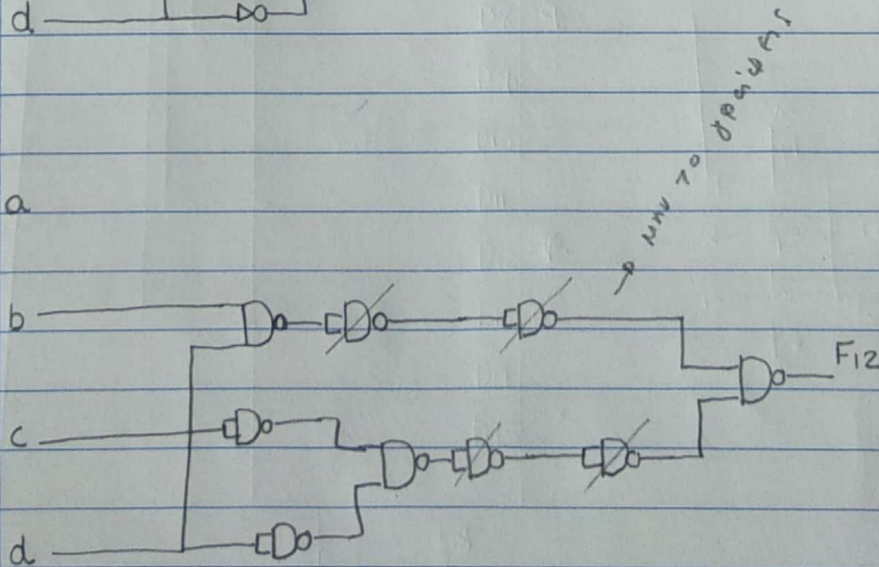
ab \ cd		c'		c		
		00	01	11	10	
a'	00	1	0	0	0	b'
	01	1	1	1	0	b
a	11	1	1	1	0	b'
	10	1	0	0	0	b
		d'		d		

$F_{12}(a,b,c,d) = c'd' + bd$

a

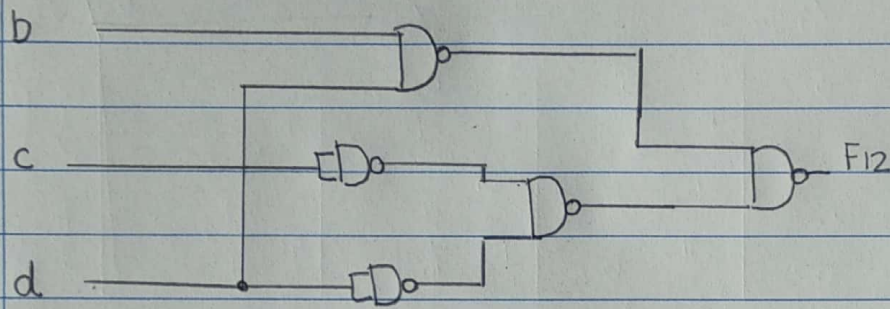


a



apa

a



1st chip

2nd chip

a

