

1. EXCESS-3

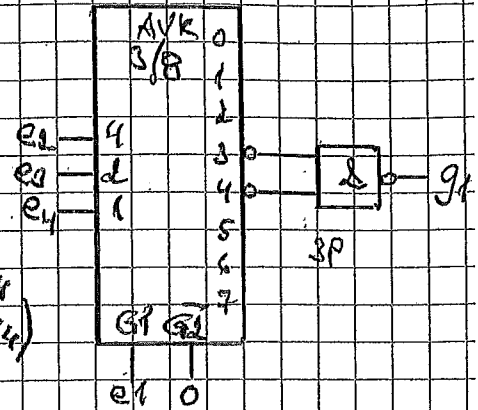
DEC	$e_1 e_2 e_3 e_4$
3	0 0 1 1
4	0 1 0 0
5	0 1 0 1
6	0 1 1 0
7	0 1 1 1
8	1 0 0 0
9	1 0 0 1
10	1 0 1 0
11	1 0 1 1
12	1 1 0 0

GRAY

$g_1 g_2 g_3 g_4$	MUX
0000	0
0001	$e_1 e_2$
0011	$e_3$
0110	1
0111	$e_4$
1000	0
1001	0
1010	0
1100	0

a/

$e_2 e_3$	00	01	11	10
00	-	-	0	1
01	0	0	0	0
11	1	-	-	-
10	0	0	1	0

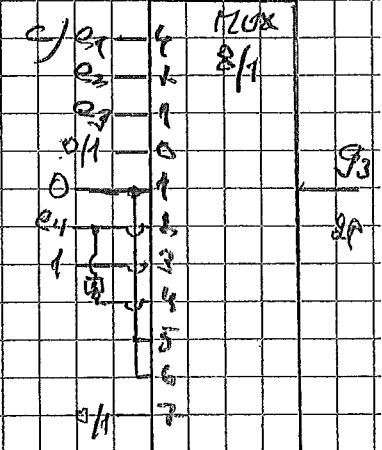
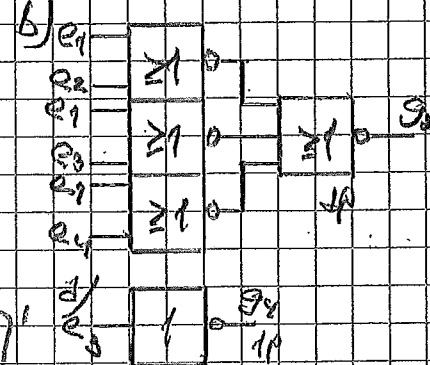


b/

$e_2 e_3$	00	01	11	10
00	1	-	0	0
01	0	0	1	0
11	1	-	-	-
10	1	1	1	1

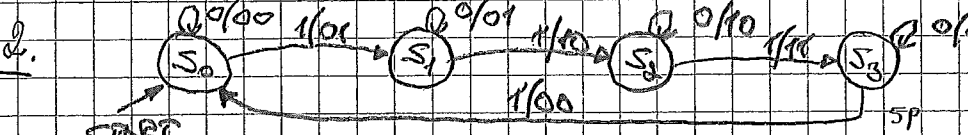
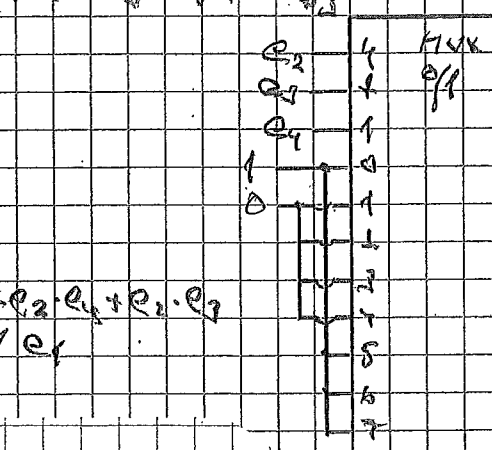
d/

$e_2 e_3$	00	01	11	10
00	-	-	0	-
01	1	1	0	0
11	1	-	-	-
10	1	1	0	0



c/

$e_2 e_3$	00	01	11	10
00	-	-	0	-
01	0	1	0	1
11	0	-	-	-
10	1	0	0	0



GI SVER TILL MOODER

		X		
$g_1 g_0$		0	1	$u_1 u_0$
$S_0$	00	00	01	00
$S_1$	01	01	10	01
$S_2$	11	11	00	11
$S_3$	10	10	11	10

		X	X
$g_1^+$	$g_0^+$	0 1	0 1
$S_0$	00	0 0	0 1
$S_1$	01	0 1	1 0
$S_2$	11	1 0	1 0
$S_3$	10	1 1	0 1

$$\begin{cases} g_1^+ = g_1 \cdot g_0' + g_1 \cdot X' + g_1' \cdot g_0 \cdot X \\ g_0^+ = g_0 \cdot X' + g_0 \cdot X = g_0 \oplus X \end{cases}$$

$$\begin{cases} u_1 = g_1 \\ u_0 = g_0 \end{cases}$$

FORTS. PÅ NÄSTA SIDA!

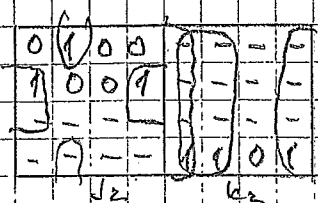
3

				X	
q <sub>2</sub>	q <sub>1</sub>	q <sub>0</sub>	0	1	
0	0	0	010/0	101/0	
0	0	1	011/0	000/1	
0	1	0	100/1	001/0	
0	1	1	101/1	010/0	
1	0	0	000/0	011/0	
1	0	1	001/0	100/0	

$q_2^+ q_1^+ q_0^+ / RCO$

				q <sub>0</sub> X	
00	01	10	11	00	01
00	01	10	11	00	01
00	01	10	11	00	01
00	01	10	11	00	01
00	01	10	11	00	01

				q <sub>1</sub> X	
00	01	10	11	00	01
00	01	10	11	00	01
00	01	10	11	00	01
00	01	10	11	00	01
00	01	10	11	00	01



			RCO		
00	01	10	00	01	10
00	01	10	00	01	10
00	01	10	00	01	10
00	01	10	00	01	10
00	01	10	00	01	10

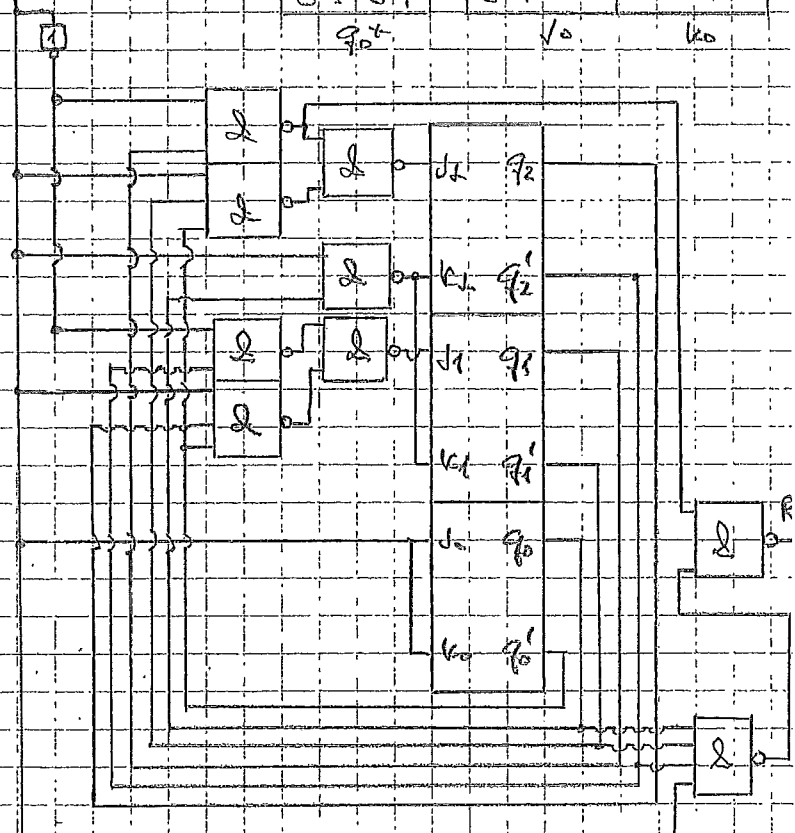
$V_{q1} = q_1 \cdot X' + q_1' \cdot q_0 \cdot X$   
 $U_{q1} = q_0' + X' = (q_0 \cdot X)'$

$V_{q2} = q_2 \cdot X' + q_2 \cdot q_0 \cdot X$   
 $U_{q2} = q_0' + X' = (q_0 \cdot X)' = U_{q1}$

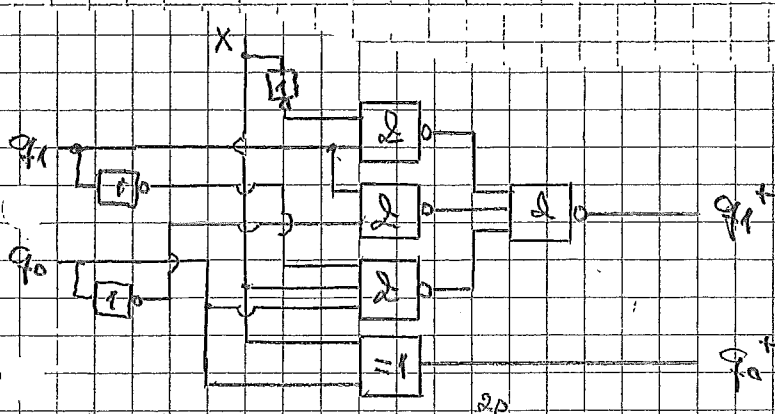
$V_{q0} = U_{q0} = X$

$RCO = q_1 \cdot X' + q_2 \cdot q_1' \cdot q_0 \cdot X$

				q <sub>0</sub> X		q <sub>1</sub> X		RCO	
00	01	10	11	00	01	00	01	10	11
00	01	10	11	00	01	00	01	10	11
00	01	10	11	00	01	00	01	10	11
00	01	10	11	00	01	00	01	10	11
00	01	10	11	00	01	00	01	10	11



2. (PART 2.)



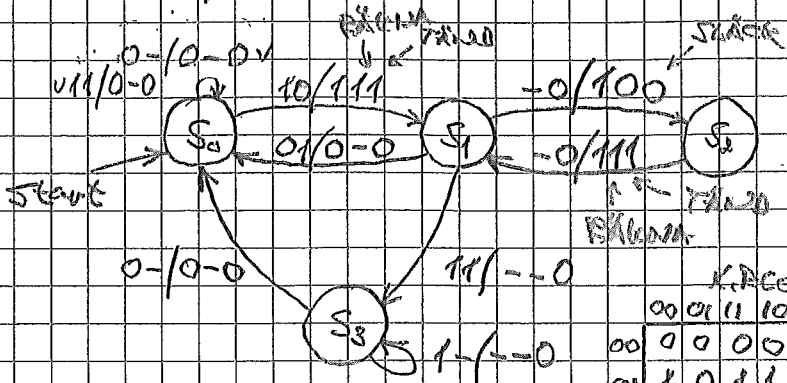
CELL 1:  $\begin{cases} q_1 = 0 \\ q_0 = 0 \end{cases} \Rightarrow$

$\begin{cases} q_1^+ = 0 \\ q_0^+ = X \end{cases}$

CELL 2:  $q_1 = 0$

$\begin{cases} q_1^+ = q_0 \cdot X \\ q_2^+ = q_0 \cdot X' + q_0' \cdot X = q_0 \oplus X \end{cases}$

4.  $X, RCO/L, R, UT$



	K, RCO					L, R, UT
$q_0$	00	01	11	10		
$q_1$	00	00	00	00	01	0-0
$q_2$	01	10	00	11	10	1-1
$q_3$	11	00	00	11	11	- - 0
$q_4$	10	01	--	--	01	1 0 0

$$J_1 = q_0 \cdot RCO + q_0 \cdot X$$

$$K_1 = X' + q_0' = (X \cdot q_0)'$$

$$J_0 = X \cdot RCO + q_1 = [X \cdot RCO] \cdot q_1'$$

$$K_0 = X' + q_1' \cdot RCO = [X \cdot (q_1' \cdot RCO)]'$$

$$L = q_1 + q_0 = (q_1' \cdot q_0)'$$

$$R = q_1' \text{ alle } R = q_0$$

$$UT = q_1' \cdot q_0$$

	K, RCO			
$q_0$	00	01	11	10
$q_1$	00	1 0 1 1		
$q_2$	11	0 0 1 1		
$q_3$	10	0 - - 0		

	$q_1 + q_0'$					$q_1$
$q_0$	00	00	--	--		0 1
$q_1$	1 0 1 1	--	--	--	$q_1$	0 1
$q_2$	--	--	1 1	0 0		1 -
$q_3$	--	--	1 -	- 1		L

	$q_1'$			
$q_0$	00	0 0 0 1		
$q_1$	01	0 0 1 0		
$q_2$	11	0 0 1 1		
$q_3$	10	1 - - 1		

	$J_1$					$K_1$
$q_0$	00	0 1	--	--		- 1
$q_1$	--	--	1 1	0 1		0 -
$q_2$	--	--	1 1	0 0		R
$q_3$	1 - - 1	--	--	--		

