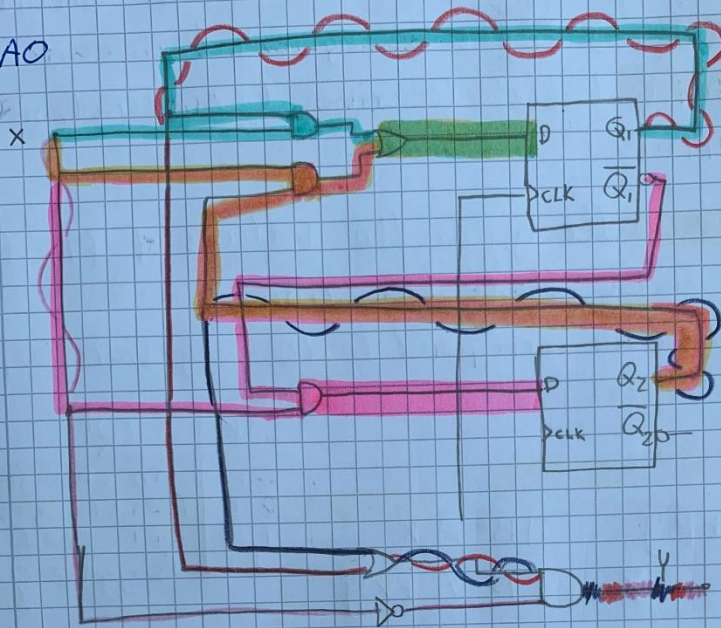


Damaskamm-tur 5.

S.AO



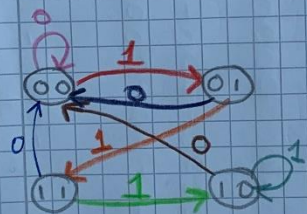
(1)

$$Q_1(t+1) = Q_1X + Q_2X$$

$$Q_2(t+1) = \overline{Q_1}X$$

$$Y = Q_2\overline{X} + Q_1\overline{X}$$

(3)



(2)

Present state			Next state		Output
Q ₁	Q ₂	X	Q ₁ ⁺	Q ₂ ⁺	Y
0	0	0	0	0	0
0	0	1	0	1	0
0	1	0	1	0	0
0	1	1	0	0	0
1	0	0	1	0	0
1	0	1	1	1	0
1	1	0	0	0	0
1	1	1	0	1	0

5.5 Mnemonic of variables for state table

The truth table describes a combinational circuit.

The state table describes a sequential circuit.

The characteristics table describes the operation of flip flops (i.e., vippur).

The excitation table gives the values of flip-flop inputs for a given state transition.

The four equations correspond to the algebraic expression of the four tables.

5.10

$$(1) JA = Bx + \bar{B}\bar{y}$$

$$JB = \bar{A}x$$

$$KA = \bar{B}x\bar{y}$$

$$KB = A + x\bar{y}$$

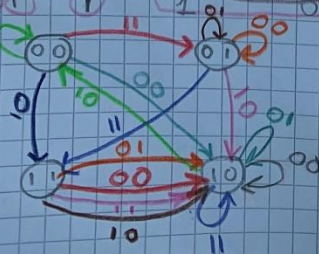
JK	Q^+
00	no change
01	Reset $Q=0$
10	set $Q=1$
11	Toggle $0 \rightarrow 1$ $1 \rightarrow 0$

(2)

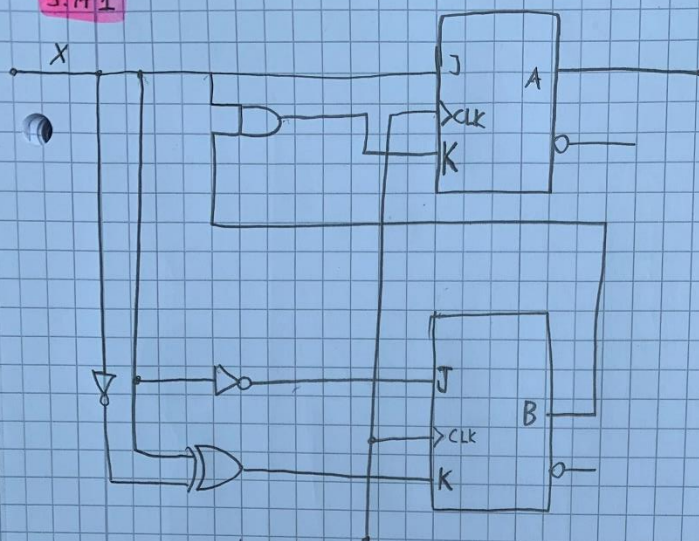
$$Z = A\bar{x}\bar{y} + Bx\bar{y}$$

Present state				Next state		Flip flop inputs				
A	B	x	y	A^+	B^+	JA	KA	JB	KB	Z
0	0	0	0	1	0	1	0	0	0	0
0	0	0	1	0	0	0	0	0	0	0
0	0	1	0	1	1	1	0	1	0	0
0	0	1	1	0	1	0	0	1	0	0
0	1	0	0	0	1	0	0	0	0	1
0	1	0	1	1	1	0	0	0	0	0
0	1	1	0	1	0	1	0	1	1	0
0	1	1	1	0	0	0	0	1	1	0
1	0	0	0	1	0	1	0	0	1	0
1	0	0	1	0	0	0	0	0	1	0
1	0	1	0	1	1	1	0	1	1	0
1	0	1	1	0	1	0	0	1	1	0
1	1	0	0	1	0	1	0	0	1	0
1	1	0	1	0	0	0	0	0	1	0
1	1	1	0	1	1	1	0	1	1	0
1	1	1	1	0	0	0	0	1	1	0

(3)



5. A1



(1)

$$JA = X$$

$$KA = XB$$

$$JB = \bar{X}$$

$$KB = \bar{X} \oplus X$$

(2) Present state

A	B	X
0	0	0
0	0	1
0	1	0
0	1	1
1	0	0
1	0	1
1	1	0
1	1	1

Next state

A+	B+
0	1
1	0
0	0
1	0
1	1
1	0
1	0
0	0

JA	KA	JB	KB
0	0	1	1
1	0	0	1
0	0	1	1
1	1	0	1
0	0	1	1
1	0	0	1
0	0	1	1
1	1	0	1

Q	
0 0	no change
0 1	Reset = 0
1 0	Set = 1
1 1	Toggle

(3)

