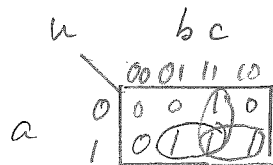


1/

a	b	c	u
0	0	0	0
0	0	1	0
0	1	0	0
0	1	1	1
1	0	0	0
1	0	1	1
1	1	0	1
1	1	1	1

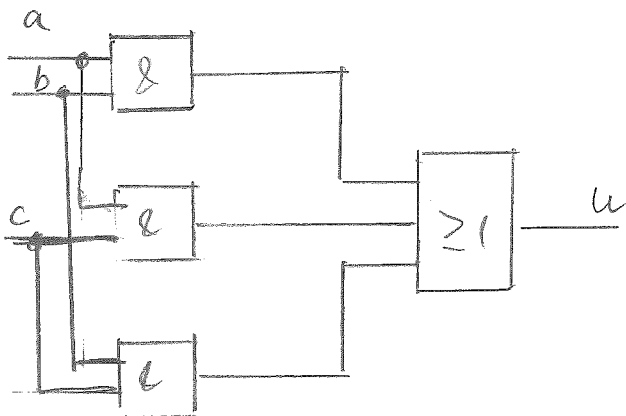


c)  $u = a \cdot b + a \cdot c + b \cdot c$

b)  $u = \bar{a} \cdot b \cdot c + a \cdot \bar{b} \cdot c + a \cdot b \cdot \bar{c} + a \cdot b \cdot c$

(3 p)

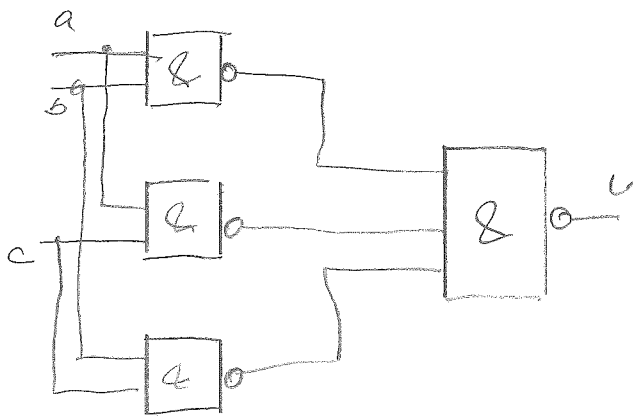
d)



(1 p)

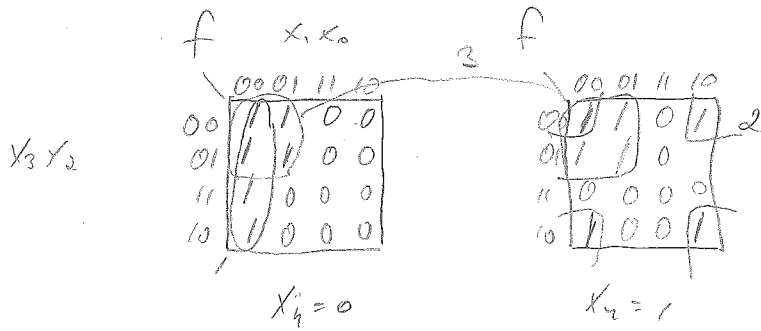
e)

$u = a \cdot b + a \cdot c + b \cdot c = \overline{\overline{a \cdot b} \cdot \overline{a \cdot c} \cdot \overline{b \cdot c}}$

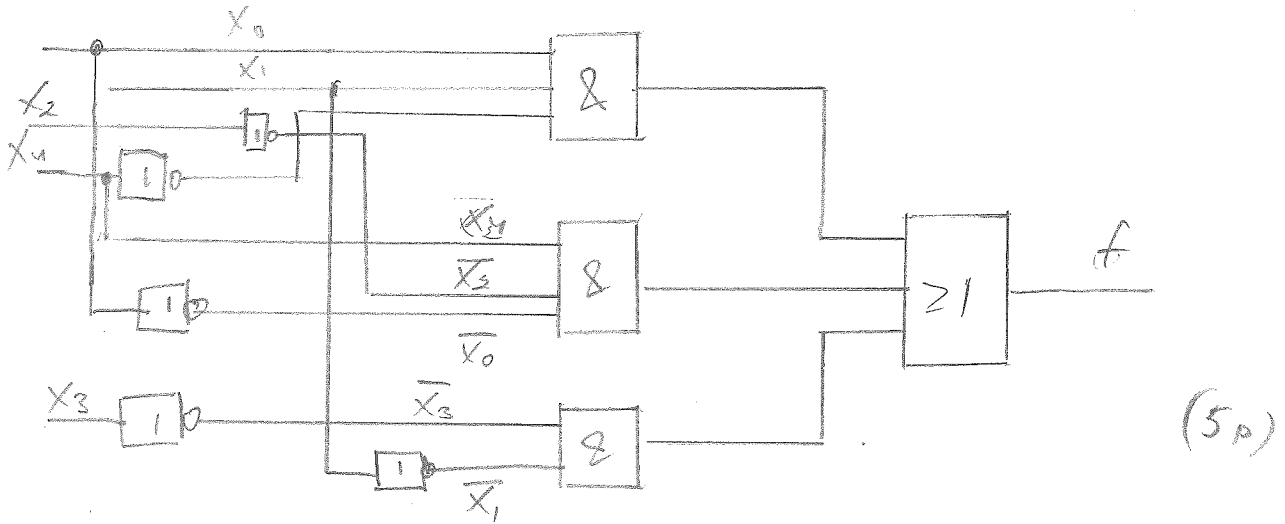


(3 p)

2)



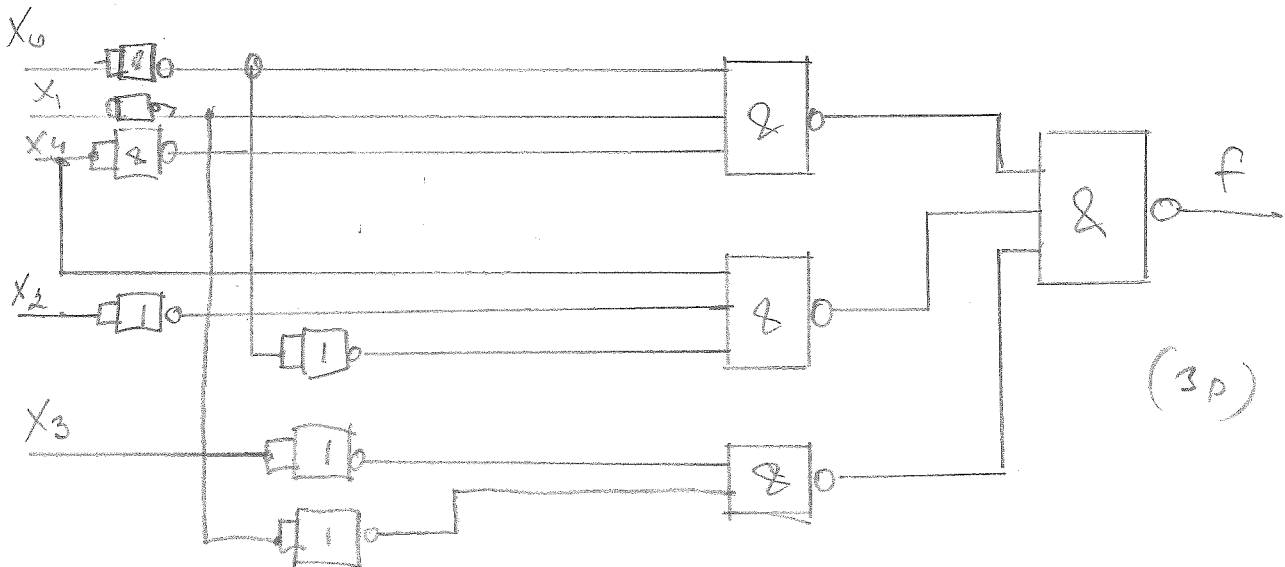
$$f = \overline{x_4} \cdot \overline{x_1} \cdot \overline{x_0} + x_4 \cdot \overline{x_2} \cdot \overline{x_0} + \overline{x_3} \cdot \overline{x_1}$$



b)

$$f = \overline{x_4} \cdot \overline{x_1} \cdot \overline{x_0} + x_4 \cdot \overline{x_2} \cdot \overline{x_0} + \overline{x_3} \cdot \overline{x_1}$$

$$= \overline{x_4} \cdot \overline{x_1} \cdot \overline{x_0} + x_4 \cdot \overline{x_2} \cdot \overline{x_0} + \overline{x_3} \cdot \overline{x_1}$$



Tentamen dec, 13 sid 3

3) a)  $87 = 64 + 16 + 4 + 2 + 1 = 01010111_2$  (1p)

b)  $0101 | 0111 = 57_{16}$  (1p)

c)  $01010 | 111 = 127_8$  (1p)

d)  $2 \cdot 01010111 = 10101000 = 10101001$  (1p)

$$\begin{array}{r} 10101000 \\ + \phantom{10101000} 1 \\ \hline 10101001 \end{array}$$

e)  $80 = 64 + 16 = 01010000$

$80 - 87 = 01010000 + 10101001 = 11111001 =$

$$\begin{array}{r} 01010000 \\ + 10101001 \\ \hline 11111001 \end{array}$$

Negativ!

$= -00000111 = -7_{10}$  (2p)

$2 \cdot 11111001 = 00000010$

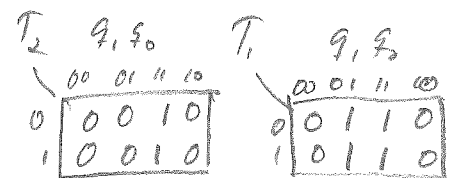
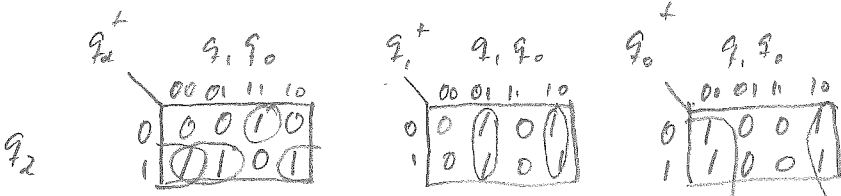
$$\begin{array}{r} 00000010 \\ + \phantom{00000010} 1 \\ \hline 00000011 \end{array}$$

Svar:  $-7_{10}$  (6p)

4)

Nuv. tillstånd	Nästa tillstånd	UPPS 5
$q_2, q_1, q_0$	$q_2^+, q_1^+, q_0^+$	$T_2, T_1, T_0$
000	001	001
001	010	011
010	011	001
011	100	111
100	101	001
101	110	011
110	111	001
111	000	111

UPPS 5.



$q_2^+ = q_2 \cdot q_0 + q_2 \cdot \overline{q_1} + \overline{q_2} \cdot q_1 \cdot q_0$

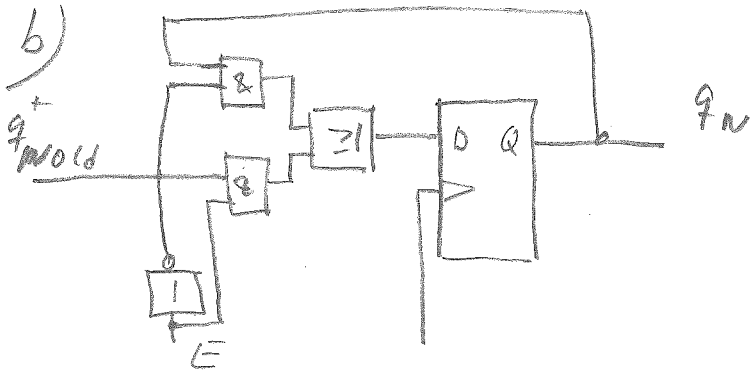
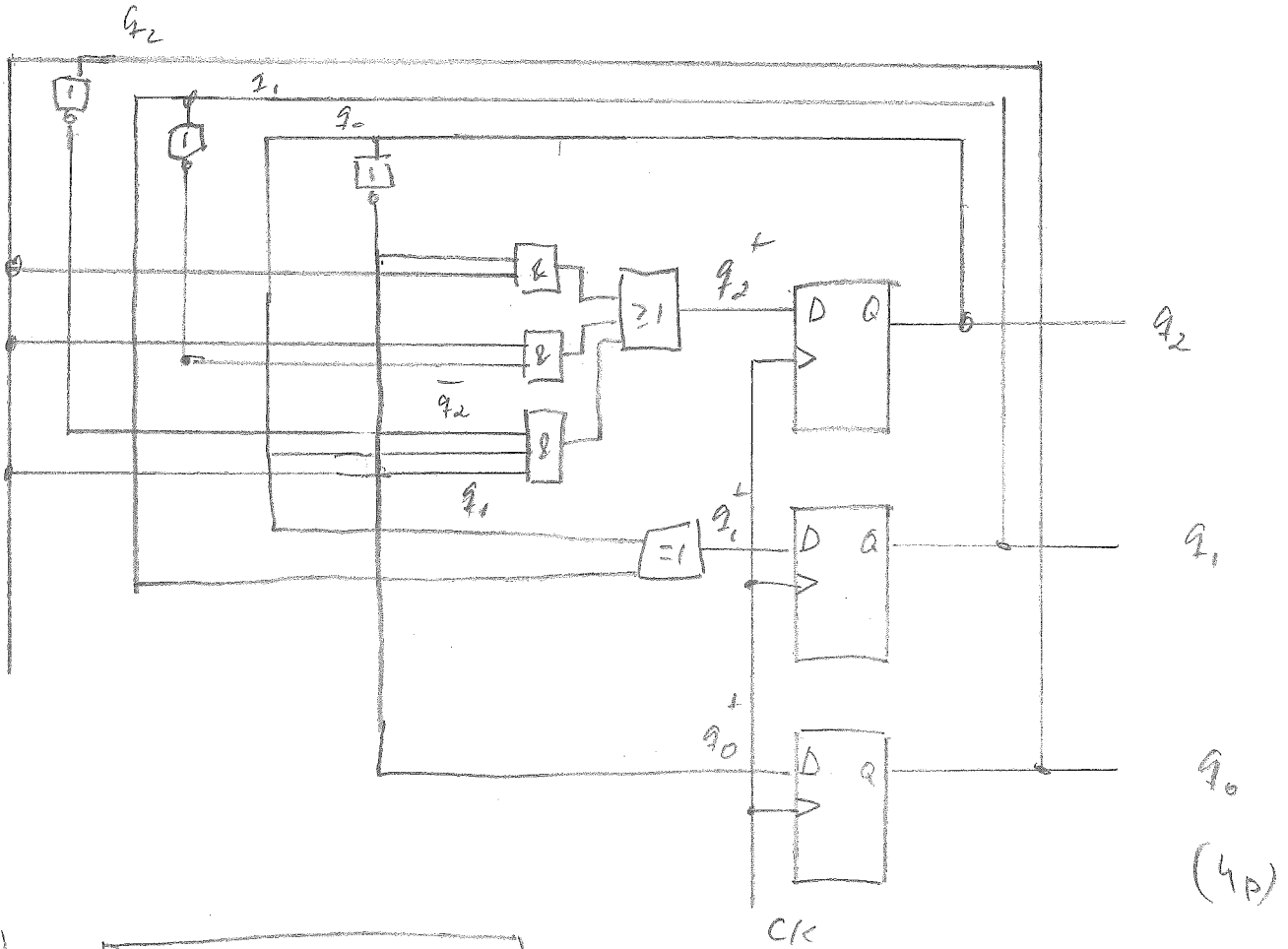
$q_1^+ = \overline{q_1} \cdot q_0 + q_1 \cdot \overline{q_2} = q_1 \oplus q_0$

$q_0^+ = \overline{q_0}$

$T_2 = q_1 \cdot q_0 = q_1 \cdot T_1$

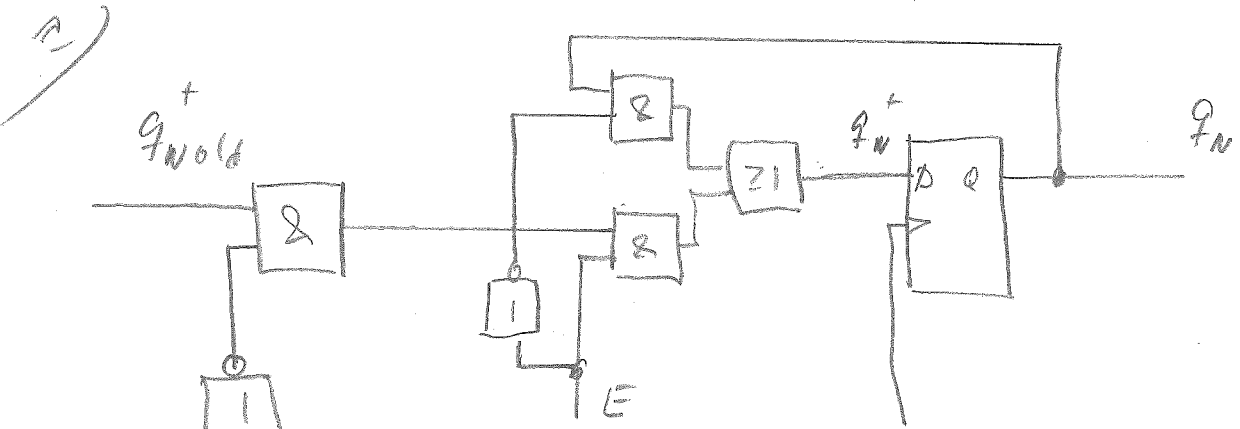
$T_1 = q_0$

$T_0 = 1$



där  $q_{nold}^+$  är lösningen i a)

(2p)

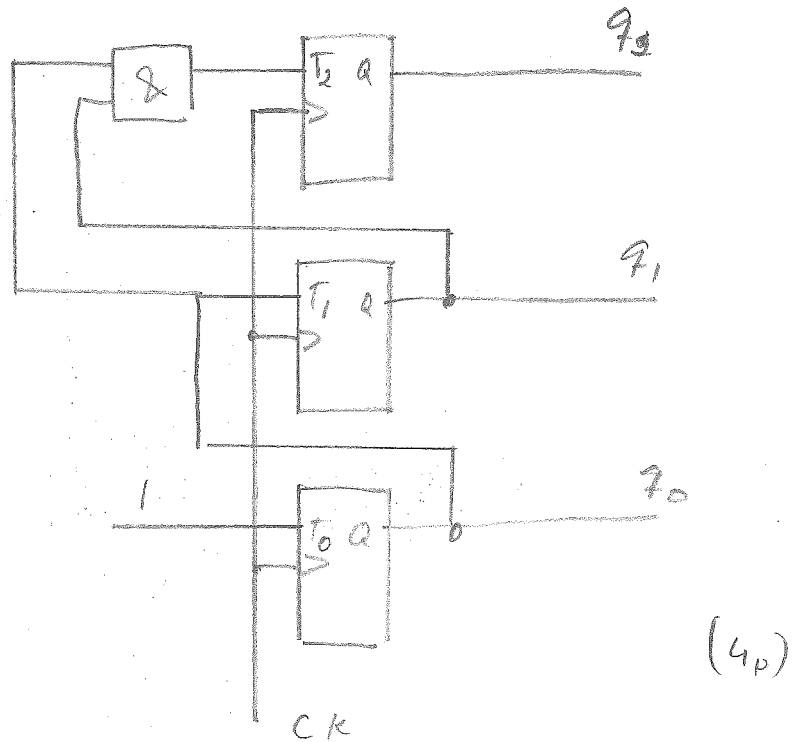


(2p)

där  $q_{nold}^+$  är lösningen i a)

$$q_n^+ = \bar{E} \cdot q_n^+ + E (q_{nold}^+ \cdot R)$$

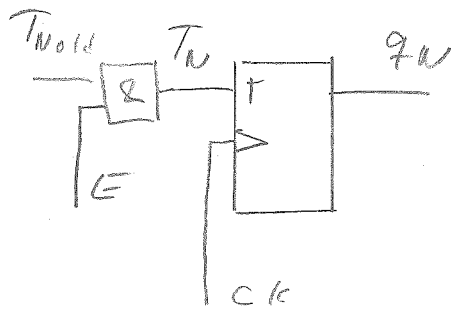
5) se lösningar uppg 9.



b)

qE	q <sup>L</sup>	T
00	0	0
01	q <sup>+</sup>	Told
10	1	0
11	q <sup>old</sup>	Told

$$T_W = E \cdot T_{Wold}$$

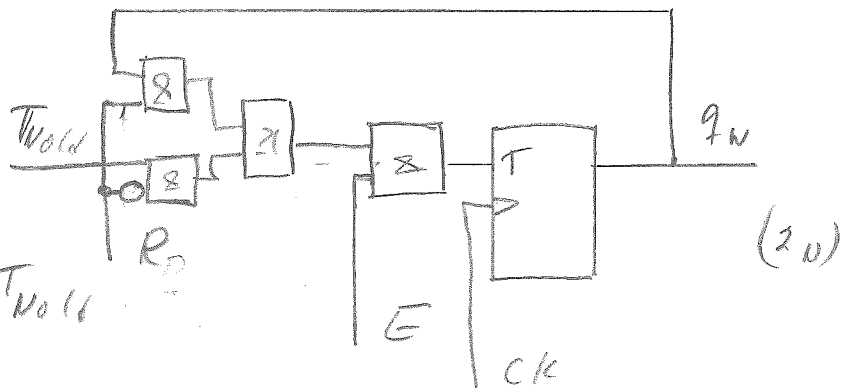


där T<sub>Wold</sub> är signalen i Sa. (2p)

c)

qR	q <sup>+</sup>	T
00	q <sup>old</sup>	Told
01	0	q
10	q <sup>old</sup>	Told
11	0	q

$$T_W = \overline{R} \cdot q + R \cdot T_{Wold}$$



T<sub>Wold</sub> signalen i Sa.

$$T = E \cdot (\overline{R} \cdot T_{Wold} + q_W \cdot R)$$

