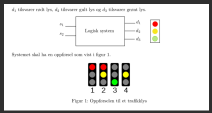
1



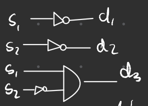
a)

S_1	S_2	d_1	d_2	d_3
0	0	1	0	0
0	1	1	1	0
1	0	0	0	1
1	1	0	1	0

b)

$$d_1 = \bar{S}_1\bar{S}_2 + \bar{S}_1 S_2 = \bar{S}_1$$
$$d_2 = \bar{S}_1 S_2 + S_1 S_2 = S_2$$
$$d_3 = S_1\bar{S}_2$$

c)



d) S_1 og S_2 siden det er færre signaler

e)

S_1	S_2	F
0	0	1
0	1	0
1	0	0
1	1	0

nor gate

2 a)

D_3	D_2	D_1	D_0	Q
0	0	0	0	0
0	0	0	1	1
0	0	1	0	1
0	0	1	1	0
0	1	0	0	1
0	1	0	1	0
0	1	1	0	0
0	1	1	1	1
1	0	0	0	1
1	0	0	1	0
1	0	1	0	0
1	0	1	1	1
1	1	0	0	0
1	1	0	1	1
1	1	1	0	1
1	1	1	1	0

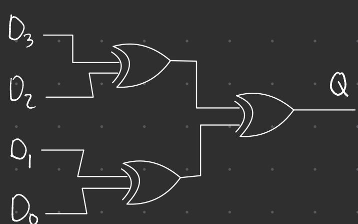
$$Q = \bar{D}_3\bar{D}_2\bar{D}_1 D_0 + \bar{D}_3\bar{D}_2 D_1\bar{D}_0 + \bar{D}_3 D_2\bar{D}_1\bar{D}_0 + \bar{D}_3 D_2 D_1 D_0 + D_3\bar{D}_2\bar{D}_1\bar{D}_0 + D_3\bar{D}_2 D_1 D_0 + D_3 D_2\bar{D}_1 D_0 + D_3 D_2 D_1\bar{D}_0$$

$$Q = \bar{D}_3\bar{D}_2(\bar{D}_1 D_0 + D_1\bar{D}_0) + \bar{D}_3 D_2(\bar{D}_1\bar{D}_0 + D_1 D_0) + D_3\bar{D}_2(\bar{D}_1\bar{D}_0 + D_1 D_0) + D_3 D_2(\bar{D}_1 D_0 + D_1\bar{D}_0)$$

$$Q = (\bar{D}_3\bar{D}_2 + D_3 D_2)\cdot(\bar{D}_1 D_0 + D_1\bar{D}_0) + (\bar{D}_3 D_2 + D_3\bar{D}_2)\cdot(\bar{D}_1\bar{D}_0 + D_1 D_0)$$

$$Q = \overline{(D_3 \otimes D_2)}\cdot(D_1 \otimes D_0) + (D_3 \otimes D_2)\cdot\overline{(D_1 \otimes D_0)}$$

$$Q = (D_1 \otimes D_0) \otimes (D_3 \otimes D_2)$$



b)

3 a)

A	B	Q
0	0	1
0	1	0
1	0	0
1	1	1

$$Q = \bar{A}\bar{B} + AB$$
$$Q = \overline{(A \otimes B)}$$

b)

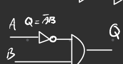
A	B	Q
0	0	0
0	1	0
1	0	1
1	1	0

$Q = A\bar{B}$

c)

A	B	Q
0	0	0
0	1	1
1	0	0
0	0	0

$Q = \bar{A}B$



d) Bare slå sammen kretsene

4 a)

A	B	C	F
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

④ b) $F = \bar{A}BC + A\bar{B}C + AB\bar{C} + ABC$

$F = \bar{A}BC + A\bar{B}C + AB$

$F = \bar{A}BC + A(B + \bar{B}C)$

$\overline{\overline{(B \cdot \overline{BC})}} = \overline{(\bar{B} \cdot \overline{(B+\bar{C})})} = (\overline{\bar{B}\bar{C}}) = B + C$

$F = \bar{A}BC + A(B+C)$

$F = B(A + \bar{A}C) + AC$

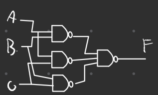
$F = AB + BC + AC$

c) Kun Nand gates

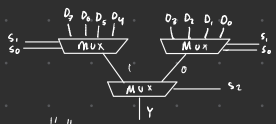
$F = \overline{\overline{AB + BC + AC}}$

$F = \overline{(\overline{AB}) \cdot (\overline{BC}) \cdot (\overline{AC})}$

d)



⑤



S_2	S_1	S_0	Y
0	0	0	D_1
0	0	1	D_2
0	1	0	D_3
0	1	1	D_4
1	0	0	D_5
1	0	1	D_6
1	1	0	D_7
1	1	1	D_8

⑥

a)
```
  x x 0
- 0 1 1
= 0 1 1
```

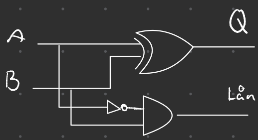
b)

A	B	Svar	Lån
0	0	0	0
0	1	1	1
1	0	1	0
1	1	0	0

c) Svar $= \bar{A}B + A\bar{B} = A \otimes B$

lån $= \bar{A}B$

d)



e)

A	B	Li	S	Lo
0	0	0	0	0
0	0	1	1	1
0	1	0	1	1
0	1	1	0	1
1	0	0	1	0
1	0	1	0	0
1	1	0	0	0
1	1	1	1	1

f) $S = \bar{A}\bar{B}L_i + \bar{A}B\bar{L_i} + A\bar{B}\bar{L_i} + ABL_i$

$L_o = \bar{A}(\bar{B}L_i + B\bar{L_i}$