① a) $A = -11_{(10)} \rightarrow 10101$

$B = -13_{(10)} \rightarrow 10011$

6-bits

$A = 110101$

$B = 110011$

$A+B = 1101000$

b) $C_{(10)} = 160 \rightarrow 0\ 1010\ 0000$

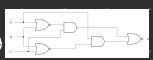
$D_{(10)} = 79_{(10)} \rightarrow 1\ 0000\ 0111$

$01010\ 0000$

$+\ 10000\ 0111$

$1101\ 0\ 0111 = 153$

② a)



A	B	C	Z
0	0	0	1
0	0	1	0
0	1	0	1
0	1	1	1
1	0	0	0
1	0	1	1
1	1	0	1
1	1	1	1

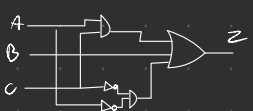
b) $Z = \bar{A}\bar{B}C + A\bar{B}\bar{C}$

$Z = (A+B+\bar{C}) \cdot (\bar{A}+B+\bar{C})$

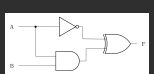
$Z = A\bar{A} + AB + AC + \bar{A}B + B + BC + \bar{C}\bar{A} + \bar{C}B + \bar{C}C$

$Z = AB + AC + \bar{A}\bar{B} + B + \bar{C}\bar{A} + \bar{C}\bar{B}$

$Z = B + AC + \bar{C}\bar{A}$



③



A	B	F
0	0	1
0	1	1
1	0	0
1	1	1

④ a)

A_0	A_1	A_2	L_0	L_1	L_2	L_3	L_4	L_5
0	0	0	1	1	0	1	0	0
0	0	1	1	1	0	1	0	0
0	1	0	1	0	1	1	0	0
0	1	1	1	0	1	1	0	0
1	0	0	1	0	0	1	1	0
1	0	1	1	0	0	1	0	0
1	1	0	1	0	1	1	0	0
1	1	1	1	0	0	0	0	0

$L_0 = 1$

$L_1 = \bar{A}_0\bar{A}_1\bar{A}_2 + \bar{A}_0\bar{A}_1A_2 = \bar{A}_0\bar{A}_1$

$L_2 = \bar{A}_0A_1\bar{A}_2 + \bar{A}_0A_1A_2 + A_0\bar{A}_1\bar{A}_2 = \bar{A}_0A_1 + A_0\bar{A}_1\bar{A}_2 = A_1(\bar{A}_0 + A_0\bar{A}_2) = A_1(\bar{A}_0 + \bar{A}_2)$

$L_3 = A_0A_1A_2 = \bar{A}_0 + \bar{A}_1 + \bar{A}_2$

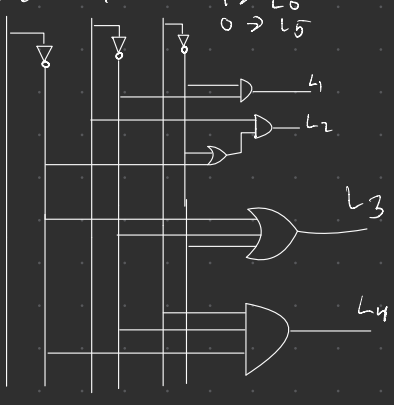
$L_4 = A_0\bar{A}_1\bar{A}_2$

$L_5 = 0$

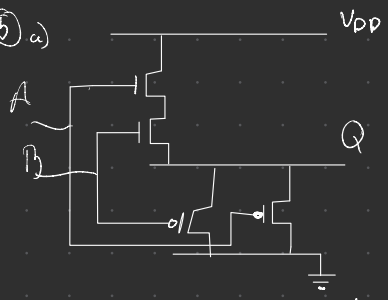
b) $A_2\ A_1\ A_0$

$1 \rightarrow L_0$

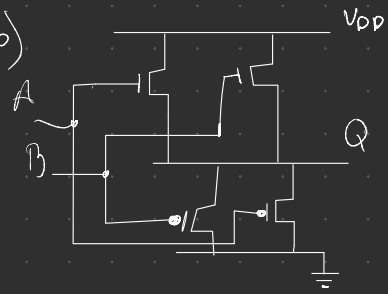
$0 \rightarrow L_5$



⑤ a)

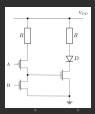


b)



⑥ 1. er alltid usann
2. er alltid sann
3. er alltid usann

⑦



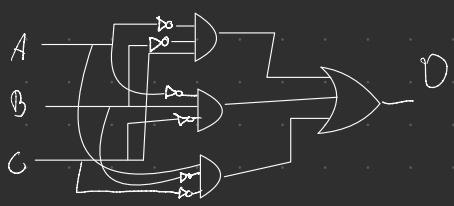
A	B	lys
0	0	1
0	1	0
1	0	0
1	1	0

NOR-gate

⑧

A	B	C	D
0	0	0	0
0	0	1	1
0	1	0	1
0	1	1	0
1	0	0	1
1	0	1	0
1	1	0	0
1	1	1	0

$D = \bar{A}\bar{B}C + \bar{A}B\bar{C} + A\bar{B}\bar{C}$



⑩ a)

X	Y	X + Y	$\bar{Q}$	$\bar{X}\bar{Y}$	Q_2
0	0	0	1	1	1
0	1	1	0	0	0
1	0	1	0	0	0
1	1	1	0	0	0

Sér að $\bar{Q} = Q_2$

b) D og 2) er eins!

$\bar{A} + A = 1$ og $A \cdot A = 0$ er riktige svar

(10)

c) $\overline{(A+\bar{B})(A\bar{B})} + \overline{(A+B)(\bar{A}\bar{B})}$

$A + \bar{B} + \bar{A} + B + \overline{A\bar{B}} + \bar{A}B$

$\bar{B} + \overline{A\bar{B}} + \bar{A}B + 1 = 1$

(11) a) Begge

b) c_1 og c_2

(12) a)

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

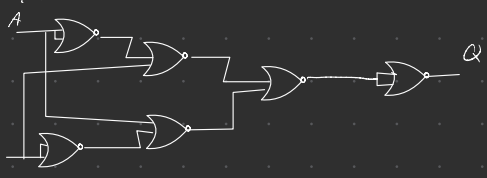
$Q = \bar{A}\bar{B} = \overline{A+B}$

b)

c)

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

$Q = A\bar{B} + \bar{A}B$



d) $Q = \overline{ABC}$

(13)