HA 4

Aufgabe 1

a)

$(a \wedge b) \Rightarrow (a \Leftrightarrow c)$

$\neg(a \wedge b) \vee (a \Leftrightarrow c)$; $a \Leftrightarrow c$

$\neg(a \wedge b) \vee ((\neg a \vee c) \wedge (\neg c \vee a))$ $(a \Rightarrow c) \wedge (c \Rightarrow a)$

$(\neg a \vee c) \wedge (\neg c \vee a)$

Wahrheitstabelle

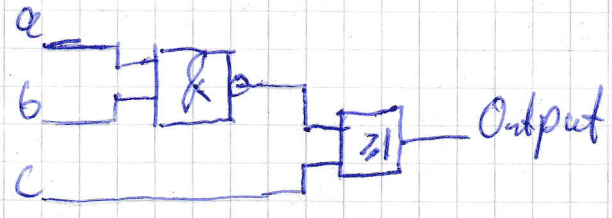
a	b	c	a∧b	a⇔c	(a∧b)⇒(a⇔c)
0	0	0	0	1	1
0	0	1	0	0	1
0	1	0	0	1	1
0	1	1	0	0	1
1	0	0	0	0	1
1	0	1	0	1	1
1	1	0	1	0	0
1	1	1	1	1	1

KV Diagramm

	a	a	$\bar{a}$	$\bar{a}$
b	1	0	1	1
$\bar{b}$	1	1	1	1
	c	c	$\bar{c}$	$\bar{c}$

MDNF

$\neg a \vee \neg b \vee c = \neg(a \wedge b) \vee c$



6) Aus der Schaltung:

$((\neg e_0 \vee \neg e_1) \wedge \neg(e_0 \wedge \neg e_1)) \vee \neg e_2$

$((\neg e_0 \vee \neg e_1) \wedge (e_0 \vee e_1)) \vee \neg e_2$

Wahrheitstabelle

e_0	e_1	e_2	$\neg e_0$	$\neg e_1$	$\neg e_2$	$\neg e_0 \vee \neg e_1$	$e_0 \vee e_1$	$\wedge$	$\vee \neg e_2$
0	0	0	1	1	1	1	0	0	1
0	0	1	1	1	0	1	0	0	0
0	1	0	1	0	1	1	1	1	1
0	1	1	1	0	0	1	1	1	1
1	0	0	0	1	1	1	1	1	1
1	0	1	0	1	0	1	1	1	0
1	1	0	0	0	1	0	1	0	1
1	1	1	0	0	0	0	1	0	0

KV Diagramm

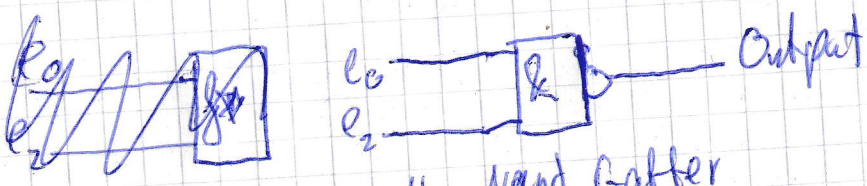
	$e_0 e_1$	$\bar{e}_0 e_1$	$\bar{e}_0 \bar{e}_1$	$e_0 \bar{e}_1$
e_2	0	1	1	1
$\bar{e}_2$	0	1	1	1

e_2 $\bar{e}_2$ $\bar{e}_2$ e_2

MDNF

$\neg e_0 \vee \neg e_2 = \neg(e_0 \wedge e_2)$

Schaltung



Also Nand Gatter