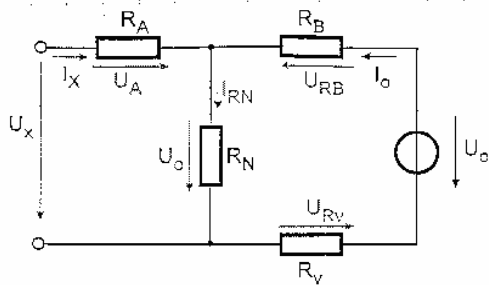


Zusatzblatt zu 1. Übung MTUF SS 2003



geg: $I_o, R_N, R_A, R_B, R_V, U_o$

ges: U_x

7 Unbekannte:

$U_x, I_x, I_{RN}, U_A, U_B, U_{RN}, U_{RV}$

7 Unbekannte \rightarrow 7 Gleichungen

- ①
- (1) $I_{RN} = I_o + I_x$
 - (2) $U_x = U_A + U_{RN}$
 - (3) $U_o = U_B + U_{RN} + U_{RV}$
 - (4) $U_A = I_x R_A$
 - (5) $U_{RN} = I_{RN} R_N$
 - (6) $U_B = I_o R_B$
 - (7) $U_{RV} = I_o R_V$

- ②
- bleibt (1) $I_{RN} = I_o + I_x$
- \rightarrow (2*) $U_x = I_x R_A + I_{RN} R_N$
- \rightarrow (3*) $U_o = I_o R_B + I_{RN} R_N + I_o R_V$

③

(1) in (2*) \rightarrow (2**) $U_x = I_x (R_A + R_N) + I_o R_N$

(1) in (3*) \rightarrow (3**) $U_o = I_x R_N + I_o (R_N + R_V + R_B) \Rightarrow I_x = \frac{U_o - I_o (R_N + R_V + R_B)}{R_N}$ (in (2**))

④

(2***) $U_x = \frac{U_o - I_o (R_N + R_V + R_B)}{R_N} (R_A + R_N) + I_o R_N = I_x$

Kompensation: $I_x = 0$ (d.h. $U_A = 0$)

$U_x(0) = I_o R_N$ g.e.d.