Arbeitsauftrag 2 LB5

03.04.20

① $R_{ges} = R_1 + R_2 + R_3 + R_4 + R_5 + R_6$

$R_{ges} = 24\Omega + 12\Omega + 5\Omega + 8\Omega + 17\Omega + 26\Omega$

$R_{ges} = \underline{82\Omega}$

$I_{ges} = \frac{220V}{82\Omega} = \underline{2,39A}$

$U_1 = R_{1+2} \cdot I_{ges} = 36\Omega \cdot 2,39 = \underline{86,04V}$

$I_1 = \frac{U_1}{R_1} = \frac{86,04V}{24\Omega} = \underline{3,585A}$

$I_2 = \frac{U_1}{R_2} = \frac{86,04V}{12\Omega} = \underline{7,17A}$

$U_2 = R_3 + \frac{R_5}{2} + \frac{R_6}{2} \cdot I_{ges} = 6\Omega + \frac{17\Omega}{2} + \frac{26\Omega}{2} \cdot 2,39A = \underline{45,57V}$

$U_3 = R_4 + \frac{R_5}{2} + \frac{R_6}{2} \cdot I_{ges} = 8\Omega + 8,5\Omega + 13\Omega \cdot 2,39A = \underline{47,57V}$

$I_3 = \frac{U_2}{R_3} = \frac{45,57V}{6\Omega} = \underline{7,60V}$

$I_4 = \frac{U_3}{R_4} = \frac{47,57V}{8\Omega} = \underline{5,95V}$

$I_5 = \frac{U_3}{R_5} = \frac{47,57V}{17\Omega} = \underline{2,80V}$

$I_6 = \frac{U_3}{R_5} = \frac{47,57V}{26\Omega} = \underline{1,83V}$

② $R_2 = U_{ges} \cdot I_2 = 4V \cdot 8mA = 0,032\Omega$

$R_3 = U_{ges} \cdot I_3 = 4V \cdot 2mA = 0,008\Omega$

③

$R_2 = \frac{1}{R_{ges}} + \frac{1}{R_1}$

$R_2 = \frac{R_{ges} \cdot R_1}{R_1 + R_{ges}}$

$R_2 = \frac{350\Omega \cdot 750\Omega}{750\Omega + 350\Omega}$

$R_2 = \underline{700\Omega}$

⑤ Das Verhältnis $\frac{R_1}{R_2}$ ist 1 zu 5