1.4 $R = 40\,\Omega$ $U = 230\,V$

$I = ?$

$U = R \cdot I \quad | : R$

$$I = \frac{U}{R} = \frac{230}{40} = 5{,}75\,A$$

1.5 $U = 230\,V$ $I = 273\,mA$

$R = ?$

$U = I \cdot R \quad | : I$

$$R = \frac{U}{I} = \frac{230}{273\,m} = 842{,}5\,\Omega$$

230 ÷ 273 EE (-) 3 =

230 ÷ 0,273 =

1.16 c) $I = 4{,}5\,A \quad G = 200\,mS$

$$R = \frac{1}{G} = \frac{1}{200m} = 5\,\Omega$$

$$U = I \cdot R = 4{,}5 \cdot 5 = 22{,}5\,V$$

1.12 $U = ?$

$I = 3\,mA \quad R = 1\,k\Omega$

$$U = I \cdot R =$$

$$= 3m \cdot 1k = 3\,V$$

2.4 $l = 3{,}6\ km$ Alu

$A = 25\ mm^2$

$R = ?$

$$R = \frac{l}{\gamma \cdot A} = \frac{3600}{36 \cdot 25} =$$

$$= 4\ \Omega$$

$$R = \frac{l \cdot \varrho}{A} = \frac{3600 \cdot 0{,}0278}{25}$$

$$= 4{,}0032\ \Omega$$

2.3 $R = 10\,\Omega$

$d = 1{,}6\,mm$

$\rho = 1{,}1\ \frac{\Omega\,mm^2}{m}$

$$A = \frac{d^2\,\pi}{4} = \frac{1{,}6^2 \cdot \pi}{4} =$$

$$= 2{,}01\,mm^2$$

$$R = \frac{l \cdot \rho}{A} \quad | \cdot A$$

$$R \cdot A = l \cdot \rho \quad | : \rho$$

$$l = \frac{R \cdot A}{\rho} = \frac{10 \cdot 2{,}01}{1{,}1}$$

$$= 18{,}27\,m$$

gef: $d = 25\,mm$, Cu

$l = 100\,m$

$R = ?$

$$A = \frac{d^2 \pi}{4} = \frac{25^2 \cdot \pi}{4} = 490{,}9\,mm^2$$

$$R = \frac{l}{\gamma \cdot A} = \frac{100}{56 \cdot 490{,}9} =$$

$$= 0{,}00364\,\Omega = 3{,}6\,m\Omega$$

2.6 $l = 43\,m$ $I = 16\,A$

$U = 3{,}3\,V$

$$R = \frac{U}{I} = \frac{3{,}3}{16} = 0{,}206\,\Omega$$

$$R = \frac{l}{\gamma \cdot A} \quad | \cdot \gamma \cdot A$$

$$R \cdot \gamma \cdot A = l \quad | : R : \gamma$$

$$A = \frac{l}{\gamma \cdot R} = \frac{2 \cdot 43}{56 \cdot 0{,}206}$$

$$= 7{,}45\,mm^2$$

$$\Rightarrow 10^{\#}$$

2.7

Anzahl Windungen:

$$N = \frac{l}{d} = \frac{80}{0,6} = 133,3$$

$\Rightarrow$ 133 Windungen

Umfang:

$$d_m = d_1 + d =$$

$$32 + 0,6 = 32,6\ mm$$

$$U = d_m \cdot \pi =$$

$$= 32,6 \cdot \pi = 102,42\ mm$$

$$l = N \cdot U = 133 \cdot 102,42$$

$$= 13\,655\ mm$$

$$= 13,6\ m$$

$$A = \frac{d^2 \pi}{4} = \frac{0,6^2 \cdot \pi}{4} = 0,282\ mm^2$$

$$R = \frac{l}{\gamma \cdot A} = \frac{13,6}{} = 0,86\ \Omega$$

3.6

$\underline{I} = 10\,mA$

$R_1 = 200\,\Omega \qquad R_2 = 0{,}12\,k\Omega$

$R_3 = 0{,}008\,M\Omega$

$$R = R_1 + R_2 + R_3 =$$
$$= 200 + 0{,}12\,k + 0{,}008\,M =$$
$$= 8{,}32\,k\Omega = 8320\,\Omega$$

$$U = I \cdot R = 10\,m \cdot 8{,}32\,k =$$
$$= 83{,}2\,V$$

$$U_1 = I_1 \cdot R_1 = 10\,m \cdot 200 = 2\,V$$

$$U_2 = I_2 \cdot R_2 = 10\,m \cdot 0{,}12\,k = 1{,}2\,V$$

$$U_3 = I_3 \cdot R_3 = 10\,m \cdot 0{,}008\,M = 80\,V$$