

2.2 RESISTANS OG RESISTIVITET. OHMS LOV

2.3.1

$$R = \frac{U}{I} \quad U = I \cdot R = 3A \cdot 150\Omega = \underline{\underline{450V}}$$

2.3.2

$$I = \frac{U}{R} = \frac{230V}{75\Omega} = \underline{\underline{3,07A}}$$

2.3.3

$$R = \frac{U}{I} = \frac{440V}{2,2A} = \underline{\underline{200\Omega}} \quad G = \frac{1}{R} = \frac{1}{200\Omega} = \underline{\underline{5 \cdot 10^{-3} S = 0,005S}}$$

2.3.4

$$R = \frac{1}{G} = \frac{1}{50\Delta} = \underline{\underline{0,02\Omega}}$$

2.3.5

$$R = \frac{\rho \cdot l}{A} = \frac{0,0175 \Omega \cdot \text{mm}^2/\text{m} \cdot 150\text{m}}{1,5 \text{mm}^2} = \underline{\underline{1,75\Omega}}$$

2.3.6

$$R = \frac{\rho \cdot l}{A} = \frac{0,028 \Omega \cdot \text{mm}^2/\text{m} \cdot 150\text{m}}{1,5 \text{mm}^2} = \underline{\underline{2,8\Omega}}$$

2.3.7

$$\gamma = \frac{1}{\rho} = \frac{1}{0,0175 \Omega \cdot \text{mm}^2/\text{m}} = 57,14 \text{ S} \cdot \text{m}/\text{mm}^2$$

2.3.8

$$R = \frac{\rho \cdot l}{A} \Rightarrow \rho = \frac{R \cdot A}{l} = \frac{6,667 \cdot 10^{-3} \Omega \cdot 6 \text{mm}^2}{2,5 \text{m}} = \underline{\underline{0,016 \Omega \cdot \text{mm}^2/\text{m}}}$$

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2.3.9

$$R = \frac{\rho \cdot l}{A} \Rightarrow l = \frac{R \cdot A}{\rho} = \frac{1,5 \Omega \cdot 6 \text{ mm}^2}{0,0175 \Omega \cdot \text{mm}^2/\text{m}} = \underline{\underline{514,3 \text{ m}}} / 2 = 257 \text{ m}$$

2.3.10

$$A = \frac{\rho \cdot l}{R} = \frac{0,0178 \Omega \cdot \text{mm}^2/\text{m} \cdot 60 \text{ m}}{66,75 \cdot 10^{-3} \Omega} = \underline{\underline{16 \text{ mm}^2}}$$

2.3.11

$$R = \frac{l}{\sigma \cdot A} = \frac{0,6 \text{ m}}{18,2 \cdot 0,008 \text{ mm}^2} = \underline{\underline{4,12 \Omega}}$$

$$I = \frac{U}{R} = \frac{12 \text{ V}}{4,12 \Omega} = \underline{\underline{2,91 \text{ A}}}$$

2.3.12

$$A = \pi \cdot r^2 = \pi \cdot \left(\frac{1,13 \text{ mm}}{2}\right)^2 = \underline{\underline{1,0 \text{ mm}^2}}$$

$$R = \frac{\rho \cdot l}{A} = \frac{0,0175 \Omega \cdot \text{mm}^2/\text{m} \cdot 200 \text{ m}}{1,0 \text{ mm}^2} = \underline{\underline{3,5 \Omega}}$$

2.3.13

$$A = \frac{\rho \cdot l}{R} = \frac{0,028 \Omega \cdot \text{mm}^2/\text{m} \cdot 170 \text{ m}}{3,17 \Omega} = \underline{\underline{1,5 \text{ mm}^2}}$$

$$A = \pi \cdot r^2$$

$$r = \sqrt{\frac{A}{\pi}} = \underline{\underline{0,69 \text{ mm}}}$$

$$O = 2 \cdot \pi \cdot r = 2 \cdot \pi \cdot 0,69 = \underline{\underline{4,34 \text{ mm}}}$$