

task_klegpky1gugolsq7_with_calculation

Student Group

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Exercise E13 Electron flow

How many electrons pass through a control cross-section of a metallic conductor when the current of 40~mA flows for 4.5~s ?

Solution

$$\begin{aligned} & 1.1 \cdot 10^{18} \text{~electrons} \end{aligned}$$

$$\begin{aligned} Q &= I \cdot t \quad \&= 0.04\text{~A} \cdot 4.5\text{~s} \quad \&= 0.18\text{~As} \\ &= 0.18\text{~C} \quad \&= 0.18\text{~C} \cdot \frac{1}{1.6022 \cdot 10^{-19}\text{~C/electron}} \\ &= 1.1 \cdot 10^{18} \text{~electrons} \end{aligned}$$

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