

task_klegpky1gugolsq7_with_calculation

Student Group

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Exercise E19 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

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

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

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Last update: **2023/04/03 11:21**

