

task_klegpky1gugolsq7_with_calculation

Student Group

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current, electrons, chapter1 4

Exercise E1 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

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

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

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