

Questão 01)

$$\begin{aligned} E &= P \cdot \Delta t \\ 2,2 &= P \cdot (1/3) \\ P &= 6,6 \text{ kw} \end{aligned}$$

$$\begin{aligned} P &= i \cdot U \\ 6600 &= i \cdot 220 \\ i &= 30 \text{ A} \end{aligned}$$

Gab: 30 A

Questão 02)

$$\begin{aligned} i_m &= \Delta Q / \Delta t & (1 \text{ min} = 60 \text{ s}) \\ i_m &= n \cdot e / \Delta t \\ 4 &= n \cdot 1,6 \cdot 10^{-19} / 60 \\ n &= 150 \cdot 10^{19} \\ n &= 1,5 \cdot 10^{21} \end{aligned}$$

Gab: $n = 1,5 \cdot 10^{21}$

Questão 03)

$$\begin{aligned} E &= P \cdot \Delta t \\ E_1 &= 0,2 \cdot 120 = 24 \text{ kwh} \\ E_2 &= 0,1 \cdot 100 = 10 \text{ kwh} \\ E_3 &= 2 \cdot 15 = 30 \text{ kwh} \\ E_4 &= 2,4 \cdot 15 = 36 \text{ kwh} \\ E_5 &= 0,5 \cdot 500 = 250 \text{ kwh} \end{aligned}$$

$$\begin{aligned} E_T &= E_1 + E_2 + E_3 + E_4 + E_5 \\ E_T &= 24 + 10 + 30 + 36 + 250 \\ E_T &= 350 \text{ kwh} \end{aligned}$$

$$\begin{aligned} C &= E_T \cdot (\text{tarifa}) \\ C &= 350 \cdot \text{R\$ } 0,50 \\ C &= \text{R\$ } 175,00 \end{aligned}$$

Gab: R\$ 175,00

Questão 04) - Extra (10,0 pontos)

$$\begin{aligned} i &= N \cdot A \cdot v \cdot e \\ 4 &= 6 \cdot 10^{28} \cdot 2 \cdot 10^{-6} \cdot v \cdot 1,6 \cdot 10^{-19} \\ 4 &= 19,2 \cdot 10^3 \cdot v \\ v &= 4 / 19200 \\ v &= 0,000208 \text{ m/s} \\ v &= 2,08 \cdot 10^{-4} \text{ m/s} \end{aligned}$$

Gab: 0,208 mm/s

Gab: 0.208 mm/s