

Ficha de Problemas 8

② a) perpendicular ao plano e "para dentro"

b) sentido anti-horário

c) $E_1 > E_2$ pq $2L > L$

③ $\Phi_B = 6,0t^2 + 7,0t$

fem = ?

$t = 2$

a) $\mathcal{E} = - \frac{12t + 7}{1}$

$|\mathcal{E}| = 31 \text{ mV}$

b) $R = 60 \Omega$

$i = \frac{\mathcal{E}}{R} \Rightarrow i = \frac{31}{60} \Rightarrow i = 0,52 \text{ mA}$ sentido horário

④ $R = 0,12 \times 10^{-2} \text{ m}$

$R = 85 \Omega$

$A = \pi (0,12 \times 10^{-2})^2 = 4,52 \times 10^{-6} \text{ m}^2$

a) $|\mathcal{E}| = N \frac{d(BA)}{dt} \Rightarrow \mathcal{E} = \frac{0,5 \times 4,52 \times 10^{-6}}{2}$

$\Rightarrow \mathcal{E} = 1,13 \times 10^{-6}$

não inclui a resistência

b) $|\mathcal{E}| = \text{zero}$

c) igual ao a)

⑤ $N = 200$

$R = 2 \Omega$

$l = 18 \times 10^{-2} \text{ m}$

$A = 3,24 \times 10^{-2} \text{ m}^2$

a) $\Delta B = 0,50$
 $\Delta t = 0,8$

$\mathcal{E} = -N \frac{\Delta BA}{\Delta t}$

$\mathcal{E} = -200 \frac{0,5 \times 3,24 \times 10^{-2}}{0,8} = -4,05$

$|\mathcal{E}| = 4 \text{ V}$

b) $i = \frac{\mathcal{E}}{R} \Rightarrow$

$i = \frac{4}{2} = 2 \text{ A}$

⑥ $N_1 = 220 / \text{cm}$

$R_1 = 1,6 \times 10^{-2} \Omega$

$N_2 = 120$

$R_2 = 1,8 \times 10^{-2} \Omega$

$R_2 = 5,3 \Omega$

$\Delta i = -1,5 \text{ A}$

$\Delta t = 25 \times 10^{-3} \text{ s}$

$\mathcal{E} = - \frac{d \Phi_B}{dt}$

$\Phi_B = B A \cos \theta$

$A_1 = 8,04 \times 10^{-4} \text{ m}^2$

$A_2 = 1,02 \times 10^{-3} \text{ m}^2$

$B = \mu_0 I n$

$B = 1,26 \times 10^{-6} \times 1,5 \times 220 \times 10^2$

$\mathcal{E}_2 = - N_2 A_1 \frac{dB}{dt} \Rightarrow \mathcal{E}_2 = - N_2 A_1 \mu_0 n \frac{dI}{dt}$

$\Rightarrow \mathcal{E}_2 = -120 \times 8,04 \times 10^{-4} \times 1,26 \times 10^{-6} \times 220 \times 10^2 \times$
 $\times - \frac{1,5}{25 \times 10^{-3}} = 0,16$

$|\mathcal{E}| = R I \Rightarrow I = \frac{0,16}{5,3} = 0,03 \text{ A}$

⑦ $B = 0,35 \text{ T}$

a) $L = 25 \times 10^{-2} \text{ m}$

$v = 55 \times 10^{-2} \text{ m/s}$

$|\mathcal{E}| = B \times L v$

$|\mathcal{E}| = 0,35 \times 25 \times 10^{-2} \times 55 \times 10^{-2} = 0,0481 \text{ V}$

b) $R = 18 \Omega$

$i = \frac{0,0481}{18} = 2,67 \times 10^{-3} \text{ A}$

c) $P = \frac{B^2 L^2 v^2}{R} \Rightarrow P = 1,28 \times 10^{-4} \text{ W}$

⑧ $A = 8 \times 10^{-4} \text{ m}^2$

$\Delta B = 2 \text{ T}$

$\Delta t = 1$

$R = 2 \Omega$

$i = ?$

$|\mathcal{E}| = \frac{2 \times 8 \times 10^{-4}}{1} \Rightarrow |\mathcal{E}| = 0,0016$

$i = \frac{0,0016}{2} = 8 \times 10^{-4} \text{ A}$

10 $R = 10 \Omega$

$B = 0,10$

$\Delta t = 0,10$

$i = ?$

$$A = 4 \times \left(\frac{\sqrt{6,75} \times 1,5}{2} \right)$$



$A = 7,79 \text{ m}^2$

$\Delta A = 9 - 7,79 = 1,21$

$$|E| = \frac{0,10 \times 1,21}{0,10} = 1,21 \text{ V}$$

$$i = \frac{1,21}{10} = 0,12 \text{ A}$$