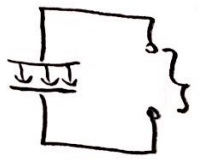
$\hat{k}: \odot$

1) Solenóide: $\vec{B}_s = \mu_0 n I \hat{k}$

Fio: $\vec{B}_f = \frac{-\mu_0 i}{2\pi b} \hat{k}$

$\vec{B} = \vec{B}_s + \vec{B}_f = 0 \Rightarrow \mu_0 n I - \frac{\mu_0 i}{2\pi b} = 0 \Rightarrow \boxed{i = 2\pi b n I}$

5.)



$V = (100\,t)$ V (segundo)

$V_c = V = 100t = \frac{Q}{C} \rightarrow Q = CV \rightarrow \frac{dQ}{dt} = I = I_0 = C\frac{dV}{dt}$

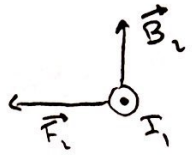
$\Rightarrow I_0 = (1F)(100\,V/s) = 100\,A$ //

6) Circuito LC: $\omega = \frac{1}{\sqrt{LC}} = \frac{1}{\sqrt{250\,\mu F\,mH}} = \frac{1}{\sqrt{25 \cdot 10^{-8}\,FH}} = \frac{1}{5} 10^4\ s^{-1}$

(oscilação)

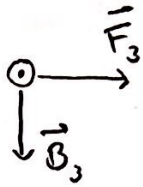
$f = \frac{\omega}{2\pi} \approx 318\ Hz$ //

8) I_1 e I_2:



$\otimes I_2$

I_1 e I_3:



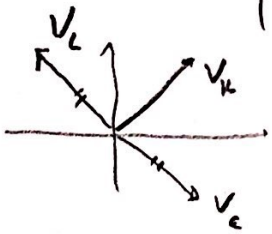
$\odot I_3$

Como I_2 está mais próximo de I_1 que $I_3 \Rightarrow F_2 > F_3$

$\Rightarrow$ R: Seta A.

9.) Ressonância: $V_L = V_C$ | $V_L \perp V_R$; $V_C \perp_L$ e | V_L adiantado. V_C atrasado.

$\Rightarrow$



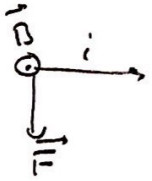
10) $\frac{mv^2}{R} = qvB$ $\quad\left\{\begin{array}{l} \frac{mv^2}{2} = qV \\ v = \sqrt{\frac{2qV}{m}} \end{array}\right.$

$R = \frac{mv}{qB}$

$\Rightarrow R = \frac{m}{q}\sqrt{2V}\sqrt{\frac{q}{m}}\frac{1}{B}$

$R = \sqrt{\frac{2Vq}{m}}\frac{1}{B}$ //

15)



11) $Q\frac{+}{-} >$ o raio $>$ a massa.

$q > 0 \rightarrow$ desvio p/ direita
$q < 0 \rightarrow$ desvio p/ esquerda

$q_1, q_2 \in q_3 > 0$ e $q_4 < 0$ $\quad$ $m_1 = m_4$ $\quad$ $m_3 > m_2 > m_1$

12) Força sobre a barra:

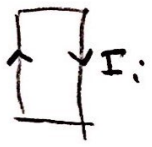
$F_B = ILB = \frac{\Delta V}{R}LB$

$\Delta V = BvL$

$\Rightarrow F_B = \frac{L^2B^2v}{R}$ //

13) $\frac{dI}{dt} < 0 \Rightarrow \frac{dB}{dt} < 0 \Rightarrow \frac{d\Phi_B}{dt} < 0 \Rightarrow \vec{B}_i \sim \hat{k} \Rightarrow I_i$ está no sentido horário

$\otimes \hat{k}$



14) $i(0) = 0 \longrightarrow i(t) = -I\sin(\omega t)$
$q(0) = Q_0 \longrightarrow q(t) = Q\cos(\omega t)$

$\Rightarrow i = \frac{dq}{dt} \Rightarrow I = Q_0\omega$

$v_L(t) = L\frac{di}{dt} = -LI\cos(\omega t)$