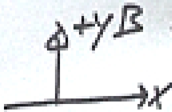
220



B .1T

$\odot$ $L=3m,\ I=2A$

F

$$\vec{F} = I\vec{L} \times \vec{B}$$

$$|\vec{F}| = (2\times3)\times(.1)$$

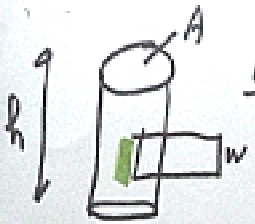
$\otimes$ $= .6\ N$

$\otimes$

$\odot$ $B = \frac{N}{A\,m}$ $\quad \varepsilon = -\frac{\Delta\phi_M}{\Delta t}$

$$V = \frac{B\cdot m^2}{s}$$

$\frac{J}{m} = \frac{F\cdot m}{m} = F$ $\quad B = \frac{Vs}{m^2}\cdot\frac{C}{s}\cdot Am$



$\underline{L}$

$$\sum_i \vec{B}_i \cdot \Delta \vec{s}_i = \mu_0 I_C$$

N

I $\quad n = \frac{N}{h}$

$$BW = \mu_0 I (n \cdot w)$$

$$B = \mu_0 I n$$

$$L = \frac{\Phi_M}{I}$$

$$\Phi_M = \Phi_{M,1} \cdot N$$

$$\Phi_{M,1} = BA = \mu_0 I n \cdot A$$

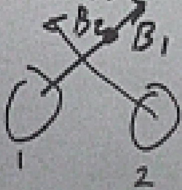
$$\Rightarrow \Phi = \mu_0 n^2 I (Ah)$$

$$L = \mu_0 n^2 (vol)$$

$$U_M = \frac{1}{2} L I^2 = \frac{1}{2} \mu_0 n^2 (vol) \times \left(\frac{B^2}{\mu_0 n^2}\right)$$

$$U_M = \frac{B^2}{2\mu_0} (vol)$$

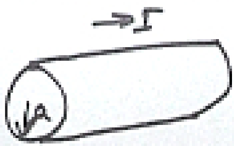
$$u_M = \frac{U_M}{vol} = \frac{B^2}{2\mu_0} \qquad u_E = \frac{1}{2}\varepsilon_0 E^2$$



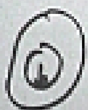
$$\cancel{U_1 + U_2} \ ?$$

$$\vec{B} = (\vec{B}_1 + \vec{B}_2)\cdot$$

$$+ 2\vec{B}_1 \cdot \vec{B}_2$$

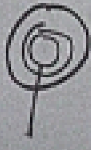


$$L = \frac{\Phi_M}{I} \qquad \Phi_M = \Sigma BA$$



$$\Sigma \vec{B}_i \cdot \Delta \vec{S}_i = \mu_0 I_c$$

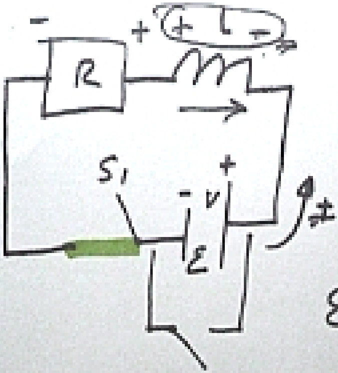
$$I_c = \frac{I}{\pi a^2} \cdot \pi r^2 = I\left(\frac{r^2}{a^2}\right)$$



$$B(2\pi r) = \mu_0 I \left(\frac{r^2}{a^2}\right)$$

$$B = \mu_0 I \frac{r}{2\pi a^2}$$

$$\Phi_M = \Sigma \vec{B}_i \cdot \Delta \vec{A}_i \qquad L = \frac{\Phi_M}{I}$$



$$I = \frac{\varepsilon}{R}$$

$$\varepsilon = -\frac{\Delta \phi_M}{\Delta t}$$

$$V_L = -L\frac{\Delta I}{\Delta t}$$

$$V - IR + V_L = 0$$

$$V - IR + V_L = 0$$

$$V - IR - L\frac{\Delta I}{\Delta t} = 0 \quad \div R$$

$$x = \frac{V}{R} - I$$

$$x + \frac{L}{R}\frac{\Delta x}{\Delta t} = 0$$

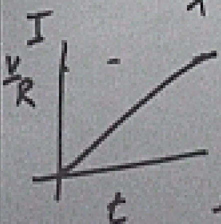
$$\tau = \frac{L}{R} \qquad L = \frac{V}{A/s}$$

$$R = \frac{V}{A}$$

$$\frac{\frac{V}{A/s}}{V/A} = \frac{1}{\frac{1}{s}} = s$$

$$\tau_c = R \cdot C$$

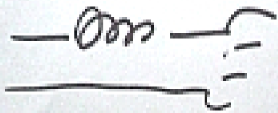
$$x + \tau\frac{\Delta x}{\Delta t} = 0 \Rightarrow x = -\tau\frac{\Delta x}{\Delta t}$$



$$\frac{\Delta x}{x} = -\frac{\Delta t}{\tau} \qquad x = x_0 e^{-t/\tau}$$

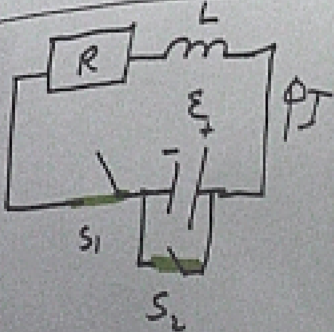
$$\ln\left(\frac{x}{x_0}\right) = -\frac{t}{\tau}$$

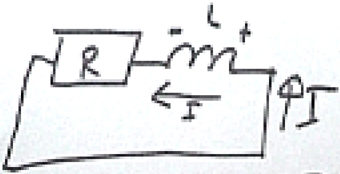
$$I = \frac{V}{R}\left(1 - e^{-t/\tau}\right)$$



$$I(t) = \frac{V}{R}\left(1 - e^{-t/\tau}\right)$$

$$\tau = \frac{L}{R}$$





$$I = \frac{\varepsilon}{R}$$

$$V_L = -L\frac{\Delta I}{\Delta t}$$

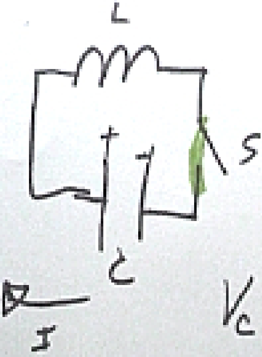
$$-L\frac{\Delta I}{\Delta t} - IR = 0$$

$$\frac{\Delta I}{\Delta t} = -I/\tau$$

$$\frac{\Delta I}{I} = -\frac{\Delta t}{\tau}$$

$$\ln\left(\frac{I}{I_0}\right) = -\frac{t}{\tau} \Rightarrow I = I_0 e^{-t/\tau}$$

$$U_m = \frac{1}{2}LI^2$$



$C = \frac{Q}{V}$ $V_C = \frac{Q}{C}$

$V_L = -L\frac{dI}{dt}$

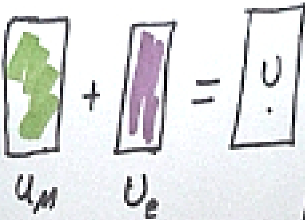
$$V_C - V_L = 0$$

$$\frac{Q}{C} + L\frac{dI}{dt} = 0$$

$$I(t) = I_m \sin(\omega t + \phi)$$

$$\omega = \frac{1}{\sqrt{LC}}$$

$$Q(t) = -\frac{I_m}{\omega}\cos(\omega t + \phi)$$



$$\omega = \frac{1}{\sqrt{LC}}$$