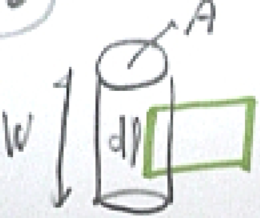
220



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

$$B d = \mu_0 N I$$

$$n = \frac{N}{w}$$

$$B = \mu_0 \left(\frac{N}{d}\right) I$$

$$B = \mu_0 n I$$

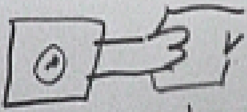
$$\phi_{M,1} = BA = \mu_0 n I A$$

$$\phi_M = NBA = \mu_0 n^2 I (Aw)$$

$$L = \frac{\Phi_M}{I} = \underline{\mu_0 n^2 (\text{volume})}$$

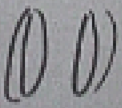
$$\frac{Tm^2}{A} \qquad \frac{V}{A/s}$$

$$\mathcal{E} = -\Delta\Phi/\Delta t$$



$I = bt$

$$L = \left|\frac{\Delta\Phi_M/\Delta t}{\Delta I/\Delta t}\right| = \left|\frac{\mathcal{E}}{b}\right|$$



$$U_{M} = \frac{1}{2} L I^2$$

$$P = I^2 R = \frac{V^2}{R} = \underline{I}\,\underline{V}$$

$$V: \ \mathcal{E} = -\frac{\Delta \phi_M}{\Delta t}$$

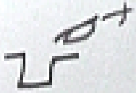
$$L = \frac{\phi_M}{I} \qquad \phi_m = L I \Rightarrow$$ [illegible]

$$\mathcal{E} = -L \frac{\Delta I}{\Delta t}$$

$$\Delta P = L I \frac{\Delta I}{\Delta t}$$

$$P = \frac{\Delta U}{\Delta t} \Rightarrow \Delta U = P\Delta t$$

$$P\Delta t = \Sigma L I \Delta I$$



$$\boxed{U_M = \frac{1}{2} L I^2}$$

$$B = \mu_0 n I$$

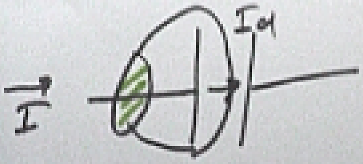
$$I = \frac{B}{\mu_0 n}$$

$$L = \mu_0 n^2 (\text{volume})$$

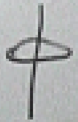
$$U_m = \frac{1}{2}\left[\mu_0 n^2 (\text{vol})\right] \frac{B^2}{\mu_0^2 n^2}$$

$$u_M = \frac{U_M}{Vol} = \frac{B^2}{2\mu_0}$$

$$u_E = \frac{1}{2}\varepsilon_0 E^2$$

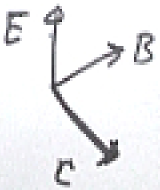


$$B = \frac{\mu_0 I}{2\pi r}$$

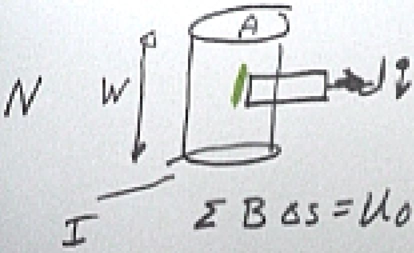
$\oint$ 

$$I_d = \varepsilon_0 \frac{d\Phi_E}{dt}$$

$$\Sigma \vec{B}\cdot d\vec{s} = \mu_0 (I_c + I_d)$$


E
B
C

Induct



$$\Sigma B \Delta s = \mu_0 I_c$$

$$B = \frac{\mu_0 I}{w}$$

$$B = \mu_0 \left(\frac{N}{w}\right) I$$

$$B = \mu_0 n I$$

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

$$\Phi_M = NBA = nB(Aw)$$

$$= \mu_0 n^2 I (Aw)$$

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

$N = 300$ $w = .25\,m$ | $A = 4\times10^{-4}\,m^2$

$$L = \left[4\pi\times10^{-7}\right]\left[\frac{300}{.25}\right]^2 (4\times10^{-4} \times .25)$$

$$= 1.8\times10^{-4}\,H$$

50 A/s Emf = ?

$$\mathcal{E} = -\frac{\Delta\phi_M}{\Delta t}$$

$$L = \frac{\phi_M}{I} \Rightarrow \phi_M = LI$$

$$\frac{\Delta\phi_M}{\Delta t} = L\frac{\Delta I}{\Delta t} = L(50\,A/s)$$

$$\mathcal{E} = -(1.8\times10^{-4})(50)$$

$$9.\times10^{-3}\,V$$

N_1 N_2

~~$\mathcal{E}_p = -N_1 \frac{\Delta I}{\Delta t}$~~

$\mathcal{E}_p = -L_p \frac{\Delta I}{\Delta t} \propto N_p$

$\mathcal{E}_s = -L_s \frac{\Delta I}{\Delta t} \propto N_s$

$$\boxed{\frac{\mathcal{E}_p}{\mathcal{E}_s} = \frac{N_p}{N_s}}$$

$\Delta \Phi_M / \Delta t$

$N_s > N_p$ (Step up)

$\mathcal{E}_s = \mathcal{E}_p \frac{N_s}{N_p}$

$P_{in} = P_{out}$ $(P = I\mathcal{E})$

8 $\mathcal{E}\uparrow$ volts

$I\downarrow$ curr.

$\mathcal{E}\downarrow$

$I\uparrow$