

Exam # 2 Formulas

$$F = qE$$

$$V = IR$$

$$Q = CV$$

$$F = qvB\sin\theta$$

$$F = I/B\sin\theta$$

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

$$\mu_0 = 4\pi \times 10^{-7} \frac{T \cdot m}{A}$$

$$B = \frac{\mu_0 IN}{l}$$

$$F = mv^2/R$$

$$F = mg$$

$$F = \frac{\mu_0 I_1 I_2 l}{2\pi d}$$

$$v = E/B$$

$$\varepsilon = -N \frac{\Delta\Phi_B}{\Delta t}$$

$$\varepsilon = Blv$$

$$\varepsilon = NB\omega A \sin(\omega t)$$

$$\frac{V_S}{V_P} = \frac{N_S}{N_P}$$

$$I_P V_P = I_S V_S$$

$$KE = \frac{1}{2}mv^2$$

$$\sum_{i=1}^N E_i \Delta A_i \cos\theta_i = \sum_{i=1}^N E_{i\text{perp}} \Delta A_i = \Phi_E = \frac{q}{\varepsilon_0}$$

$$\varepsilon_0 = 8.85 \times 10^{-12} \frac{C^2}{N \cdot m^2}$$

$$\sum_{i=1}^N B_i \Delta A_i \cos\theta_i = \sum_{i=1}^N B_{i\text{perp}} \Delta A_i = \Phi_B = 0$$

$$PE = mgh$$

$$\sum_{i=1}^N \left| \vec{B}_i \right| \left| \vec{\Delta x}_i \right| \cos\theta = \sum_{i=1}^N B_{ix} \Delta x_i = \mu_0 I_{\text{encl}} + \mu_0 \varepsilon_0 \frac{\Delta\Phi_E}{\Delta t}$$

$$c = \frac{1}{\sqrt{\mu_0 \varepsilon_0}}$$

$$\sum_{i=1}^N \left| \vec{E}_i \right| \left| \vec{\Delta x}_i \right| \cos\theta = \sum_{i=1}^N E_{ix} \Delta x_i = -\frac{\Delta\Phi_B}{\Delta t}$$

$$u = \frac{1}{2} \varepsilon_0 E^2 + \frac{1}{2} \frac{B^2}{\mu_0}$$

$$c = 3.0 \times 10^8 \frac{m}{s} = f\lambda$$

$$c = f\lambda$$

$$I = P/A$$

$$I_{\text{ave}} = \frac{1}{2} \varepsilon_0 c E_0^2$$

$$A = \pi R^2$$

$$A = 4\pi R^2$$

$$P = E/t$$

$$F = ma$$

$$v = \Delta x / \Delta t$$

$$a = \Delta v / \Delta t$$

$$V = \frac{4}{3} \pi R^3$$

$$V = \pi R^2 h$$

$$C = 2\pi R$$