FORUMLAS AND CONSTANTS FOR EXAM 1

$e = 1.6 \times 10^{-19}$ C $k = 9 \times 10^{9}$ N m^2/C^2 $= 1/(4\pi\varepsilon_o)$

$\varepsilon_o = 8.85 \times 10^{-12}$ C^2/N m^2 1 eV $= 1.6 \times 10^{-19}$ J q = Ne

$m_e = 9.1 \times 10^{-31}$ kg $m_p = 1.67 \times 10^{-27}$ kg

$$F = k\frac{q_1 q_2}{r^2} \qquad \vec{E} = \frac{\vec{F}}{q_o} \qquad E = k\frac{q}{r^2} \qquad E = \frac{q}{\varepsilon_o A}$$

$W_{AB} = EPE_A - EPE_B$ $$V = \frac{EPE}{q_o} \qquad E = -\frac{\Delta V}{\Delta s}$$

$$V_B - V_A = \Delta V = -\frac{W_{AB}}{q_o} = \frac{\Delta(EPE)}{q_o} \qquad V = k\frac{q}{r}$$

$$\frac{1}{2}mv_B^2 + q_o V_B = \frac{1}{2}mv_A^2 + q_o V_A \qquad V_B - V_A = k\frac{q}{r_B} - k\frac{q}{r_A}$$

q = CV $$E = \frac{V}{d} \qquad C = \frac{\kappa\varepsilon_o A}{d} \qquad E = \frac{E_o}{\kappa}$$

$$I = \frac{\Delta q}{\Delta t} \qquad V = IR \qquad R = \frac{\rho L}{A}$$ Energy = (1/2) CV^2

$$\rho = \rho_o[1 + \alpha(T - T_o)] \qquad R = R_o[1 + \alpha(T - T_o)]$$

P = IV $= I^2 R = V^2/R$ $V = V_0 \sin(2\pi ft)$ $I = I_0 \sin(2\pi ft)$ $I_0 = V_0/R$

$$\overline{P} = \frac{1}{2}I_0 V_0 = I_{rms} V_{rms} \qquad I_{rms} = I_0/\sqrt{2} \qquad V_{rms} = V_0/\sqrt{2} \qquad V_{rms} = I_{rms} R$$

$$R_S = R_1 + R_2 + R_3 + \cdots \qquad \frac{1}{R_P} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} + \cdots$$

$$\frac{1}{C_S} = \frac{1}{C_1} + \frac{1}{C_2} + \frac{1}{C_3} + \cdots \qquad C_P = C_1 + C_2 + C_3 + \cdots$$