1. $F = K\frac{Q_1 Q_2}{r_{12}^2}$, $E = K\frac{Q}{r_{12}^2}$, $V = K\frac{Q}{r_{12}}$, $K = \frac{1}{4\pi\varepsilon_0} = 9\cdot 10^9$, $\varepsilon_0 = 8{,}85\cdot 10^{-12}$

$W_C = \frac{1}{2}U^2 C$

$\oint_S E\,ds = \frac{Q}{\varepsilon_0} \rightarrow E\cdot S = \frac{Q}{\varepsilon_0}$, $E = \frac{Q}{4\pi r^2 \varepsilon_0}$, $E = \frac{Q'}{2r\pi\varepsilon_0}$

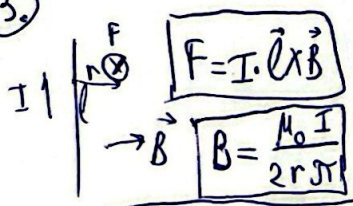
$U = Ed$, $U = \frac{Q}{4\pi\varepsilon_0}\left(\frac{1}{r_1} - \frac{1}{r_2}\right)$, $U = \frac{Q'}{2\pi\varepsilon_0} Ln\frac{r_2}{r_1}$

2. $R = \frac{U}{I}$, $I = \frac{U}{R}$, $P = UI$, $\sum I_k = 0$, $\sum(\varepsilon_i - RI) = 0$

$R_{11} I_1 + R_{12} I_2 = \varepsilon_1$ | $V_1\left(\frac{1}{R}\right) - V_2\left(\frac{1}{R}\right) = \sum \pm I$

$R_{21} I_1 + R_{22} I_2 = \varepsilon_2$ | $V_2\left(\frac{1}{R}\right) - V_1\left(\frac{1}{R}\right) = \sum \pm I$

3.



$F = I\cdot \vec{\ell} \times \vec{B}$

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

$B = \frac{\mu_0 I}{4\pi d}(\sin\alpha_2 - \sin\alpha_1)$

$B = \int_0^{\alpha} \frac{\mu_0 I}{a\pi r}\,d\alpha$

$\oint_C \vec{B}\,d\vec{\ell} = \mu_0 \sum I_k$, $\mu_0 = 12{,}56\cdot 10^{-7}\ \frac{N}{A^2}$

$\oint_C \vec{H}\,d\vec{\ell} = \sum I_k$

$\Phi = \int_S \vec{B}\,d\vec{s}$

$L = \frac{\Phi}{I}$ | $e = -\frac{d\Phi}{dt}$

$B = \frac{\mu_0 N I}{2\pi r}$, $\Phi = \frac{\mu_0 N^2 I}{2\pi} h\,Ln\frac{b}{a}$

$B = \frac{\mu_0 N I}{\ell}$, $\Phi = NBS$, $\ell = (a+b)\pi r$

4.

$i(t) = I\sqrt{2}\sin(\omega t + \psi)$

$u(t) = U\sqrt{2}\sin(\omega t + \theta)$

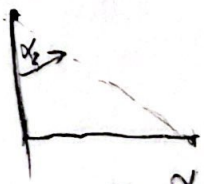
$\omega = 2\pi f$

- $X_R = R$, $\theta = \psi$
- $X_L = \omega L$, $\theta = \psi + \frac{\pi}{2}$
- $X_C = \frac{1}{\omega C}$, $\theta = \psi - \frac{\pi}{2}$

$P_{max} = \frac{E^2}{4R_D}$

$Z = R + jX$ $P = UI\cos\varphi$ $Q = UI\sin\varphi$ $S = UI$ $\underline{S} = \underline{U}\,\underline{I}^* = P + jQ$

akademijazamasince.com



$\rightarrow \alpha_2 = \frac{\pi}{2}$ $\alpha_1 = 0$

$\leftarrow \alpha_2 = 0$ $\alpha_1 = -\frac{\pi}{2}$

Scanned with CamScanner