Relationships

Demonstrate understanding of Waves

$d\sin\theta = n\lambda$ $\quad$ $n\lambda = \frac{dx}{L}$ $\quad$ $f' = f\frac{v_w}{v_w \pm v_s}$

Demonstrate understanding of Mechanics

$d = r\theta$ $\quad$ $v = r\omega$ $\quad$ $a = r\alpha$ $\quad$ $\omega = \frac{\Delta\theta}{\Delta t}$

$\alpha = \frac{\Delta\omega}{\Delta t}$ $\quad$ $\omega = 2\pi f$ $\quad$ $E_{K(ROT)} = \frac{1}{2}I\omega^2$

$\omega_f = \omega_i + \alpha t$ $\quad$ $\theta = \frac{(\omega_i + \omega_f)}{2}t$ $\quad$ $\omega_f{}^2 = \omega_i{}^2 + 2\alpha\theta$

$\theta = \omega_i t + \frac{1}{2}\alpha t^2$

$\tau = I\alpha$ $\quad$ $L = mvr$ $\quad$ $L = I\omega$ $\quad$ $F_g = \frac{GMm}{r^2}$

$T = 2\pi\sqrt{\frac{l}{g}}$ $\quad$ $T = 2\pi\sqrt{\frac{m}{k}}$

$y = A\sin\omega t$ $\quad$ $v = A\omega\cos\omega t$ $\quad$ $a = -A\omega^2\sin\omega t$ $\quad$ $a = -\omega^2 y$

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Demonstrate understanding of atoms, photons and nuclei

$E = hf$ $\quad$ $hf = \phi + E_K$ $\quad$ $E = \Delta mc^2$

$E_n = -\frac{hcR}{n^2}$

$\frac{1}{\lambda} = R(\frac{1}{S^2} - \frac{1}{L^2})$

Demonstrate understanding of electrical systems

$E = \frac{1}{2}QV$ $\quad Q = CV$ $\quad C = \frac{\varepsilon_o \varepsilon_r A}{d}$ $\quad C_T = C_1 + C_2 + \ \ldots$ $\quad \tau = RC$

$\frac{1}{C_T} = \frac{1}{C_1} + \frac{1}{C_2} + \ldots$ $\quad \phi = BA$ $\quad \varepsilon = -L\frac{\Delta \mathrm{I}}{\Delta t}$

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

$\varepsilon = -\mathrm{M}\frac{\Delta \mathrm{I}}{\Delta \mathrm{t}}$ $\quad \frac{N_p}{N_s} = \frac{V_p}{V_s}$ $\quad E = \frac{1}{2}L\mathrm{I}^2$

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

$\mathrm{I} = \mathrm{I}_{MAX} \sin \omega t$ $\quad V = V_{MAX} \sin \omega t$ $\quad \mathrm{I}_{MAX} = \sqrt{2}\,\mathrm{I}_{rms}$

$V_{MAX} = \sqrt{2}\,V_{rms}$ $\quad X_C = \frac{1}{\omega C}$

$X_L = \omega L$ $\quad V = \mathrm{I}Z$ $\quad \omega = 2\pi f$