SPFSC Physics – Sheet 109/2

The following formulae may be of use to you:

$F = ma$

$F = kx$

$E_p = ½kx^2$

$F = -ky$

$F\Delta t = m\Delta v$

$p = mv$

$\Delta p = Ft$

$W = Fd$

$v^2 = v_i^2 + 2ad$

$d = \frac{(v_i + v)t}{2}$

$d = v_i t + ½at^2$

$v = v_i + at$

$F_g = \frac{GMm}{r^2}$

$F_c = \frac{mv^2}{r}$

$a = \frac{v^2}{r}$

$v = \frac{2\pi r}{T}$

$f = \frac{1}{T}$

$a = r\alpha$

$v = r\omega$

$\omega = \frac{\Delta\theta}{\Delta t}$

$\alpha = \frac{\Delta\omega}{\Delta t}$

$\omega = 2\pi f$

$\tau = I\alpha$

$L = I\omega$

$\tau = Fr$

$L = mvr_\perp$

$d = r\theta$

$\omega_f = \omega_i + \alpha t$

$\omega_f^{\ 2} = \omega_i^{\ 2} + 2\alpha\theta$

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

$\theta = \omega_i t + ½\alpha t^2$

$E_{k(rot)} = ½I\omega^2$

$a = -\omega^2 y$

$P = VI$

$\phi = BA$

$\Delta E = Vq$

$Q = VC$

$\sum I = 0$

$C = \frac{\varepsilon_o \varepsilon_r A}{d}$

$C_{TOT} = C_1 + C_2 + ...$

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

$\frac{1}{C_{TOT}} = \frac{1}{C_1} + \frac{1}{C_2} + \frac{1}{C_3} ...$

$\varepsilon = -L\frac{\Delta I}{\Delta t}$

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

$Z = \sqrt{R^2 + (X_L - X_C)^2}$

$\varepsilon = BAN\omega \sin \omega t$

$X_C = \frac{1}{\omega C}$

$X_L = \omega L$

$V = IZ$

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

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

$y = A\cos \omega t$

$v = -A\omega \sin \omega t$

$a = -A\omega^2 \cos \omega t$

$y = A\sin \omega t$

$v = A\omega \cos \omega t$

$a = -A\omega^2 \sin \omega t$

$E = ½QV$

$V = \varepsilon - IR$

$C = \frac{\varepsilon_o A}{d}$

$V = Ed$

$R_{TOT} = R_1 + R_2 + ...$

$\frac{1}{R_{TOT}} = \frac{1}{R_1} + \frac{1}{R_2} ...$

$E = \frac{1}{2}LI^2$

$\sum V = 0$

$\tau = RC$

$V = V_{max} \sin \omega t$

$I = I_{max} \sin \omega t$

$V = Blv$

$I_{max} = \sqrt{2}\, I_{rms}$

$V_{max} = \sqrt{2} V_{rms}$

$\frac{N_p}{N_s} = \frac{V_p}{V_S}$

$f_o = \frac{1}{2\pi\sqrt{LC}}$

$d \sin\theta = (n - ½)\lambda$

$d \sin\theta = n\lambda$

$n\lambda = \frac{dx}{L}$

$f_b = |f_1 - f_2|$

$f_1 = f\frac{v_w}{v_w \pm v_s}$

$v = f\lambda$

$d = \frac{1}{N}$

$E = hf$

$hf = \phi + E_k$

$E = mc^2$

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

$L = \frac{nh}{2\pi}$

$\Delta E = |E_1 - E_2|$

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