Formula Sheet for Physics 1118 Diagnostic Test

Physical Constants

$g = 9.81$ m/s^2 $k = 9.0 \times 10^9$ Nm^2/C^2 $\pi = 3.141592.....$

density of water $= 1.00 \times 10^3$ kg/m^3

specific heat capacity of water $= 4.18 \times 10^3$ J/(kg·°C)

speed of sound in air $= 3.40 \times 10^2$ m/s

speed of light $= 3.00 \times 10^8$ m/s

Equations

$$A_x = A\cos\theta \qquad A_y = A\sin\theta \qquad R = \sqrt{R_x^2 + R_y^2} \qquad \sum F_x = 0 \qquad \sum F_y = 0$$

$$F = kx \qquad \tan\alpha = \frac{R_y}{R_x} \qquad v = \frac{\Delta x}{\Delta t} \qquad a = \frac{\Delta v}{\Delta t} \qquad v = v_0 + at$$

$$x = v_0 t + \frac{at^2}{2} \qquad v^2 = v_0^2 + 2ax \qquad F_a = ma \qquad w = mg \qquad p = mv$$

$$m_1 v_1 + m_2 v_2 = m_1 u_1 + m_2 u_2 \qquad F\Delta t = \Delta P \qquad W = F\cos\theta x$$

$$PE = mgh \qquad KE = \frac{mv^2}{2} \qquad E = PE + KE \qquad W_{nc} = \Delta PE + \Delta KE$$

$$PE_{spring} = \frac{1}{2}kx^2 \qquad P = \frac{W}{t} \qquad Q = cm\Delta T \qquad \Delta U = Q - W$$

$$\mu = \frac{m}{L} \qquad\qquad \rho = \frac{m}{V} \qquad P = \frac{F}{A} \qquad P = \rho gh \qquad F_B = \rho gV$$

$$v = f\lambda \qquad v = \sqrt{\frac{F_T}{\mu}} \qquad f_{closed} = \frac{nv}{2L} \qquad f_{open\ 1\ end} = \frac{nv}{4L} \qquad \frac{\sin i}{\sin r} = \frac{n_2}{n_1} \qquad n = \frac{c}{v}$$

$$\frac{1}{f} = \frac{1}{d_o} + \frac{1}{d_i} \qquad m = \frac{h_i}{h_o} = \frac{-d_i}{d_o} \qquad F_e = \frac{k q_1 q_2}{r^2} \qquad E = \frac{F}{q_0} \qquad V = k\frac{q}{r}$$

$$\Delta V = \frac{\Delta PE}{q_0} \qquad I = \frac{q}{t} \qquad R = \frac{V}{I} \qquad V_{ab} = emf - Ir \qquad \rho = \frac{RA}{L} \qquad P = IV \qquad P = I^2 R$$

$$R_s = R_1 + R_2 + R_3 + ...$$

$$\frac{1}{R_p} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} + ...$$