

Physics 122
Exam #1 Formula Sheet
Cal Poly Pomona Physics Department - Mireles

Chapter #10

$$T = 1/f$$

$$w = 2\pi f$$

$$d(t) = A \cos wt$$

$$v_{\max} = Aw$$

$$a_{\max} = Aw^2$$

$$F_{\text{applied}} = kx$$

$$F_{\text{restore}} = -kx$$

$$PE_{\text{elastic}} = \frac{1}{2}kx^2$$

$$w = \sqrt{\frac{k}{m}}$$

$$w = \sqrt{\frac{mgL}{I}} = \sqrt{\frac{g}{L}}$$

$$I = mr^2$$

$$P = F/A$$

Stress = Const. • Strain

$$F/A = Y \cdot \left(\frac{\Delta L}{L_0} \right)$$

$$F/A = S \cdot \left(\frac{\Delta X}{L_0} \right)$$

$$F/A = B \cdot \left(-\frac{\Delta V}{V_0} \right)$$

Temperature Conversion Hints:

Water Freezes at 0 °C, 32 °F, 273 K

Water Boils at 100 °C, 212 °F, 373 K

Chapter #12

$$\Delta L = \alpha L_0 \Delta T$$

$$\Delta V = \beta V_0 \Delta T$$

$$\text{Stress} = Y \alpha \Delta T$$

$$Q = cm\Delta T$$

$$Q = mL_f$$

$$Q = mL_v$$

Chapter #13

$$Q = \frac{(kA\Delta T)t}{L}$$

$$Q = e\sigma T^4 At \quad P_{\text{net}} = e\sigma A(T^4 - T_0^4)$$

Chapter #14

$$1 \text{ u} = 1.6605 \times 10^{-27} \text{ kg} \quad N_A = 6.022 \times 10^{23} \text{ mol}^{-1}$$

$$k = 1.38 \times 10^{-23} \text{ J/K} \quad F = 5.67 \times 10^{-8} \text{ J/sm}^2\text{K}^4$$

$$R = 8.314 \text{ J / (mole K)}$$

$$n = \frac{N}{N_A}$$

$$n = \frac{m_{\text{part}} N}{m_{\text{part}} N_A} = \frac{m}{\text{MassPerMole}}$$

$$PV = NkT$$

$$PV = nRT$$

$$\text{Boyle : } P_i V_i = P_f V_f$$

$$\text{Charles : } \frac{V_i}{T_i} = \frac{V_f}{T_f}$$

$$U = \frac{3}{2} nRT$$

$$k = \frac{R}{N_A}$$

