Equation Sheet for PHSC 107 - 01 Exam

Note: You will not necessarily need to use every item on this sheet.

Conversion factors:
1.00 inch = 2.54 cm  
1.00 N = 0.225 lb  
1.0 eV = 1.6 x 10^{-19} J

Prefixes and constants:
mega (M) = 10^6  
kilo (k) = 10^3  
centi (c) = 10^{-2}  
milli (m) = 10^{-3}

g = 9.80 m/s^2  
G = 6.67 x 10^{-11} Nm^2/kg^2  
h = 6.63 x 10^{-34} Js  
k = 9.0 x 10^9 Nm^2/C^2

speed of sound in air = 344 m/s  
c = speed of light = 3.00 x 10^8 m/s

Equations:
\[ a_c = \frac{v^2}{r} \quad F_{net} = ma \quad w = mg \quad F_1 = -F_2 \]
\[ F = Gm_1m_2/r^2 \quad p = mv \quad p_f = p_i \quad L = mvr \quad L_1 = L_2 \]
\[ W = F||d \quad E_k = (\frac{1}{2})mv^2 \quad W = \Delta E_k \quad E_p = mgh \]
\[ (E_k + E_p)_1 = (E_k + E_p)_2 \quad P = \frac{W}{t} \]

\[ f = 1/T \quad v = \lambda f \quad c = \text{speed of light} = 3.00 \times 10^8 \text{ m/s} \quad n = c/c_{\text{material}} \]

\[ f = \frac{R}{2} \quad \text{speed of sound in air} = 344 \text{ m/s} \]

\[ F = kq_1q_2/r^2 \text{ with } k = 9.0 \times 10^9 \text{ Nm}^2/\text{C}^2 \]

\[ E = hf \quad \text{with } h = 6.63 \times 10^{-34} \text{ Js} \quad r_n = 0.053 n^2 \text{ nm} \quad (n = 1, 2, 3, \cdots) \quad E_n = -13.6/n^2 \text{ eV} \]

\[ E_{\text{photon}} = E_{n_1} - E_{n_2} \quad \lambda = h/mv \quad N = A - Z \quad E = mc^2 \]

formula mass = sum of individual atomic masses

A periodic table will be provided at the time of the exam.