29:006 Fall 2009 Final Exam Formulas

1 meter = 100 cm	1 kg = 1000 g	1 kW = 1000 W
1 mm = 0.001 m	1 nm = 10^{-9} m	1 MHz = 10^{6} Hz
Speed of light in vacuum, $c = 3 \times 10^{8}$ m/s		
acceleration due to gravity on the earth = g = 10 m/s^2		
Ohm's Law: voltage = current $\times$ resistance (V = I × R)		
current I = V / R	resistance R = V / I	
power (W) = Energy/time = E / t , 1 Watt (W) = 1 J / s Energy = Power $\times$ time = P t		
power (Watts) = current (A) $\times$ voltage (V) $P = I\,V = I^2\,R = \frac{V^2}{R}$		
wave speed (v) = wavelength (λ) × frequency (f) $v = \lambda f$		
frequency (f) = $\frac{1}{\text{period (T)}}$	wavelength $\lambda = \frac{c}{f}$	
photon energy E: $E = hf = \frac{hc}{\lambda}$, where h = constant		
frequency $f = \frac{\text{speed of light}}{\text{wavelength}} = \frac{c}{\lambda}$	$v_{medium} = \frac{c}{n}$ n = index of refraction	
${}^{A}_{Z}X$, A = Z + N, Z = # protons, N = # neutrons		