Name_____ Date_____

EM Spectrum

1) Calculate the energy possessed by a single photon of each of the following types of electromagnetic radiation.

a) 6.32×10^{20} Hz

b) 9.50×10^{13} Hz

c) 1.05×10^{16} Hz

2) Blue fireworks get their color from copper chloride heating to a temperature of 1500 K. Its light has a wavelength of 4.50×10^{-9} meters. How much energy does one photon of this light carry? (NOTE: You need to calculate the frequency first).

3) The radiation used in microwaves has a wavelength of 0.125 meters. What is the energy of one photon of this radiation? (Calculate frequency first.)

4) Ultraviolet light has a wavelength of 1.18×10^{-8} m. What is the energy of one photon?

5) What is the energy of a photon in the broadcast from WBCN 104.1 FM? (NOTE: The frequency is 104.1×10^{6} Hz)

6) How long does it take for a radio transmission to reach Earth from the Space Shuttle, if the Shuttle is orbiting at a distance of 2.72×10^{9} meters? (NOTE: Use the speed of light)

7) One line in Hydrogen's Emission Spectrum is a blue color with a wavelength of 486×10^{-9} meters.

a) What is the frequency of this light?

b) What is the energy of a photon of this light?