Chem 155 Homework #6 Due at the start of class on Weds. Feb 18

Reading: Chapter 15

Chapter 14 Problems:
14.38
14.68

Additional Problems:
1) a) What is the energy in J of a 635 nm photon. **b)** How many photons per second are emitted by a 1 mW laser pointer with a 635 nm wavelength? **c)** What color is this laser pointer?

2) Calculate the potential energy in J, of an electron and a proton separated by 1 Angstrom. What is this value in eV?

3) If an electron has 100 eV of kinetic energy how fast is it moving in m/s? What is its momentum?

4) Suppose that a 100W source radiates 600 nm light uniformly in all directions. Assuming that the human eye can detect this light if only 20 photons per second enter a dark-adapted eye with a 7-mm diameter pupil. How far from the source can the light be detected under these conditions? Why do you think can't we see this far in the "real world"?

5) In the Bohr model of the atom, electrons are constantly accelerating, yet they are traveling at constant speed. Explain how something can be accelerating but not changing speed. What behavior does classical electromagnetism predict for accelerating charges?

Chapter 15 Problems:
15.4
15.8
15.14
15.23
15.24
15.28
15.68