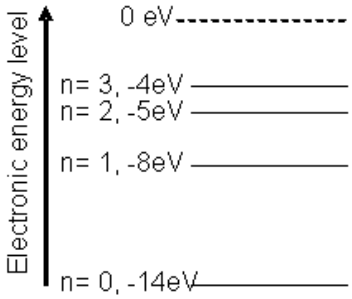
PHYS 225: Applications of Modern Physics **Marie Lopez del Puerto**

HW #1

1. Atomic spectra are really useful because they tell us what energies electrons are allowed to have within atoms.

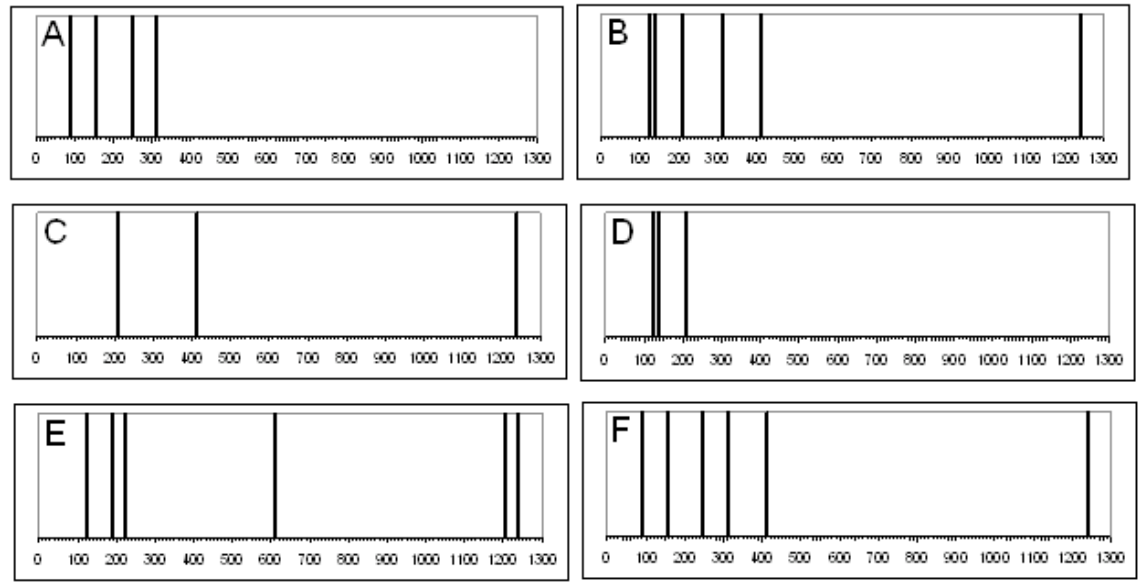


Note: energy is given in units of electron-volt (eV),

1 eV = 1.602×10^{-19} Joules

   a. Which of the atomic spectra below includes all the emission lines you might expect from the above electronic energy level diagram?

      The x-axis represents wavelengths in nanometers (10^{-9} m).
      Remember that $\Delta E = hc/\lambda$, and note that hc = 1240 eV nm.



   b. What is the ionization energy of this atom (in eV)? Assume this atom has only one electron.