

Name: _____

Date: _____

AP 2 Atomic Line Spectra and Energy levels ws 1

1. Which energies below indicate that the electron is attached to an atom?

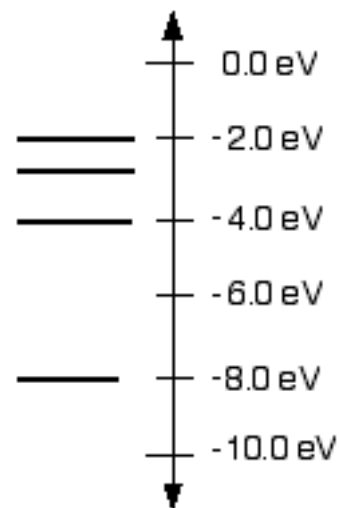
-1 eV 0 eV 18 eV -8.6 eV

2. For each of the following energies, indicate how much energy you must add to get the electron free from the atom: a) -3.4 eV; b) -54.4 eV; c) -11.5 eV.

3. An electron has an energy of -4.6 eV. An interaction occurs and it loses 5.1 eV of energy. a) What is its new energy? b) Is it still attached to the atom? Explain your answer.

4. The energy diagram at left shows four possible energies for an electron bound to an atom.

- a. Indicate all the electron energy transitions that could occur.
- b. Determine the energies of the emitted photons for each transition.



5. The silicon-silicon single bond that forms the basis of a (mythical) silicon-based creature, the Horta, has a bond strength of 3.4 eV. What wavelength photon would you need in a (mythical) phaser disintegration gun to destroy the Horta?

