

Homework #6
AS101 Summer 2006
Dr. Withers

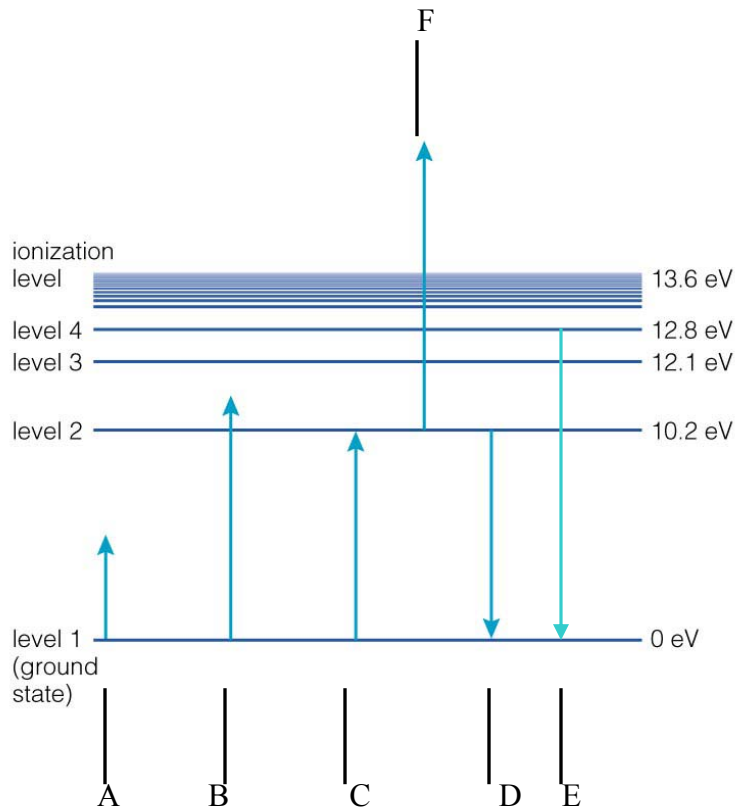
Assigned: 2006.06.01
Due: 2006.06.02, start of class

- 1) Read Chapter 5
- 2) What is a photon and what are the properties and characteristics of a photon?

- 3) Blue light has a higher frequency than red light. Is the wavelength of blue light greater than, the same as, or less than the wavelength of red light? Is the energy of one photon of blue light greater than, the same as, or less than the energy of one photon of red light?

- 4) Is a star whose emission spectrum peaks in the infra-red hotter, cooler, or larger than our Sun? Both the Sun and the other star emit photons whose wavelengths are 550 nm. Will one square metre of the star's surface emit more or less 550 nm photons than one square metre of the Sun's surface?

Question 5 is on the next page



- 5) This picture shows labelled transitions that represent an electron moving between energy levels in hydrogen. Explain your answers to each of the following questions:
- Which transition represents an atom that absorbs a photon with 10.2 eV of energy?
 - Which transition represents an atom that emits a photon with 10.2 eV of energy?
 - Which transition represents an electron that is breaking free from the atom?
 - Which transitions are not possible?
 - Does transition E represent emission or absorption of light? How does the wavelength of the photon in transition E compare to that of the photon involved in transition D?