Hydrogen Models – Pretest

Answer the following questions.

Question 1: What is a “particle” of light called?
   a) wavicle
   b) phonon
   c) baryon
   d) photon
   e) lepton

Question 2: How does the speed of a photon change when its frequency is decreased?
   a) the speed increases
   b) the speed decreases
   c) the speed does not change

Question 3: Which wavelength of light below would have the most energy?

Question 4: What kind of particle has a neutral charge?
   a) proton
   b) electron
   c) neutron

Question 5: Select all the terms which apply to or are consistent with the Bohr model.
   a) electrons can only have certain discrete binding energies
   b) electrons can be found anywhere inside an "electron cloud" around the atom
   c) electrons move around the nucleus in fixed distance "orbits"
   d) electrons can exist around the atom with any particular energy
Question 6: The 1st excited state refers to which number orbital?
   a) 0th orbital
   b) 1st orbital
   c) 2nd orbital
   d) 3rd orbital
   e) 4th orbital
   f) 5th orbital

Question 7: Which is easier to ionize, an electron in the ground state or an excited electron?
   a) the electron in the ground state
   b) the electron in the excited state
   c) both are equally easy to ionize

Question 8: Most Balmer transitions involve photons of which type?
   a) Ultraviolet
   b) Visible
   c) Infrared
   d) None of the Above
Question 9: An electron is in the 3rd orbital and has a binding energy of -1.5 eV. The binding energy of the next orbital is -0.8 eV. What range of energies will potentially excite the electron to the next level?
   a) 0 eV to 1.5 eV
   b) 0.7 to 1.5 eV
   c) 0 eV to 0.7 eV
   d) >1.5 eV

Question 10: What event can be associated with the transition shown in the figure?
   a) a photon was absorbed
   b) a photon was emitted

Question 11: Given a low density cloud of Hydrogen atoms, what happens when the temperature of the cloud is increased?
   a) The number of electrons in the excited states increases.
   b) The Hydrogen atoms move faster but the number of electrons in each orbital stays basically the same.
   c) None of the above.