

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.