Name _____   Date _____

Review Homework: Chapter 7

01. According to the Bohr model, what are the energies of the first six energy levels in the hydrogen atom?

02. Using the Bohr model, calculate the change in energy associated with the following transitions for an electron in the hydrogen atom.
   a.) $n = 3$ to $n = 2$ b.) $n = 4$ to $n = 2$ c.) $n = 5$ to $n = 2$ d.) $n = 6$ to $n = 2$ e.) $n = 2$ to $n = 1$

03. What is the wavelength of light associated with each transition in number 2 and determine how that light is classified from the following choices (green, infrared, violet, orange, ultraviolet, blue)?

1. -2.178×10^{-18} J, -5.445×10^{-19} J, -2.420×10^{-19} J, -1.361×10^{-19} J, -8.712×10^{-20} J, -6.050×10^{-20} J
2. a.) 3.025×10^{-19} J   b.) 4.084×10^{-19} J   c.) 4.574×10^{-19} J   d.) 4.840×10^{-19} J   e.) 1.634×10^{-18} J
3. a.) 657 nm-orange   b.) 486 nm-geen   c.) 434 nm-blue   d.) 411 nm-violet   e.) 121 nm-ultraviolet

04. What is the frequency of violet light with a wavelength of 425 nm?

05. Yellow light has a wavelength of 610 nm. What is the energy of a photon of yellow light?

06. What is the de Brogliewavelength of an electron traveling at 5 x 10^6 m/s?

07. Sugar of mass 70.0 kg is thrown out the window at 15.0 m/s. Calculate the de Broglie wavelength of this sugar.

08. The uncertainity in an electron's position is $\Delta x = 525$ nm. What is the minimum uncertainity in the electron's velocity, Δv?

4. 7.06 x 10^{14} hz   **5.** 3.25 x 10^{-19} J   **6.** 0.145 nm   **7.** 6.31 x 10^{-37} m = 6.31 x 10^{-28} nm   **8.** 110 m/s