

WOC Chem I Objectives #4 Ch 11

1. How was Bohr's model of an atom different from Rutherford's? How is each of those models different from the modern wave mechanical model?
2. Describe a wave in terms of frequency, wavelength, speed, and amplitude. Draw a diagram to illustrate.
3. Identify the major regions of the electromagnetic spectrum and indicate relative wavelength.
4. Explain how the energy of radiation is related to wavelength and frequency. Use an equation to illustrate your explanation.
5. What is meant by the expression, "Radiant energy has a dual nature?"
6. Explain why ions emit light when heated. Why do different types of ions emit different colors of light?
7. Explain what is meant by energy quantization.
8. Contrast an orbit with an orbital.
9. Describe these rules:
  - Heisenberg Uncertainty Principle
  - Aufbau Principle
  - Pauli Exclusion Principle
  - Hund's Rule
10. Construct a table which compares s, p, d, f orbitals in terms of size, shape, and energy.
11. Describe the significance of each component of this term:  $2p^6$
12. How many electrons can occupy any orbital? Compare their spins.
13. Using the box method to show how the electrons of calcium and chlorine are distributed, then write out the configuration. Be able to write complete electron configurations for any element.
14. Using a periodic table and no pre-drawn boxes. Write the electron configuration for copper and thorium.  
Be able to write complete electron configurations for any element using the periodic table.
15. Define these terms: quantum photon photoelectric effect line spectrum  
core electrons valence electrons
16. Explain how to write an abbreviated electron configuration. Identify this element;  $[\text{Kr}] 5s^2 4d^1$   
Write abbreviated electron configurations for Si, Rb, Pr, and Mn.