Chapter 4: The Arrangement of Electrons in Atoms

Section 1: The Development of a New Atomic Model

Section 2: The Quantum Model of the Atom

Please read pages 97 – 106 in your textbook. Answer the following questions, these will be the basis of your notes on this section.

1. Define electromagnetic radiation.
2. What are some of the other forms of electromagnetic radiation?
3. What speed does all forms of electromagnetic radiation travel at?
4. What is the numeric value?
5. Define wavelength.
6. What is its symbol?
7. What unit is wavelength measured in?
8. Define frequency.
9. What is its symbol?
10. What unit is frequency measured in?
11. Write the equation that relates wavelength and frequency.
12. In what way are these proportional?
13. What are the colors of visible light?
14. Which color has the highest frequency?
15. Which color has the shortest wavelength?
16. Describe the photoelectric effect.
17. Define a quantum.
18. What relationship did Planck propose for a quantum of energy and the frequency of radiation?
19. Explain how Albert Einstein used Planck’s quantum studies to explain the photoelectric effect.
20. Define photon.
21. Describe bright line emission spectra.
22. What was Niels Bohr’s theory of the arrangement of electrons in an atom?
23. Define ground state and excited state.
24. How did Bohr explain the bright line emission spectra?
25. Where did Bohr’s model fall short?
26. How did this change the view of the electron?
27. What is the Heisenberg Uncertainty Principle?
28. What is the Schrodinger Wave Equation?
29. How did the equation change the way we view the location of an electron in an atom?
30. Define orbital.
31. Define Quantum theory.
32. What are solutions to the Schrodinger wave equation known as?