Key:

Chapter 9 material:

1. Wavelength is the distance between adjacent wave crests.
2. What color light has the shortest wavelength? Longest?
   Shortest - Violet
   longest - Red
3. Gamma rays have the highest energy in the electromagnetic spectrum.
4. What is frequency?
   The # of cycles or Crests that Pass through a stationary pt. in 1 second
5. Describe the old quantum theory:
   Created by Bohr, described interal Structure of atom, elect. travels in orbits around nucleus, ground → excited state
6. ground State is a particle's lowest energy level. If energy is added to this particle, it moves to an excited State
7. Describe the main points of the Quantum mechanical model.
   Electrons exhibit
   wave-particle duality
   * Orbital = Probability Path
8. Identify and describe the 4 quantum numbers.
   a. Principle Quantum # - # of Orbitals
   b. Angular Momentum # - Shape of Orbital

c. Magnetic Quantum # - orientation on axis

d. Spin Quantum # - direction elect. spins in orbital.

Matching:

9. Valence shell B	a. Electrons in the valence shell
10. Valence electron A	b. Outermost shell of electrons
11. Core electron D	c. Nucleus and core electrons
12. kernel C	d. Electrons that are not located in the valence shell
13. degenerate G	e. Shows the occupation of the orbitals by electrons for a specific atom
14. The original energy level of the electron H	f. photon
15. Electron configuration E	g. When two electrons around a nucleus have the same set of 4 quantum numbers.

16. A particle of light with the same energy as a wavelength of a particle of energy of light. F

h. Ground state

17. Developed the original theory for the internal structure of an atom. "The Old Quantum theory" I

i. Niel Bohr

18. Wavelength and Frequency are inversly Proportionate. Therefore, as wavelength increases, frequency will decrease

19. Explain the duality of photons:

a. Photons can act as either a wave or particle based on the situation / environment they are in.

20. Who is Heisenberg, and what is he famous for?

Uncertainty Principle - States that it is impossible to know electron's speed + direction.

Wave - particle duality makes it impossible to trace an electron's path.