

Chapter 12 HW

Review Questions: 8, 9, 10, 18, 20, 26

Exercises: 8, 9, 10, 16, 17, 21, 30, 31, 32, 33, 35

Additional:

1. Which of the following is not an element: hydrogen, carbon, oxygen, or water?
2. What determines the type of chemical element?
 - a. number of electrons
 - b. number of protons
 - c. number of neutrons
 - d. relative number of all particles within the atom
3. Where were most of the elements found on Earth formed?
4. A neutral copper atom with one extra neutron is
 - a. no longer copper
 - b. an ion
 - c. an isotope
5. Identify the number of protons and neutrons in each of the following atoms and determine whether it is a regular atom or an isotope.
 ${}^4_2\text{He}$ ${}^{55}_{26}\text{Fe}$ ${}^{13}_6\text{C}$ ${}^{235}_{92}\text{U}$ ${}^2_1\text{H}$ ${}^{17}_8\text{O}$
6. Suppose a certain atom has four energy levels. Assuming that all transitions between levels are possible, how many spectral lines will this atom exhibit?
7. An electron drops from the 4th energy level to the 3rd and then to the 1st within an atom. Two frequencies of light are emitted. How does their combined energy compare to the energy if the electron drops directly from the 4th to the 1st and emits one frequency of light?
8. Is it possible for an atom to absorb or emit 1 ½ photons?
9. How can you tell the blue line emitted from one element as compared to a blue line emitted from a second element?