

Chapter 30

Example Problems

1. In Greek, atomos means _____.
2. John Dalton created an elementary atomic theory. Fill in the blanks below for the theory:
 - a. Elements are made of _____
 - b. Atoms of a given element are _____
 - c. Atoms of different elements _____
 - d. Atoms cannot be _____
 - e. Atoms of different elements combine in _____

 - f. In chemical reactions, atoms are _____
3. What is the “plum pudding” model for the atom?
4. What did the Geiger-Marsden Experiment tell us about atoms?
5. Describe the problems with Rutherford’s Model.

6. What is the Bohr model?

7. Fill in the missing information:

Symbol	Name	Allowed Values
n		$1, 2, 3, \dots$
ℓ		$0, 1, 2, \dots, n - 1$
m_ℓ		$-\ell, -(\ell - 1), \dots, +(\ell - 1), +\ell$

8. A sodium vapor lamp is placed at the center of a large sphere that absorbs all the light reaching it. The rate at which the lamp emits energy is 100 W; assume that the emission is entirely at a wavelength of 590 nm. At what rate are photons absorbed by the sphere?

9. What is the photoelectric effect and the Compton effect?

10. de Broglie suggested that $p = h/l$ might apply not only to _____.

11. What are fermions, bosons, hadrons, leptons, mesons, and baryons?

12. What are the names and symbols for the 6 types of quarks?

13. What is “color” for quarks?