

Unit 1 Review: Structure and Properties of Matter

Part 1: Atomic Theory, Isotopes, Periodic Trends

Concepts:

- Atomic Theory
 - Contributions of Dalton, Thomson, Rutherford, Chadwick, Bohr
 - Describe Rutherford's goldfoil experiment.
- Isotopes
 - What is an isotope? How would you identify one.
 - What is the unit for an isotope?
 - Be able to calculate average atomic mass of an element.
- Periodic Table and Trends
 - What are the major groups in the periodic table?
 - Who is the modern father of the periodic table?
 - Compare and contrast groups and periods.
 - Describe the atomic trend for: atomic radius, electronegativity, electron affinity, ionization energy.
 - Be able to describe each of the above terms.
 - What is larger, first ionization energy or second ionization energy
- Lewis Structures
 - Be able to draw a Lewis structure for various molecules.
- Molecular Forces
 - List and describe the two types of intramolecular forces
 - List and describe the three types of intermolecular forces. Which is strongest? Weakest?
 - How may you identify a covalent, polar covalent, and ionic bond?

Be able to:

- Calculate average atomic mass
- Draw Lewis diagrams for a given molecule, identify if it's polar

Practice Questions:

Page 97 #2, 3, 5, 6, 7, 8, 9

Page 90 # 3, 15, 21

Page 45 #4, 6, 7, 19

Part 2: Naming Compounds and Balancing

- What is the law of conservation of mass?
- What is meant by the term binary compound?
- What is a polyatomic ion?
- What does ‘-ate’, ‘ite’, ‘per’, and ‘hypo-ite’ mean in terms on the number of oxygen atoms an oxyanion contains.
- What is the name difference between H_2O_2 and H_2O ?

Be able to:

- Recognize and name various compounds
 - This includes multivalent, ionic, covalent, polyatomic, and acids
- Write chemical formulas
- Balance equations

Naming Practice

Hydrogen sulfide

Aluminum oxide

Sulfur tetrachloride

Hydrobromic acid

Calcium oxide

Ammonium chloride

Zinc carbonate

Iron (II) sulfide

Arsenic trifluoride

Lead (II) sulfate

Hypochlorous acid

CO

$LiHCO_3$

CS_2

HgO

$H_2S_{(aq)}$

HI

$Cr(ClO)_3$

Na_2O_2

CO_2

$Ba(ClO_3)_2$

$Co(NO_3)_2$