

The following topics should be used along with the homework assignments, and lab materials to help you know what will be covered on each exam. These will make up the majority of the exam, but in some cases I may also put questions on the exam from topics that were covered in class or in the assigned reading.

Chapter 1-

- Scientific Notation
- Significant Figures
- Unit Conversions
- Metric System(including prefixes: milli-, centi-, kilo-)
- Density (and calculations involving density)

Chapter 2

- Atomic Structure, Sub-Atomic particles (proton, neutron, electron)
- Ions
- Isotopes
- Organization of the periodic table

Chapter 3-

- Light
- The Bohr model of the atom
- What causes atomic emission/absorption of light
- Electron Configurations
- Valence electrons
- Orbitals
- Periodic Trends (Atomic Size, Ionization Energy, Electronegativity, etc.)

Chapter 4-

- States of Matter (Solid, Liquid, Gas)
- Elements/Atoms, Compounds, and Mixtures
- Chemical Formulas
- Ionic Compounds vs. Molecular Compounds
- Predicting formulas of Ionic Compounds
- Naming Ionic & Molecular compounds

Chapter 5-

- Moles
- Calculation of Molar Mass/Formula Mass
- Conversions involving grams, moles, number of atoms or molecules etc.
- Mass Percentages
- Empirical Formula and Molecular Formula of a compound

Chapter 6-

- Lewis structures
- Resonance Structures
- Electronic and Molecular Shapes
- Electronegativity and Polarity
- Intermolecular Forces

Chapter 7-

- Properties of liquids and solids
- Phase Changes
- The relationship between temperature and heat/energy(e.g. heat capacity calculations)
- Exothermic vs Endothermic

Chapter 8-

- Kinetic Molecular Theory
- Ideal Gas Law
- Dalton's Law

Chapter 9-

- Properties of Solutions
- Electrolyte(ionic) vs. non-electrolyte solutions
- Concentration calculations, especially Molarity.
- Dilution calculations
- Colligative Properties

Chapter 10-

- Writing and balancing chemical equations.
- Precipitation reactions and writing net ionic equations
- Neutralization reaction
- Classifying chemical reactions(Combustion, Acid/Base Neutralization, and Ionic/Precipitation)
- Determine oxidation numbers
- Identify the oxidizing/reducing agent and element that was oxidized/reduced in a given reaction.

Chapter 11-

- Conversions using chemical reactions (solid, solution, gas phases, and heat)
- Limiting reactants, theoretical yield, percent yield

Chapter 12-

- Arrhenius and Bronsted-Lowry acid-base definitions
- Identifying acids, bases and their conjugate base/acid pairs.
- Titrations
- pH calculations
- Buffers

Chapter 13-

- Calculation of equilibrium constants and what they mean
- Le Chatelier's principle

Chapter 14-

- Alpha, Beta, and Gamma radiation and their effect on the nucleus they were emitted from.
- Half Lives