

Review sheet for Final Exam Chemistry 101 Fall 2010

Introduced in Chapter 1 and continued in later chapters

1. Kinetic molecular theory and atomic theory.
2. Nanoscale, macroscale, and symbolic representations.
3. Features of atoms, elements, molecules, and compounds.
4. Phases of matter.
5. Physical and chemical transformations.
6. Measurements.

Introduced in Chapter 2 and continued in later chapters

1. Atomic structure and isotopes.
2. Significant figures and scientific notation.
3. Mole and molar mass. Avogadro's number (N_A) for # items-mole conversions. Molar mass (MM) for mass-mole-atom or molecule conversions (using N_A and MM).
4. General aspects of the periodic table.

Introduced in Chapter 3 and continued in later chapters

1. Ions, ionic compounds, and solutions of ionic compounds.
2. Percent composition (mass %).
3. Molecular compounds.
4. Chemical formulas and naming of ions, molecules, and compounds.
5. Empirical formula and molecular formula. Applying N_A , MM, and mass %, which are all ratios (#items/mole, #g/mole, #g/#g).

Introduced in Chapter 4 and continued in later chapters

1. Basic understanding of a chemical equation.
2. Balancing chemical reactions and conservation of mass.
3. Mole ratio in chemical reactions.
4. Limiting reactant.
5. Percent yield.
6. Percent composition and empirical formula.

Monday, Dec. 6th, 4:30 – 7:00 PM, SH C260

Introduced in Chapter 5 and continued in later chapters

1. Net ionic equations.
2. Acid-base reactions and titrations.
3. Molarity.

Introduced in Chapter 6 and continued in later chapters

1. Kinetic, thermal, and chemical energy.
2. Energy transfer and conservation of energy.
3. Temperature, heat transfer, exothermic, endothermic, and enthalpy.
4. Energy transfer for T changes, phase changes, and chemical changes.
5. State function, path function, and Hess's Law.

Introduced in Chapter 7 and continued in later chapters

1. Photons and their energy, wavelength, and frequency.
2. Quantized energy levels, including photon absorption, photon emission, photoelectric effect, and ionization.
3. Electronic configurations, including energy levels, atomic orbitals, quantum numbers, orbital box diagrams, valence electrons, and core electrons.
4. Periodic trends in size and ionization energy (Chapter 7), and electronegativity (Chapter 8).

Introduced in Chapter 8 and continued in later chapters

1. Electronegativity and nonpolar covalent, polar covalent, and ionic bonding.
2. Lewis structures, inc. resonance structures but not formal charge.
3. Bond energy, bond strength, and bond length (Chapter 6 also).

Exam questions can be

1. Quantitative problems, 2. Qualitative problems, or 3. Open-ended response.

Exam questions based on

1. Lecture material, examples and practice problems, 2. Homework (OWL, textbook, group), and 3. Recitation quizzes.