

Name: _____

Date: _____

Chemistry 11 Final Exam Preparation

Final Exam: 60 Multiple Choice Questions worth 60 marks

10 Written Response Questions worth 40 marks

The final exam is worth 20% of the entire course grade

Study Suggestions:

- take the final exam seriously, meaning and organized, manageable study schedule
- if you want to have a chance to do well, start studying **at least** three weeks in advance
- study 30 minutes per day for the first two weeks, and then increase daily study time in the last week
- familiarize yourself with the chem 11 course checklist to get an overall view of what you learned in the course
- set up and stick to a study schedule that specifies daily study times and daily study topics
- read over notes unit by unit, trying one or two old assignment questions for each new concept
- at the completion of study for a unit, redo the original unit test by covering old answers and mark; analyze errors and do extra questions on concepts that were troublesome
- as you move ahead, briefly review/summarize the units you have already studied, before studying the next unit
- complete the course review/practice exam for the course
- ask for help when necessary
- study with a partner or in a small group to help each other out, but make sure the focus is on Chemistry

Chemistry 11 Review

Chapter 1: Safety

- Refer to safety recommendation for the lab (handout) -> what to do/ what not to do
- Accidents, (dealing w/ and priorities), safety precautions -> what to do if more than one accident occurs, use of medical equipment
- Safe conduct and procedures -> common sense, lab safety
- Reading Reagent Labels -> symbols for danger, warning, caution, and indicators, ex. flammable, corrosive etc.
- WHMIS: Workplace Hazardous Material Information System -> know the classes (A-F and brief descriptions, recognize the symbols)
- Safety equipment -> how to use
- 5 chemical hazards -> oxidizers, flammables, corrosives, reactives, and poisons.
- Disposal of chemicals -> used/unused chemicals

Chapter 2: Measurement

- know: base units, derived units
- Conversion factors, multiple conversions
- Precision and accuracy
- Uncertainty
- Density and units
- ~~Determining density from graphs~~
- Scientific Notation
- Sig. Figs.
- Rules for Sig. Figs for \times/\div , $+/-$

Chapter 3: Matter

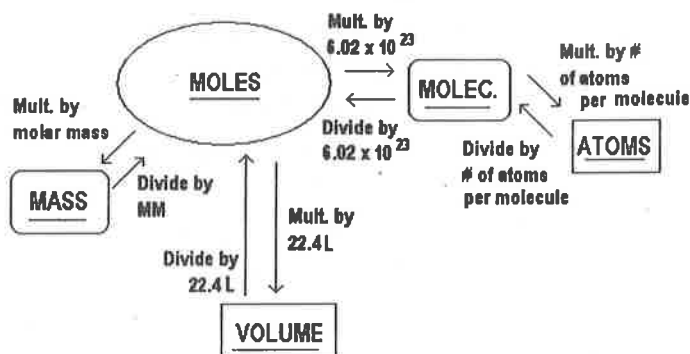
- Qualitative -> non numerical
- Quantitative -> numerical
- Intensive & Extensive properties
- Physical & Chemical changes
- Homogenous & Heterogeneous Mixtures
- Identifying ions, atoms, and molecules
- The difference between compounds and mixtures
- Properties of solids, liquids, gases
- Melting and boiling points.

Chapter 4 Periodic Table

- Periods -> horizontal rows
- Families -> vertical columns
- Diatomic molecules -> molecules w/ 2 atoms (only 7!)
- Ionic compound -> name it and give a formula
- Include polyatomic ions
- Naming/formulas of Acids, oxyacids
- Naming/formulas of hydrates
- Name/formulas for covalent compounds (using prefix-naming system)

Chapter 5: Moles

- The fundamental unit for measuring amount!
- Molar mass
- 6.02×10^{23} (Avogadro's number)
- 22.4 L/1 mole of any gas
- Know how to go from moles-moles, moles-mass, moles- volume, moles- molecules, molecules-atoms (basically mole chart)
- % composition - percentage by mass of each element in a chemical formula $\rightarrow = \text{mass} / \text{total mass}$
- Empirical formula - formula of a compound determined from experimental data
- Molecular formula - actual formula of the compound $\rightarrow = \text{molar mass} / \text{empirical mass}$



Chapter 6: Chemical Reactions

- Enthalpy \rightarrow heat contained in a system ($\Delta H = H_{\text{products}} - H_{\text{reactants}}$)
- Endothermic \rightarrow absorbs heat ($+\Delta H$)
- Exothermic \rightarrow releases heat ($-\Delta H$)

- Types of reactions (see pg.118)
- Synthesis \rightarrow combine elements into one compound
- Decomposition \rightarrow one compound, breaks into elements
- Single Replacement \rightarrow element + compound, interchange metals or non-metals that are present
- Double Replacement \rightarrow compound + compound, interchange positive ions in compounds
- Neutralization \rightarrow Acid + Base, water is one product; remaining ions combine to form salt
- Combustion \rightarrow (A substance whose formula starts with "C") + O_2
 $CO_2 + H_2O$ (if H present) + SO_2 (if S present)
- Law of Conservation of mass, atoms, electrical charge, energy \rightarrow the total amount does not change in a chemical reaction (closed system)

- Balancing!

Chapter 7: Stoichiometry

- Stoichiometry \rightarrow the method to calculate the quantities of chemicals in a chemical reaction. Need balanced equations. Use coefficients for mole ratios.
- Equations \rightarrow know how to go from:

Mole - Mole

Mole - Mass

Mass - Volume

Mass - Mass

Volume - Volume

- Excess & Limiting Reactants (see pg.132)
- Definitions: Mole ratio, limiting reactant, excess reactant

Chapter 8: Atomic Theory

- Quantum Mechanics -> protons & neutrons in nucleus. The closer the orbital to the nucleus, the lower the energy. Electrons don't follow a specific pathway.
- Know quantum numbers and what they each represent:
 - 1- n energy level
 - 2- l shape of orbital
 - 3- m orientation (x,y,z etc) of orbital
 - 4- m_s spin of electron
- know the different orbital shapes
- know regular notation, e.g.) O = 1s²2s²2p⁴
- know core notation, e.g.) Cl = [Ne] 3s²3p⁵
- know core & regular notation for ions. RULE: P before S before D (People Should Dream)
- know what valence electrons are
- know what "isoelectronic" is
- Remember: make the "d" orbital full if there are 4 or 9 electrons e.g.) s²d⁴ -> s¹d⁵
s²d⁹ -> s¹d¹⁰

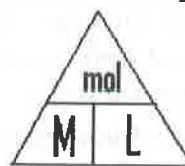
Chapter 9: Bonding

- Definitions: electrostatic force, ionization energy, electronegativity, intermolecular force, intramolecular force, valence electron, polarization, octet rule
- Intramolecular Bonds ->
- ionic bonds (electronegativity diff ≥ 1.7)
- polar covalent bonds (between 0.2 -1.7)
- non-polar covalent (0.0-0.2)

- Intermolecular Bonds -> London forces, dipole – dipole, hydrogen bonds
- Know Lewis Structures and exceptions: beyond octet rule, sub octet
- Know molecular shapes
- Know resonance structures and molecular polarity

Chapter 10: Solubility

- definitions: solution, solute, solvent, saturated, solubility, concentration
- Molarity calculations



- Dilution: $M_1V_1 = M_2V_2$
- Dissociation equations with stoich
- Conductivity
- Molarity, Dilution, Dissociation combined problems
- Precipitation (using table)
- Formula, Complete, and Net Ionic Equations
- Qualitative Analysis (Flow Charts) – Selective Precipitation