

## Final Exam Review Sheet

### Exam Details

- Second Semester comprehensive test (chapters 11 through 20)
- First hour: 10 Written Questions (50 pts)
- Second hour: 50 MC Questions (50 pts)
- 100 points

### I will provide

- Periodic table
- Applicable data tables

### You should bring

- Pencil
- $8\frac{1}{2} \times 11$  "cheat" sheet
- calculator
- Your Book!

Concept Review (not exhaustive - meant to supplement your review)

### Chapter 11 Atomic Orbitals

Rutherford's Atom

Basics of E/M Radiation

Bohr Model of the Atom

Energy levels of the H atom

Quantum Mechanical Model

Energy levels

Orbitals

Electron Configuration

Properties of the Periodic Table

### Chapter 12 Chemical Bonding

Ionic bonding

Covalent bonding

Electronegativity

Bond polarity

Polar molecules

Lewis Dot Structures

Resonance structures

Octet rule

VSEPR

Molecular geometry

### Chapter 13 Gases

What is pressure?

What is volume?

What is temperature?

Converting gas units

Gas Laws

Ideal vs. real gases

Ideal gas law

Gas stoichiometry

### Chapter 14 Liquids and Solids

Intermolecular forces

Hydrogen bonding

Boiling point

Freezing point

Energy involved in phase changes

### Chapter 15 Solutions

Solution = solute + solvent

Aqueous solutions

Solubility

Solution concentration

Sat./unsat./supersat.

Mass % calculations

Molarity calculations

Dilution equation

Solution stoichiometry

### Chapter 16 Acids and Bases

Properties of acids and bases

Arrhenius model

Bronsted-Lowry model

Lewis model

Conjugate acids and bases

Strong acids

Weak acids

Ionization

K<sub>w</sub> calculations

pH calculations

[H<sup>+</sup>], [OH<sup>-</sup>] concentrations

Titration calculations

### Chapter 17 Equilibrium

Reversible reactions

Reaction rates

Catalyst

Hetero/Homo reactions

Dynamic equilibrium

The equilibrium constant

Calculations with K<sub>w</sub>

Le Chatelier's Principle

Predict reaction shifts

### Chapter 19 Nuclear Energy

Write nuclear equations

Decay particles

Decay series

Chain reactions

Half life calculations

Carbon dating

Applications of radioactivity

Nuclear fission

Nuclear fusion

Power plants

### Chapter 20

Naming of Organic Molecules

Naming of Functional Groups