FINAL EXAM REVIEW TOPICS & VOCABULARY

JUNE 2015 CHEMISTRY

Useful info

The second semester final exam will cover everything we have learned since January 26th.

Semester II Vocabulary

The following list contains some of the vocabulary words we have learned this semester.

Reactants
Products
Aqueous
Coefficients
Coefficients
Subscripts
Law of Conservation of Mass
Law of Conservation of Energy
Law of Conservation of Charge
Stoichiometry
Percent Yield
Actual Yield
Theoretical Yield
Limiting Reagent
Excess Reagent
Molarity
Solute
Solvent
Concentration
Acid (all definitions)
Base(all definitions)
pH
pOH
mole
Hydronium Ion
(what is the technical name for 'H+'?))
Hydroxide ion
Neutralization reaction
Solution
Ionic Compounds
molecular compounds
Electronegativity
Atomic Radius
Ion
Electron configuration
Group/family
Period
Noble gases
Octet Rule

Proton
Neutron
Electron
Endothermic
Exothermic
Reactants
Products
Aqueous
Coefficients
Synthesis Reactions
Decomposition Reactions
Single Replacement Reactions
Double Replacement Reactions
Combustion reactions
Chemical Reactions
Lewis Dot structures
Valence electrons
Temperature
Heat
Titration

Things we Learned between January 26th and June 3rd

UNIT 6

1. Describe the evidence that supports the idea that particles have a property we call charge.
2. Use the Thomson model of the atom to account for the fact that neutral atoms can become either positively or negatively charged by the loss or gain of electrons.
4. Describe the evidence that distinguishes ionic from molecular solids.
5. Given the formula of an ionic or molecular substance, state its name.
6. Given the name of ionic or molecular substance, write its formula.
7. From the name or formula of a substance determine whether that substance is ionic or molecular.

UNIT 7

1. Describe chemical changes in terms of rearranging atoms to form new substances.
2. Recognize that the total number of atoms does not change during a reaction because every reactant atom must be included in a product molecule.
3. Recognize that the total number of particles (sum of the coefficients) can change during a reaction because of differences in the bonding ratios of each substance.
4. Learn to describe reactions in terms of macroscopic observations.
5. Learn to describe reactions in terms of microscopic behavior of atoms.
6. Learn to write balanced equations to represent these changes symbolically.
7. Explain that the coefficients in a chemical equation describe the quantities of

a. the individual atoms or molecules involved
b. the moles of the substances involved.
8. Observe basic patterns in the way substances react. Identify these reaction types :
a. Synthesis reactions
b. Decomposition reactions
c. Combustion reactions
d. Single replacement reactions
e. Double replacement (ionic) reactions
9. Describe endo- and exothermic reactions in terms of storage or release of chemical potential energy.

UNIT 8
1. Review Concepts:
a) Determine the molar mass of a substance and use it to convert between the mass and mole measurements. (U5)
b) Relate coefficients and formulas to a molecular diagram of a reaction.
c) Given a chemical reaction stated in words, write a balanced chemical equation. 2. Starting with
- a balanced chemical equation,
- the number of moles of a reactant or product,

determine the number of moles of any other reactant or product involved.
3. Starting with
- a balanced chemical equation,
- the mass of a reactant or product,

determine the mass of any other reactant or product involved.
4. Starting with
- a balanced chemical equation,
- the mass of one reactant,
- mass of product actually produced

calculate the percent yield for the reaction.
5. Starting with
- a balanced chemical equation,
- the mass of the reactants

determine
- which reactant is limiting, and why it limits the reaction,
- the theoretical yield of a product.

6. Given a balanced chemical equation and the amounts of reactants, sketch molecular diagrams to represent the reaction mixture before and after the reaction.
Vocabulary to understand, distinguish, and use correctly:
- Stoichiometry
- Stoichiometric mole ratio
- Theoretical yield
- Actual yield
- Percent yield
- Limiting reactant

UNIT 9
1. Review Concepts:
- Solutions: a homogeneous mixture of a solute dissolved in a solvent; dissolving process
- Energy storage and transfer mechanisms in a molecular system; Energy constants

5. Beginning with a balanced equation and
- volume, temp, and pressure of a gaseous reactant or product
- predict the moles of another reactant or product

6. Relate the molar concentration (molarity) of a solution to the number of moles and volume of the solution.
7. Beginning with a balanced equation and the volume and molarity of a reactant or product,
predict the moles of another reactant or product in the reaction.
8. Describe endothermic and exothermic reaction in terms of
- energy bar graphs and system flow diagrams (LOLOL)

- Balanced equations with a quantitative energy term
- ΔH notation

9. Extend the use of the BCA table to cases involving
- volume of a gas
- volume of a solution, or
- energy of reaction

to determine stoichiometric relationships in a reaction.

10. Vocabulary
- Concentration
- Molarity
- Partial Pressure
- Molar Volume
- Ideal Gas
- Endo-, exothermic
- Enthalpy

UNIT 11 (Note, we skipped Unit 10)

1. Draw the Bohr model for different elements.
2. Identify periodic trends in ionization energy, atomic size and electronegativity. Explain these in terms of the men-in-well model.
4. Use "valence" to describe the electrons that are most readily lost during successive ionizations.
5. Identify the number of valence electrons in the "representative elements".
6. Recognize that at normal temperatures and pressures, for non-metals, the maximum number of valence electrons per atom is eight (with the exception of two for H and He).
8. Use Lewis diagrams to represent the sharing of valence electrons in covalent compounds.

UNIT 14 (Note, we skipped Units 12 & 13)

1. Describe properties of aqueous solutions of acids and bases.
2. Account for differences between acids and bases in terms of the Arrhenius model.
3. Use the Bronsted-Lowry model of acids and bases to identify the proton donor, proton acceptor, conjugate acid and conjugate base in a given equation.
6. Given the mass (or number of moles) of a known strong acid or strong base and the total volume of solution, calculate the [H3O+] and [OH–].
8. Recognize that pH is a way of describing the [H3O+] of solutions using a logarithmic scale. Given the [H3O+] or pH, calculate the other.

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Final exam review strategies:

1. Make priorities. Focus on classes where your grade is on the borderline.
2. Treat yourself well. Eat well and get plenty of sleep.
3. Talk to people about ideas. If you can explain something to someone else, than that knowledge is yours!
4. This is not meant to be comprehensive. This is a skeleton online. Expand it. Fill in as many details as you can.
5. The best things to look at are old quizzes. The next thing to look at is the Reviews we did before tests and your notes.
6. Start studying early!