Final Exam Topics 2009

1. Density –know how to manipulate the equation.
2. What is a volumetric flask?
3. Sig. Fig. zero rules
4. % error calculation
5. Phase diagram interpretation

6. Factors affecting solubility of gases
7. The mole map
8. Balancing equations
9. Inorganic nomenclature.
10. Ideal Gas Law and manipulation of variables. i.e. n = mass/molecular weight

11. Effusion
12. Combined gas law.
13. Percent composition of a compound. i.e. NaOH is 57.5 % sodium by mass.
14. Empirical and molecular formulas
15. Stoichiometry—there are several questions about this.

16. $Q = mC\Delta T$
17. Enthalpy change graphs
18. Endothermic and exothermic (sign on ΔH and placement in a chemical equation).
19. LeChatelier's principle
20. Why does a catalyst change the rate of a reaction?

21. Equilibrium constants and the effects of temperature, pressure and concentration. (which of these three can change the value of the constant?
22. Periodic trends in atomic radius, ionization energy, electronegativity, valence electrons, and activity.
23. Sublevel blocks and electron configuration.
24. Molecular geometries.
25. Effect of polarity on solubility in water.

26. Effect of temperature and pressure on gas solubility.
27. Solution preparation (for example: 80 grams of NaOH could be used to prepare 500 ml of a 4 M NaOH solution)
28. pH
29. Weak acid Ka/pH calculation.
30. Neutralization

31. What is in a buffer solution?
32. Oxidation states of elements in ions.
33. Nuclear equation balancing
34. Accuracy and precision
35. acid dilution rules

36. Distillation
37. Kinetic energy definition
38. When does boiling occur?
39. Interpreting formulas of hydrates
40. basic organic nomenclature and functional groups.

41. Dalton's law of partial pressures
42. Avogadro's number.
43. Change in heat summation equation:
    $\Delta H = \Delta H_{fp} - \Delta H_{fr}$
44. Equilibrium expressions (remember that solids and liquids are not included).
45. Hund's rule

46. Properties of solids. (ionic, metallic, network covalent, molecular).
47. Molality
48. Dilution problems
49. **Allotropes—look this one up.**

50. Titration
51. Solubility rules 1,2, and 3
52. Ksp and molar solubility
53. Oxidation and reduction in chemical reactions.
54. Half life.