Chemistry – First Semester Review 2018

Use these as a study guide to review your notes (The final is 65-75 multiple choice questions)

Unit 1 Matter

Definitions: Meniscus, How to read an instrument (ruler, balance, graduated cylinder, and thermometers), **read all numbers possible and one good guess number.** qualitative and quantitative, precision and accuracy, how to determine percent error, scientific notation, significant figures, metric system (review metric handout) including metric conversions (factor label), density, volume by displacement, Law of Conservation of Mass

Problems:

- If given examples you can read an instrument
- Number of significant figures in numbers already written
- How to multiply and divide with significant figures
- How to write, multiply and divide with scientific notation
- Particle Diagrams
- Metric conversions – factor label method
- Density (density = mass/volume)
- Volume by displacement

Unit 2 Gases

Definitions: gas, standard pressure – all units, pressure, volume, temperature, Know what Standard Temperature and Pressure is (STP) 0 Celsius and 1 atm (STP), all relationships between P, V, T, and n, Inverse and direct relationships and what their graphs look like, Review Diffusion.

Problems:

- Know how to go from Celsius to Kelvin (add 273) and Kelvin to Celsius (subtract 273)
- Change from one pressure to another using Standard Pressures.
- Review the gas problems like in your worksheets. Make a table and solve.

$$\frac{P_1V_1}{} = \frac{P_2V_2}{}$$

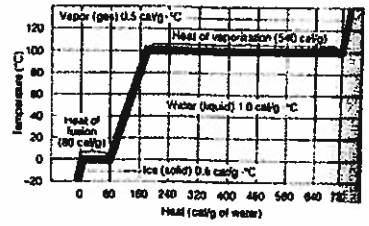
$$n_1T_1 = n_2T_2$$

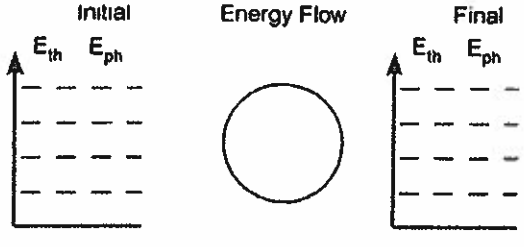
Unit 3 Solids & Liquids (Energy)

Definitions: Solids, Liquids, Specific Heat (C_p), Heat of Fusion (ΔH_F), Heat of Vaporization (ΔH_V)

Problems:

- Energy Transfer Graphs
- Calculating Specific heat problems using Q = (mass) (ΔT) C_p
- Calculating Heat of Fusion problems using Q = (mass) (ΔH_F)
- Calculating Heat of Vaporization problems using Q = (mass) (ΔH_V)
- One system and two system problems!!!!





Unit 4 Atomic Theory

Definitions: Dalton's model of the atom, Thomson's model of the atom, Rutherford's model of the atom, Bohr's model of the atom, Modern day model of the atom including what holds the nucleus stays together, orbitals (s,p,d,f), energy level (n), 3 major rules when writing electron configuration, (electrons fill lowest energy level, electrons don't share if they don't need to, electrons spin in opposite directions), 2 e-'s per orbital, spin, electromagnetic waves, spectrum, velocity of light, frequency, wavelength, photon (quantum). electron, proton, neutron and where they are found, atomic # (Z), mass # or atomic mass (A), isotopes

Problems:

- Calculating 6 things if given 2 (# of protons, # of neutrons, # of electrons, mass #, atomic #, charge)
- Writing electron configurations: whole atom, Noble gas, last row, last orbital
- calculate frequency and wavelength using the formula $c = \lambda\upsilon$ ($c = 3.0 \times 10^8 ms^{-1}$)