Chemistry 111

STUDY GUIDE - EXAM 1

1. Distinguish between: (a) mixture and pure substance (b) element and compound (c) molecular compound and ionic compound (d) molecule and formula unit (e) homogeneous mixture and heterogeneous mixture (f) physical and chemical change/property
2. Given a measurement of mass, volume, or length in one metric unit, convert to another specified metric unit. (Know and be able to use the prefixes: mega-, kilo-, deci-, centi-, milli-, micro-, nano-, pico-; also squared and cubed linear units)
3. Given a temperature in °C, convert to K and vice versa.
4. In all mathematical problems on this and all subsequent exams you will choose the correct number of significant figures in the answer.
5. Given the name of a compound, write its formula and vice versa.
6. Given equations, classify them as to type: combination, decomposition, single replacement, double replacement, or combustion.
7. Given the reactants in words and/or symbols and formulas, complete and balance the reaction, giving correct physical states for each reactant and product.
8. Given the quantity of a substance in grams or number of molecules or atoms, calculate the number of moles present, and vice versa. (Know Avogadro's number.)
9. Given the moles of a compound and its formula, calculate (a) grams compound (b) number of molecules or formula units (c) mass or moles or atoms of each element present in compound.
10. Given the grams of a compound and its formula, calculate (a) moles of compound (b) grams or moles or atoms of each element present in compound.
11. Given the formula of a compound, calculate its percent composition.
12. Given combining masses, or percent composition, plus molar mass of compound, determine the molecular formula of the compound
13. Given the balanced equation for a reaction, and the number of grams or moles of one substance in the reaction, calculate the number of grams or moles of any other substance in the reaction.
14. Given the balanced equation for a reaction, and the number of grams or moles of two or more reactants, determine the limiting reagent and calculate the maximum amount of a specified product produced in the reaction and determine how much of which reagent is left over.
15. Given two of the following or information from which two of the following may be determined, calculate the third: theoretical yield, actual yield, percent yield.
16. Locate and/or identify within the periodic table the following chemical families or groups of elements: representative elements, transition elements (metals), alkali metals, alkaline earth metals, halogens, noble gases.
17. Classify given elements as metals, non-metals, or metalloids using the periodic table.
18. Solve any of the assigned textbook problems.
19. Define or identify the following:

    matter
    pure substance
    compound
    element
    mixture
    molecule
    formula unit