CHM 1010 **GAGE**

Problems Involving Moles (No Reactions)

1. a. How many grams of C_2H_6O are in 0.54 moles of C_2H_6O?

   b. How many atoms of hydrogen are required to form 0.350 mol of C_2H_6O?

   c. How many grams of carbon are in 86.4 g of C_2H_6O?

2. What is the mass of one molecule of calcium carbonate in amu and grams?

3. How many grams of ammonium sulfate can be prepared from 7.81×10^{22} atoms of hydrogen?

4. An analysis of a 2.03 gram sample of chromium oxide yields 1.39 grams of chromium. What is the simplest (empirical) formula for this chromium oxide?

5. a. How many atoms of oxygen are in a molecule of muscovite (mica), $KAl_3Si_3O_{10}(OH)_2$?

   b. How many molecules of muscovite can be formed from 3.11×10^{20} atoms of aluminum?

   c. How many grams of silicon are in 100.0 grams of muscovite?

   d. How many moles of aluminum are in 0.0444 g of muscovite?

1.a. 25 g C_2H_6O
   b. 1.26×10^{24} atoms H
   c. 45.1 g C
2. 1.66×10^{-22} g, 100.1 amu
3. 2.14 g $(NH_4)_2SO_4$
4. Cr_2O_3
5.a. 12 atoms O
   b. 1.04×10^{20} molecules musc.
   c. 21.2 g Si
   d. 3.34×10^{-4} mol Al