Key

CHM 151 Quiz #4a 20 Pts Fall 2000 Name Comp III practice

1. (5 Pts) The compound that is responsible for the characteristic smell in garlic is allicin. Its chemical composition by mass is: 44.4% C; 6.21% H; 39.5% S; and 9.86% O.

   a. (4 Pts) Determine the empirical formula for allicin. (SHOW ALL WORK) (ans) $C_6H_{10}S_2O$

   b. (1 Pt) The molar mass of allicin is 162 g/mol.
   What is its molecular formula? (SHOW ALL WORK)

(Ans) (same as empirical since molar mass = empirical mass

2 (a) What mass of $ZnCl_2$ can be prepared from the reaction of 3.27 grams of zinc with 3.30 grams of HCl? (b) what is the % yield if 5.2 g were recovered?

$$Zn + 2HCl \rightarrow ZnCl_2 + H_2$$

a) Ans 6.17

3. Calculate the molarity of a solution that contains 70.0 g of H_2SO_4 in 280 mL of solution.

Ans. 2.55M

4. What mass of $CaCl_2$ must be dissolved in enough water to produce 2000 mL of 1.25 *M* $CaCl_2$?

Ans 277g

5. How many mL of 18.4 *M* H_2SO_4 are needed to prepare 600 mL of 0.10 *M* H_2SO_4?

Ans. 3.3 mL

6. What volume of 0.130 *M* HCl solution will just react with 0.424 gram of $Ba(OH)_2$?

$$2HCl + Ba(OH)_2 \rightarrow BaCl_2 + 2H_2O$$

Ans. 38.1 mL