Kasey Cooper
9/4/20
CHEM 137 02

Application Questions Chapter 3

1- **Calculate the molar mass of each of the following compounds: 9pts**

   a- Nitric acid, HNO_3 (1 x 1.008) + (1 x 14.007) + (3 x 16.00) = **63.01 g/mol**

   b- Malachite, $Cu_2(OH)_2CO_3$ (2 x 63.546) + (5 x 16.00) + (2 x 1.008) + (1 x 12.011) =

   221.12 g/mol

   c- Caffeine, $C_8H_{10}N_4O_2$ (8 x 12.011) + (10 x 1.008) + (4 x 14.007) + (2 x 16.00) =

   194.19 g/mol

2- **Determine the percent water in $CuSO_4.5H_2O$ to three significant figures. 5pts**

   a. (90.10 g/mol / 249.72 g/mol) x 100% = **36.1%**

3- **Consider this question: What is the mass of solute in 200.0 L of a 1.556-M solution**

   of KBr. 6pts

   a. Outline the steps necessary to answer the question.

      1. 1 L has 1.556 mol

      2. 1.556 mol/L x 200.0 L = 311.2 mol

      3. (1 x 39.098) + (1 x 79.904) = 119.002 g/mol

      4. 311.2 mol x 119 g/mol = 37,030 g = **37.03 kg**

   b. Answer the question.

      1. Mass solute = **37.03 kg**