**Homework #9: Chemistry 1013 Spring 2012**

**Due Friday 20 April in class 18 pts**

Your name: \_\_\_\_\_\_\_\_\_answers\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**9.1) Compute the desired quantities on the right using the quantities on the left. (Round atomic masses to the nearest whole # to get MW. Assume 1 mole = 6.022\*1023 )**

**360 g H2O = \_\_\_20\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ mole H2O =360 g H2O \* 1 mol H2O/18 g H2O=20**

**1.2318\*1023 CO2 molecules = \_\_\_\_9\_\_\_\_g CO2 = 1.2318\*1023 molecules CO2\***

**1 mol CO2 \* 44 g CO2 = 9 g 6.022\*1023 molecules CO2 mol CO2**

**0.08 moles CaCO3 =\_\_\_\_\_\_\_\_8\_\_\_\_\_\_\_\_g CaCO3 =0.08 mol CaCO3 \* 100 g/mol CaCO3= 8**

**196 grams N2 = \_\_\_\_\_\_\_\_\_\_7\_\_\_\_\_\_\_\_moles N2 = 196 g N2 \* 1 mol N2/28 g N2 = 7**

**9.963\*10-24 moles O2 =\_\_\_\_\_6\_\_\_\_\_\_\_ molecules O2 = 9.963\*10-24 mol\* 6.022\*1023molecules/mol**

**2.324\*10-22 g CO =\_\_\_\_\_\_\_\_5\_\_\_\_\_\_\_\_ molecules CO = 2.324\*10-22 g\***

**1 mol CO/28 g CO\* 6.022\*1023 molecules CO/mol CO=5**

**9.2) % Composition (2 pts each/4 pts total)**

1. **Given a compound containing C and H whose weight percents are: 75 wt % C; 25 wt% H determine the compound’s empiric formula (show work below)**

**Element mass At. Wt (g/mol) mol = mass/At Wt mol/min mol**

**C 75 g 12 =75/12=6.25 6.25/6.25=1**

**H 25 g 1 =25/1 = 25 25/6.25=4**

**=>empiric formula is CH4**

1. **Given a compound containing C,H and O whose weight percents are: 52.17 wt % C;**

**34.78 % O and 13.05% H, determine the compound’s empiric formula (show work below)**

**Element mass At. Wt (g/mol) mol = mass/At Wt mol/min mol**

**C 52.17 g 12 52.17/12=4.347 4.347/2.173=2 Empiric formula is**

**H 13.05 g 1 13.05/1= 13.05 13.05/2.173=6 C2H6O**

**O 34.78 g 16 34.78/16=2.173 2.173/2.173=1**