CHM1350
In-Class Assignment
September 15, 2006
Name ____________________________
Partner(s) _________________________

Please answer the following problems in the space provided. Show all your work, use correct significant figures and units, and circle your final answers. You may work individually or in groups and you may use your textbook, class notes, and instructor or class resources. You must hand in this assignment before you leave – it will be graded.

Complete the Summary Problem (parts I and II) on p. 114 in MSJ.

Note: Although you may look up the necessary formulas in the book for this assignment, you will not have these available on a test or quiz. You must memorize the names, formulas, and charges of the common polyatomic ions, as discussed in class on 9/11. These would make an excellent topic for a quiz sometime soon!

I. \( \text{[NH}_4\text{ClO}_4] \) ammonium perchlorate 1.6 \times 10^4 lbs.
   a. \( \text{NH}_4\text{ClO}_4 \) ammonium perchlorate
   b. \( \text{NH}_4\text{ClO}_4 \) ammonium chlorate
   c. \( \text{NH}_4\text{ClO}_4 \) ammonium chlorite
   d. \( \text{NH}_4\text{ClO}_4 \rightarrow \text{NH}_4^+ + \text{ClO}_4^- \) ions

b. Yes. Because the solution contains charged ions it will conduct an electric current.

II. 2.5 M \( \text{H}_2\text{SO}_4 \) 1.6 x 10^(-6) \( \text{Na}_2\text{ClO}_4 \) (483.59 g \( \text{Na}_2\text{ClO}_4 \) / 1 mol \( \text{Na}_2\text{ClO}_4 \) / 117.50 g \( \text{Na}_2\text{ClO}_4 \) ) \( \text{Na}_2\text{ClO}_4 \) = 2.5 M

1 mol \( \text{Na}_2\text{ClO}_4 \) = 143.5 g + 4(1.01 g) + 35.45 g + 4(16.00 g) = 117.50 g
2 mol \( \text{Na}_2\text{ClO}_4 \) 2 d.p. = 52.6.
(1) \[ \text{75.69 g C} \left( \frac{1 \text{ mol C}}{12.011 \text{ g}} \right) = 6.302 \text{ mol C} \times 0.9694 = 6.05 \times \] Multiply by 2, to get an integer, must also multiply H and O by 2.

\[ 2.89 \text{ g H} \left( \frac{1 \text{ mol H}}{1.011 \text{ g}} \right) = 8.78 \text{ mol H} \times 0.9694 = 8.58 \]

\[ 16.51 \text{ g O} \left( \frac{1 \text{ mol O}}{16.00 \text{ g}} \right) = 1.031 \text{ mol O} \times 0.9694 = 1 \]

\[ \frac{6.05 \times 2 \times 13.012 \text{ C}}{8.58 \times 2 \times 1.008 \text{ H}} \frac{10 \times 2}{2} = \text{C}_{19} \text{H}_{18} \text{O}_2 \]

(2) 2 \times 200 \text{ mg} = 2.000 \text{ g/mmol} \left( \frac{1 \text{ mol g}}{1 \text{ mg}} \right) = 0.400 \text{ g/mmol.}

\[ \text{Pd, mg} : 13(12.01) + 8(1.01) + 2(16.00) = 2.06 \text{ g/mmol.} \]

\[ 0.400 \text{ g/mmol} \left( \frac{1 \text{ mol g}}{206.31 \text{ g/mmol}} \right) = 0.00199 \times 10^{-3} \text{ mol g/mmol.} \]

Pd. 5.5 g.