

Worksheet due dates: **Mon, 5/18, 1:10 PM (L1)** , **Wed, 5/20 1:10 PM (L2)**. To complete, show *detailed steps* on how to get the given answer for each problem. *Failure to use this form for work and answers will result in a point penalty.*

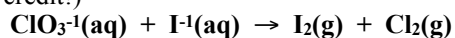
Problem 1: How many grams of $\text{Fe}(\text{OH})_2$ ($K_{\text{sp}} = 1.8 \times 10^{-15}$) will dissolve in one liter of water buffered at $\text{pH} = 12.00$?

Answer to Problem #1: **$1.6 \times 10^{-9} \text{ g}$**

Problem 2: A solution of AgNO_3 is added dropwise to a solution that is 0.10 M Cl^- and 0.10 M Br^- . Neglecting volume changes, **which salt precipitates first**, AgCl ($K_{\text{sp}} = 1.8 \times 10^{-10}$) or AgBr ($K_{\text{sp}} = 3.3 \times 10^{-13}$)? What is the concentration (M) of the anion that precipitates first when the second anion begins to precipitate?

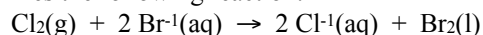
Answer to Problem #2: **AgBr , $1.8 \times 10^{-4} \text{ M}$**

Problem 3: Using the *unbalanced* reaction buffered at pH = 4.41 show below, determine the number of electrons transferred during the reaction. (Show the balanced reaction for credit!)



Answer to Problem #3: Ten electrons are transferred.

Problem 4: Determine ΔG° for a cell that utilizes the following reaction:



The standard reduction for the chlorine is 1.360 V and the standard reduction for the bromine liquid is 1.077 V.

Answer to Problem #4: -54.6 kJ

Problem 5: If an electrolysis plant operates its electrolytic cells at a total current of 1.0×10^6 amp, how long will it take to produce one metric ton (one million grams) of Mg(s) from seawater containing Mg^{2+} ?

Answer to Problem #5: 2.2 hours