Acid-Base – pH/SS **Name:** _____

For complete credit show all the work for the calculations and give the answers in the correct significant figures.

1) Write the conjugate base for the following acids:
   HIO_4, NH_3, HSO_4^-

2) Write the conjugate acid for the following bases:
   HCO_3^-, F^-, NO_3^-

3) Identify the acid, base, conjugate acid, conjugate base in the following reaction.
   a) $CO_3^{2-} + HSO_4^- \rightleftharpoons HCO_3^- + SO_4^{2-}$

   b) $HOClO_2 + H_2O \rightleftharpoons H_3O^+ + OClO_2^-$

   c) $HSeO_4^- + NH_3 \rightleftharpoons NH_4^+ + SeO_4^{2-}$

4) Circle the stronger of the acid or base in the following pairs of acids and bases. (indicate if you are comparing them as acids or bases)
   a) H_2SO_3 vs H_2SO_4 b) Cl^- vs I^-

   c) $CH_3CHClCOOH$ vs CH_2ClCH_2COOH d) OH^- vs H_2O

5) Classify the following as Lewis acids or Lewis bases:
   a) Fe^{3+} b) H_3O^+ c) HSO_4^- d) NH_3

6) Calculate the pH, pOH, $[H_3O^+]$ or $[OH^-]$ concentrations as indicated in the problem:
   a) $[H_3O^+]$ in a HCl solution of pH 3.76.

   b) pH of a 0.056 *M* HNO_3 solution

   c) pOH for 0.039 M HCl

   d) pH for 2.5×10^{-4} M $Ca(OH)_2$

   e) $[OH^-]$ for paint stripper with pH 13.70