Acid-Base – Equilibrium/SS **Name:** _____

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

1) Calculate the pH of the following acidic solutions:
   a) 0.15 M hydrofluoric acid (K_a: 7.1×10^{-4}.) (*ans: 1.99*)

   b) 0.34 M phenol (C_6H_5OH) ((K_a: 1.3×10^{-10}.) (*ans: 5.18*)

2) What is the molarity of a solution of formic acid (HCOOH) whose pH is 3.26? (K_a: 1.7×10^{-4}) (*ans: 2.3 x 10^{-3} M*)

3) Calculate the pH of the following basic solutions:
   a) 0.10 M NH_3 (K_b: 1.8×10^{-5}.) (*ans: 11.11*)

   b) 0.05 M C_5H_5N (K_b: 1.7×10^{-7}) (*ans: 9.96*)

4) What is the K_b of a weak base if a 0.19 M aqueous solution with the pH of 10.88? (*ans:* K_b: 3.04×10^{-6}.)

5) What are the concentrations of HSO_4^-, SO_4^{2-} and H_3O^+ in a 0.20 M solution of $KHSO_4$? (K_a HSO_4^- = 1.3 x 10^{-2}) (*ans: $[SO_4^{2-}]$, $[H_3O^+]$ = 0.045M, $[HSO_4^-]$ = 0.16M*)