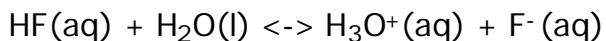


Chem12 Ka/Kb Quiz-150

1)a) Write the K_a expression for this equilibrium :



b) What is the numerical value of K_a for HF? _____

c) What is the numerical value of K_b for F^- ? _____

d) Write the equation for the equilibrium of the F^- ion in an aqueous solution and give the K_b expression.

2) Give the value of K_a for : Oxalic Acid _____

H_2SO_4 _____

Give the value of K_b for : NH_3 _____

NaOH _____

3) $K_a \times K_b =$ _____ (Give the numerical answer)

4)a) Give the equilibrium equation for the sulfite ion (SO_3^{2-}) in water.

b) Find the K_b expression and give the numerical value.

5) Which is the stronger base, SO_3^{2-} , or SO_4^{2-} ?

6) Calculate the $[\text{H}_3\text{O}^+]$ in a 0.50M solution of CH_3COOH .

7) Calculate the $[\text{H}_3\text{O}^+]$ in a 0.40M solution of NH_3 .

8)a) Write the ionization equation for HNO_2 .

b) If the $[\text{H}_3\text{O}^+]$ in a 3.0M HNO_2 solution is 0.023. find $[\text{NO}_2^-]$.

9) Will HCO_3^- act as an acid or a base in an aqueous solution? (Hint : Find K_a and K_b).

Answer : 1)a) $\frac{[\text{H}_3\text{O}^+][\text{F}^-]}{[\text{HF}]}$, b) 3.5×10^{-4} , c) 2.9×10^{-11} , d) $\text{F}^- + \text{H}_2\text{O} \rightleftharpoons \text{HF} + \text{OH}^-$, $K_b = \frac{[\text{OH}^-][\text{HF}]}{[\text{F}^-]}$, 2) 5.9×10^{-2} , very large, 1.8×10^{-5} , very large, 3) 1.0×10^{-14} , 4)a) $\text{SO}_3^{2-} + \text{H}_2\text{O} \rightleftharpoons \text{HSO}_3^- + \text{OH}^-$, b) $K_b = \frac{[\text{OH}^-][\text{HSO}_3^-]}{[\text{SO}_3^{2-}]}$, 1.0×10^{-7} , 5) SO_3^{2-} , 6) 3.0×10^{-3} , 7) 3.7×10^{-12} M, 8)a) $\text{HNO}_2 + \text{H}_2\text{O} \rightleftharpoons \text{H}_3\text{O}^+ + \text{NO}_2^-$, b) 0.060 M, 9) base, $K_b > K_a$.