

1) Calculate the pH of the following acidic solutions:

a) 0.15 M hydrofluoric acid ($K_a: 7.1 \times 10^{-4}$) (*ans: 1.99*)

b) 0.34 M phenol (C_6H_5OH) ($K_a: 1.3 \times 10^{-10}$) (*ans: 5.18*)

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

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 $\text{C}_5\text{H}_5\text{N}$ (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 ?
($K_a \text{HSO}_4^- = 1.3 \times 10^{-2}$) (ans: $[\text{SO}_4^{2-}]$, $[\text{H}_3\text{O}^+] = 0.045\text{M}$, $[\text{HSO}_4^-] = 0.16\text{M}$)