Atomic Energy Central School No.4, Rawatbhata
Ch: 7 Equilibrium Module 5 (Worksheet 1)

Subject: Chemistry **Class: XI**

Q.1. What is common ion effect?

Q.2. What is ionic product?

Q.3. How is the degree of dissociation of a weak base related to its molarity?

Q.4. Why would the basic strength of NH_4OH decrease on addition of NH_4Cl?

Q.5. Calculate the ionsation constant of water at 298 K.

Q.6. At 25 °C, 4.2% of 0.10 M formic acid, HCOOH dissociated in aqueous solution. Calculate the acid dissociation constant, K_a for formic acid.

Q.7. What is the relation between disassociation constant of Acid and its conjugate base.

Q.8. What is meant by pK_w of a solution? What is its value at 298K.

Q.9. Lionization constants K_a for formic acid and acetic acid are 17.7×10^{-5} and $1{\cdot}77\times10^{-5}$. Which acid is stronger and how many times the other if equimolar concentrations of the two are taken?

Q.10. What is the effect of temperature on ionic product of water and why?

Q.11. What happens to the ionic product of water if some acid is added into water?

Q.12. The ionization constant of HF, HCOOH and HCN at 298K are 6.8×10^{-4}, 1.8×10^{-4} and 4.8×10^{-9} respectively. Calculate the ionization constant of the corresponding conjugate base.
(Hint: $K_w = K_a \times K_b$)

Q.13. What do you mean by polyprotic acid. Give reason for decrease of successive dissociation constant for them?

Q.14. Acid dissociation constant, K_a for hydrofluoric acid HF at 25 °C is 6.8×10^{-4} M. For a solution of 0.20 M HF, calculate:
i. the concentration of hydronium ion at equilibrium
ii. degree of dissociation
(Hint: $\alpha = \sqrt{((K_a) / C)}$ and $[H_3O^+] = C\alpha$).

Q.15. Base dissociation constant, K_b for ammonia solution, NH_3 at 25 °C is 1.8×10^{-5} M. For a solution of 0.50 M NH_3, calculate:
i. the concentration of hydroxide ion at equilibrium
ii. % dissociation
(Hint: $\alpha = \sqrt{((K_b) / C)}$ and $[OH^-] = C\alpha$).

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