DPP
DAILY PRACTICE PROBLEMS

Class : XIth **Subject : CHEMISTRY**
Date : **DPP No. : 3**

Topic :- Equilibrium

1. Under what conditions of temperature and pressure, the formation of atomic hydrogen from molecular hydrogen will be favoured most?
   a) High temperature and high pressure b) High temperature and low pressure
   c) Low temperature and low pressure d) Low temperature and high pressure
2. Mohr's salt is a:
   a) Normal salt b) Acid salt c) Basic salt d) Double salt
3. pH of 0.05 M $Mg(OH)_2$ is:
   a) 13 b) 10 c) 1 d) Zero
4. In which of the following reactions, the concentration of product is higher than the concentration of reactant at equilibrium? (K = equilibrium constant)
   a) $A \rightleftharpoons B; K = 0.001$ b) $M \rightleftharpoons N; K = 10$ c) $X \rightleftharpoons Y; K = 0.005$ d) $R \rightleftharpoons P; K = 0.01$
5. The values of dissociation constant of bases are given below. Which is the weakest base?
   a) 1.8×10^{-5} b) 4.8×10^{-10} c) 7.2×10^{-11} d) 7.07×10^{-7}
6. The dissociation equilibrium of a gas AB_2 can be represented as :
   $$2AB_2(g) \rightleftharpoons 2AB(g) + B_2(g)$$
   The degree of dissociation is $'x'$ and is small compared to 1. The expression relating the degree of dissociation (x) with equilibrium constant K_p and total pressure p is :
   a) $(2K_p/\ P\ )^{1/3}$ b) $(2K_p/\ P\ )^{1/2}$ c) (K_p/P) d) $(2K_p/P)$
7. In which one of the following gaseous equilibria, K_p is less than K_c?
   a) $N_2O_4 \rightleftharpoons 2NO_2$ b) $2SO_2 + O_2 \rightleftharpoons 2SO_3$ c) $2HI \rightleftharpoons H_2 + I_2$ d) $N_2 + O_2 \rightleftharpoons 2NO$
8. K_{sp} for $Cr(OH)_3$ is 2.7×10^{-31} . What is its solubility in mol/L?
   a) 1×10^{-8} b) 8×10^{-8} c) 1.1×10^{-8} d) 0.18×10^{-8}
9. N_2O_4 is dissociated to 33% and 40% at total pressure P_1 and P_2 atm respectively. Then the ratio P_1/P_2 is:
   a) 7/4 b) 7/3 c) 8/3 d) 8/5
10. In the reactions, $A + 2B \rightleftharpoons 2C$, if 2 moles of A, 3.0 moles of B and 2.0 moles of C are placed in a 2 L flask and the equilibrium concentration of C is 0.5 mol/L, the equilibrium constant (K_c) for the reactions is
    a) 0.21 b) 0.50 c) 0.75 d) 0.025
11. The pH value of 1/1000 N KOH solution is
    a) 3 b) 10^{-11} c) 2 d) 11
12. The pH of tears coming out of a person's eye is:
    a) 7.4 b) 6.4 c) 7.0 d) 2.36
13. The solubility of CaF_2 is 2×10^{-4} mol/L. Its solubility product (K_{sp}) is
    a) 2.0×10^{-4} b) 4.0×10^{-3} c) 8.0×10^{-12} d) 3.2×10^{-11}
14. The solubility product of a salt having general formula MX_2 in water is 4×10^{-12}. The concentration of M^{2+} ions in the aqueous solution of the salt is
    a) 2.0×10^{-6}M b) 1.0×10^{-4}M c) 1.6×10^{-4}M d) 4.0×10^{-10}M
15. The solubility product of barium sulphate is 1.5×10^{-9} at 18°C. Its solubility in water at 18°C is

a) 1.5×10^{-9} b) 1.5×10^{-5} c) 3.9×10^{-9} d) 3.9×10^{-5}

16. The strongest Bronsted base is
a) ClO_3^- b) ClO_2^- c) ClO_4^- d) ClO^-

17. The reaction quotient (Q) at equilibrium is:
a) $= 1$ b) $= K$ c) $> K$ d) $< K$

18. The concentration of oxalic acid is $'x'$mol L^{-1}. 40 mL. of this solution reacts with 16 mL of 0.05 M acidified $KMnO_4$. What is the pH of $'x'$ M oxolic acid solution?
(Assume that oxalic acid dissociates completely)
a) 1.3 b) 1.699 c) 1 d) 2

19. Metal ions like Ag^+, Cu^{2+} etc. act as
a) Bronsted acids b) Bronsted bases c) Lewis acids d) Lewis bases

20. The pK_a of acetylsalicylic acid (aspirin) is 3.5. The pH of gastric juice in human stomach is about $2-3$ and the pH in the small intestine is about 8. Aspirin will be
a) Unionised in the small intestine and in the stomach
b) Completely ionised in the small intestine and in the stomach
c) Ionised in the stomach and almost unionised in the small intestine
d) Ionised in the small intestine and almost unionised in the stomach