DPP
DAILY PRACTICE PROBLEMS

Class : XIth **Subject : CHEMISTRY**
Date : **DPP No. : 10**

Topic :- Equilibrium

1. Which of the following will not function as a buffer solution?
   (i) NaCl and NaOH
   (ii) NaOH and NH_4OH
   (iii) CH_3COONH_4 and HCl
   (iv) Borax and boric acid
   a) (i), (ii), (iii) b) (ii), (iii), (iv) c) (i), (iii), (iv) d) (i), (ii), (iii), (iv)
2. K_{SP} of salts AB,AB_2 and A_3B are 4.0×10^{-8},3.2×10^{-14} and 2.7×10^{-15} respectively at temperature T. The solubility order of these salts in water at temperature T(in mol litre^{-1}) is:
   a) $AB > AB_2 > A_3B$ b) $A_3B > AB_2 > AB$ c) $AB_2 > A_3B > AB$ d) $AB > A_3B > AB_2$
3. Which does not act as Bronsted acid?
   a) NH_4^+ b) CH_3COO^- c) HCO_3^- d) HSO_3^-
4. Which of the following solutions will have pH=9 at 298 K?
   a) 1×10^{-9} M HCl solution b) 1×10^{-5} M NaOH solution
   c) 1×10^{-9} M KOH solution d) Both (a) and (b)
5. Acidosis is diagnosed when blood pH:
   a) Falls below 7.35 b) Rises above 7.45 c) Both (a) and (b) d) None of these
6. Which statement is false? (Assume complete dissociation in each case)
   a) If 2.0 L of a solution of H_2SO_4 contains 0.1 mole, then pH of the solution is 2
   b) The concentration of OH^- in 0.005 M HNO_3 is 2.0×10^{-12} mol/L
   c) The pH of 0.01 M KOH is 12
   d) In a 0.001 M solution of NaOH the concentration of $H^+$is 10^{-3} mol/L
7. 10 mL of a solution contains 0.1 M NH_4Cl + 0.01 M NH_4OH. Which addition would not change the pH of the solution?
   a) Adding 1 mL water
   b) Adding 5 mL of 0.1 M NH_4Cl
   c) Adding 5 mL of 0.1 M NH_4OH
   d) Adding10 mL of 0.1 M NH_4Cl
8. Arrhenius theory of acid-base is not valid for:
   a) Aqueous solution
   b) In presence of water
   c) Non-aqueous solution
   d) None of these

9. The solubility in water of a sparingly soluble salt AB_2 is 1×10^{-5} mol L^{-1}. Its solubility product number will be
a) 4×10^{-15} b) 4×10^{-10} c) 1×10^{-15} d) 1×10^{-10}

10. The equilibrium constant (K_p) for the reaction, $PCl_5(g) \rightarrow PCl_3(g) + Cl_2(g)$ is 16. If the volume of the container is reduced to one half its original volume, the value of K_p for the reaction at the same temperature will be
a) 8 b) 16 c) 32 d) 64

11. The indicators used in the titration of iodine against sodium thiosulphate is
a) Starch b) $K_3Fe(CN)_6$ c) K_2CrO_4 d) Potassium

12. For the reaction,
$2HI(g) \rightleftharpoons H_2(g) + I_2(g) - Q$ kJ , the equilibrium constant depends upon
a) Temperature b) Pressure c) Catalyst d) Volume

13. In the dissociation of $2HI \rightleftharpoons H_2 + I_2$, the degree of dissociation will be influenced by the:
a) Addition of inert gas at constant volume
b) Addition of inert gas at constant pressure
c) Increase of temperature
d) Increase of pressure

14. If pressure increases then its effect on given equilibrium
$2NO(g) \rightleftharpoons N_2(g) + O_2(g)$ is shift in
a) Forward direction b) Backward direction
c) No effect d) None of these

15. Which one of the molecular hydride acts as Lewis acid?
a) NH_3 b) H_2O c) B_2H_6 d) CH_4

16. For the reversible reaction, $N_2(g) + 3H_2(g) \rightleftharpoons 2NH_3(g)$ at 500°C, the value of K_p is 1.44×10^{-5} when partial pressure is measured in atmospheres. The corresponding value of K_c with concentration in mol L^{-1}, is
a) $\frac{1.44 \times 10^{-5}}{(0.082 \times 773)^{-2}}$ b) $\frac{1.44 \times 10^{-5}}{(0.082 \times 773)^{2}}$ c) $\frac{1.44 \times 10^{-5}}{(8.314 \times 773)^{-2}}$ d) $\frac{1.44 \times 10^{-5}}{(0.082 \times 500)^{-2}}$

17. The compound that does not act as Lewis acid, is:
a) $AlCl_3$ b) BF_3 c) NH_3 d) $FeCl_3$

18. For the following reaction in gaseous phase
$CO(g) + \frac{1}{2}O_2(g) \longrightarrow CO_2(g)$ K_p/K_c is
a) $(RT)^{1/2}$ b) $(RT)^{-1/2}$ c) (RT) d) $(RT)^{-1}$

19. For the reaction $H_2(g) + I_2(g) \rightleftharpoons 2HI(g)$, the equilibrium constants expressed in terms of concentrations K_c and in terms of partial pressure K_p, are related as
a) $K_p = K_c(RT)^2$ b) $K_p = K_c(RT)^{-2}$ c) $K_p = K_c$ d) $K_c = K_p(RT)$

20. In the titration of Na_2CO_3 and HCl, the indicator used is
a) Methyl orange b) Methylene blue c) Phenolphthalein d) Litmus