

DPP

DAILY PRACTICE PROBLEMS

Class : XIth
Date :

Subject : CHEMISTRY
DPP No. : 5

Topic :- Equilibrium

- Solubility product of $\text{Mg}(\text{OH})_2$ at ordinary temperature is 1.96×10^{-11} . pH of a saturated solution of $\text{Mg}(\text{OH})_2$ will be
 - 10.53
 - 8.47
 - 6.94
 - 3.47
- For the reaction $\text{H}_2 + \text{I}_2 \rightleftharpoons 2\text{HI}$:
 - $K_c = 2K_p$
 - $K_c > K_p$
 - $K_c = K_p$
 - $K_c < K_p$
- When CaCO_3 is heated at a constant temperature in a closed container, the pressure due to CO_2 produced will:
 - Change with the amount of CaCO_3 taken
 - Change with the size of the container
 - Remain constant so long as temperature is constant
 - Remain constant even if temperature is changed
- Four species are listed below
 - HCO_3^-
 - H_3O^+
 - HSO_4^-
 - HSO_3FWhich one of the following is the correct sequence of their acid strength?
 - (iv) < (ii) < (iii) < (i)
 - (ii) < (iii) < (i) < (iv)
 - (i) < (iii) < (ii) < (iv)
 - (iii) < (i) < (iv) < (ii)
- 1 dm^3 solution containing 10^5 moles each of Cl^- ions and CrO_4^{2-} ions is treated with 10^4 moles of silver nitrate. Which one of the following observation is made?

$[K_{sp}\text{Ag}_2\text{CrO}_4$	4	$10^{12}]$
$[K_{sp}\text{AgCl}$	1	$10^{10}]$

 - Precipitation does not occur
 - Silver chromate gets precipitated first
 - Silver chloride gets precipitated first
 - Both silver chromate and silver chloride start precipitating simultaneously
- Which is a basic salt?
 - PbS
 - PbCO_3
 - PbSO_4
 - $2\text{PbCO}_3\text{Pb}(\text{OH})_2$

7. A reversible reaction, $\text{H}_2 + \text{Cl}_2 \rightleftharpoons 2\text{HCl}$ is carried out in one litre flask. If the same reaction is carried out in two litre flask, the equilibrium constant will be:
 a) Doubled b) Decreased c) Halved d) Same
8. In the system, $\text{CaF}_2(s) \rightleftharpoons \text{Ca}^{2+}(aq) + 2\text{F}^-(aq)$, increasing the concentration of Ca^{2+} ions 4 times will cause the equilibrium concentration of F^- ions to change to :
 a) $\frac{1}{4}$ of the initial value
 b) $\frac{1}{2}$ of the initial value
 c) 2 times of the initial value
 d) None of the above
9. Hydrogen ion concentration in mol/L in a solution of pH = 5.4 will be
 a) 3.98×10^8 b) 3.88×10^6 c) 3.68×10^{-6} d) 3.98×10^{-6}
10. The strongest conjugate base is
 a) NO_3^- b) Cl^- c) SO_4^{2-} d) CH_3COO^-
11. In the reaction $\text{I}_2 + \text{I}^- = \text{I}_3^-$, the Lewis base is:
 a) I_2 b) I^- c) I_3^- d) None of these
12. HI was heated in a sealed tube at 440°C till the equilibrium was reached, HI was found to be 22% decomposed. The equilibrium constant for dissociation is :
 a) 0.282 b) 0.0796 c) 0.0199 d) 1.99
13. Which one is amphoteric oxide?
 a) SO_2 b) B_2O_3 c) ZnO d) Na_2O
14. For which reaction K_p is less than K_c ?
 a) $\text{N}_2\text{O}_4 \rightleftharpoons 2\text{NO}_2$ b) $2\text{HI} \rightleftharpoons \text{H}_2 + \text{I}_2$ c) $2\text{SO}_2 + \text{O}_2 \rightleftharpoons 2\text{SO}_3$ d) $\text{N}_2 + \text{O}_2 \rightleftharpoons 2\text{NO}$
15. For the reactions, $\text{H}_2(\text{g}) + \text{CO}_2(\text{g}) \rightleftharpoons \text{CO}(\text{g}) + \text{H}_2\text{O}(\text{g})$ if the initial concentration of $[\text{H}_2] = [\text{CO}_2]$ and x mol/L of hydrogen is consumed at equilibrium, the correct expression of K_p is
 a) $\frac{x^2}{(1-x)^2}$ b) $\frac{x^2}{(2+x)^2}$ c) $\frac{x^2}{1-x^3}$ d) $\frac{(1+x)^2}{(1-x)^2}$
16. In the given reaction,

$$2\text{X}(\text{g}) + \text{Y}(\text{g}) \rightleftharpoons 2\text{Z}(\text{g}) + 80 \text{ kcal,}$$
 Which combination of pressure and temperature will give the highest yield of Z at equilibrium?
 a) 1000 atm and 200°C b) 500 atm and 500°C
 c) 1000 atm and 100°C d) 500 atm and 100°C
17. Equimolar solutions of the following were prepared in water separately. Which one of the solutions will record the highest pH?
 a) BaCl_2 b) MgCl_2 c) CaCl_2 d) SrCl_2
18. Which is not correct for Lewis acids?
 a) They contain at least one vacant orbital
 b) They have a tendency to accept electrons
 c) The smaller ion has greater acidic strength
 d) In case of ions, the strength of acid is inversely proportional to its charge

19. The vapour density of N_2O_4 at a certain temperature is 30. What is the percentage dissociation of N_2O_4 at this temperature?
- a) 46.5% b) 36.2% c) 53.3% d) 64.2%
20. For which reaction $K_p \neq K_c$?
- a) $2NO_2(g) \rightleftharpoons N_2(g) + O_2(g)$
b) $SO_2(g) + NO_2(g) \rightleftharpoons SO_3(g) + NO(g)$
c) $I_2(g) + H_2(g) \rightleftharpoons 2HI(g)$
d) $2C(s) + O_2(g) \rightarrow 2CO(g)$

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