

NEET CHEMISTRY 2018-19 - Chennai

Periodic Test : 10

Test ID : 022

Number of questions: 150

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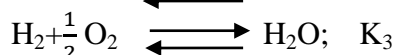
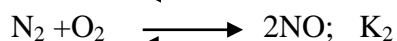
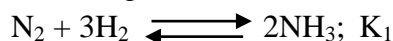
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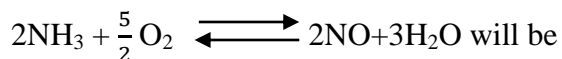
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Negative Marks : 4 marks for correct attempt & 1 mark deducted for every wrong attempt.

1. The equilibrium constants of the following are



The equilibrium constant (K) of the reaction



(a) $K_2K_3^3/K_1$

(b) K_2K_3/K_1

(c) $K_2^3K_3/K_1$

(d) $K_1K_3^3/K_1$

2. Concentration of the Ag^+ ions in a saturated solution of $\text{Ag}_2\text{C}_2\text{O}_4$ is $2.2 \times 10^{-4} \text{ mol L}^{-1}$

Solubility product of $\text{Ag}_2\text{C}_2\text{O}_4$ is

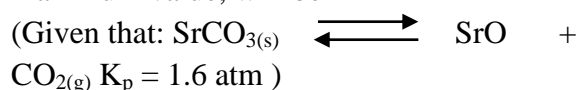
(a) 2.66×10^{-12}

(b) 4.5×10^{-11}

(c) 5.3×10^{-12}

(d) 2.42×10^{-8}

3. A 20 litre container at 400 K contain $\text{CO}_2(\text{g})$ at pressure 0.4 atm and an excess of SrO (neglect the volume of solid SrO). The volume of the container is now decreased by moving the movable piston fitted in the container. The maximum volume of the container, when pressure CO_2 , attains its maximum value, will be



(a) 10litre

(b) 4litre

(c) 2litre

(d) 5litre

4. The percentage of pyridine ($\text{C}_5\text{H}_5\text{N}$) that forms pyridinium ion ($\text{C}_5\text{H}_5\text{N}^+\text{H}$) in a 0.10M aqueous pyridine solution (K_b for $\text{C}_5\text{H}_5\text{N}$ 1.7×10^{-9}) is

(a) 0.0060%

(b) 0.013%

(c) 0.77%

(d) 1.6%

5. The solubility of $\text{AgCl}(\text{s})$ with solubility product 1.6×10^{-10} in 0.1M NaCl solution would be

(a) $1.26 \times 10^{-5} \text{ M}$

(b) $1.6 \times 10^{-9} \text{ M}$

(c) $1.6 \times 10^{-11} \text{ M}$

(d) zero

6. Which of the following fluoro-compounds is most likely to behave as a Lewis base?

(a) BF_3

(b) PF_3

(c) CF_4

(d) SiF_4

7. MY and NY_3 , two nearly insoluble salts, have the same k_{sp} values of 6.2×10^{-13} at room Temperature. Which statement would be true in regard to MY and NY_3 ?

(a) The salts MY and NY_3 are more soluble in 0.5 M KY than in pure water.

- (b) The addition of the salt of KY to solution of MY and NY_3 will have no effect on their solubilities.
- (c) The molar solubility of MY and NY_3 in water are identical.
- (d) The molar solubility of MY in water is less than that of NY_3
8. If the equilibrium constant for $\text{N}_2(\text{g}) + \text{O}_2(\text{g}) \rightleftharpoons \text{NO}(\text{g})$ is K, the equilibrium constant for $\frac{1}{2} \text{N}_2(\text{g}) + \frac{1}{2} \text{O}_2(\text{g}) \rightleftharpoons \text{NO}(\text{g})$ will be
- (a) $\frac{1}{2} K$
 (b) K
 (c) K^2
 (d) $K^{1/2}$
9. What is the pH of the resulting solution when equal volumes of 0.1M NaOH and 0.01 M HCl are mixed?
- (a) 2.0
 (b) 7.0
 (c) 1.04
 (d) 12.65
10. Aqueous solution of which of the following compounds is the best conductor of electric current?
- (a) Hydrochloric acid, HCl
 (b) Ammonia, NH_3
 (c) Fructose, $\text{C}_6\text{H}_{12}\text{O}_6$
 (d) Acetic acid, $\text{C}_2\text{H}_4\text{O}_2$
11. Which one of the following pairs of solution is not an acidic buffer?
- (a) CH_3COOH and CH_3COONa
 (b) H_2CO_3 and Na_2CO_3
 (c) H_3PO_4 and Na_3PO_4
 (d) HClO_4 and NaClO_4
12. The K_{sp} of Ag_2CrO_4 , AgCl, AgBr and AgI are respectively, 1.1×10^{-12} , 1.8×10^{-10} , 5.0×10^{-13} , 8.3×10^{-17} . Which one of the following salts will precipitate last if AgNO_3 solution is added to the solution containing equal moles of NaCl, NaBr, NaI and Na_2CrO_4 ?
- (a) AgBr
 (b) Ag_2CrO_4
 (c) AgI
 (d) AgCl
13. Which of the following statements is correct for a reversible process in a state of equilibrium?
- (a) $\Delta G^\circ = -2.30 RT \log K$
 (b) $\Delta G^\circ = 2.30 RT \log K$
 (c) $\Delta G^\circ = -2.30 RT \log K$
 (d) $\Delta G^\circ = 2.30 \log K$
14. If the value of equilibrium constant for a particular reaction is 1.6×10^{12} , then at Equilibrium the system will contain
- (a) mostly products
 (b) similar amounts of reactants and product
 (c) all reactants
 (d) mostly reactants.
15. Which of the following salts will give highest pH in water?
- (a) KCl
 (b) NaCl
 (c) Na_2CO_3
 (d) CuSO_4
16. Using Gibbs energy change $\Delta G^\circ = +63.3 \text{ KJ}$ for the following reaction $\text{Ag}_2\text{CO}_3(\text{s}) \rightleftharpoons 2 \text{Ag}^+(\text{aq}) + \text{CO}_3^{2-}(\text{aq})$ the k_{sp} of $\text{Ag}_2\text{CO}_3(\text{s})$ in water at 25°C is ($R = 8.314 \text{ JK}^{-1} \text{ mol}^{-1}$)
- (a) 3.2×10^{-26}

- (b) 8.0×10^{-12}
- (c) 2.9×10^{-3}
- (d) 7.9×10^{-2}

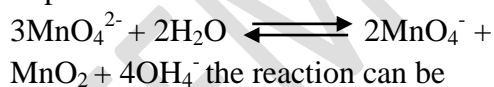
17. For the reversible reaction, $N_{2(g)} + 3H_{2(g)} \rightleftharpoons 2NH_{3(s)} + \text{heat}$ The equilibrium shifts in forward direction

- (a) by increasing the concentration of $NH_{3(s)}$
- (b) by decreasing the pressure
- (c) by decreasing the concentrations of $N_{2(g)}$ and $H_{2(g)}$
- (d) by increasing pressure and decreasing temperature.

18. For a given exothermic reaction K_p and K'_p are the equilibrium constant temperature T_1 and T_2 respectively. Assuming that heat of reaction constant in temperature range between T_1 and T_2 . it is readily observed that

- (a) $K_p > K'_p$
- (b) $K_p < K'_p$
- (c) $K_p = K'_p$
- (d) $K_p = \frac{1}{K'_p}$

19. $KMnO_4$ can be prepared from K_2MnO_4 as per reaction



the reaction can be completion by removing OH^- ions by adding

- (a) CO_2
- (b) SO_2
- (c) HCl
- (d) KOH

20. Which of these is least likely to act as a Lewis Base?

- (a) BF_3
- (b) PF_3

- (c) CO
- (d) F^-

21. Accumulation of lactic acid

($HC_3H_5O_3$), a monobasic acid in tissues leads to pain and a feeling of fatigue. In a 0.10 M aqueous solution, lactic acid is 3.7% dissociates. The value of dissociation constant, K_a , for this acid will be

- (a) 1.4×10^{-5}
- (b) 1.4×10^{-4}
- (c) 3.7×10^{-4}
- (d) 2.8×10^{-4}

22. At $100^\circ C$ the K_w of water is 55 times its value at $25^\circ C$. What will be the pH of neutral solution? ($\log 55 = 1.74$)

- (a) 7.00
- (b) 7.87
- (c) 5.13
- (d) 6.13

23. The values of K_{sp} of $CaCO_3$ and CaC_2O_4 are 4.7×10^{-9} and 1.3×10^{-9} respectively at $25^\circ C$. If the mixture of these two is washed with water what is the concentration of Ca^{2+} ions in water?

- (a) $5.831 \times 10^{-5} M$
- (b) $6.856 \times 10^{-5} M$
- (c) $3.606 \times 10^{-5} M$
- (d) $7.746 \times 10^{-5} M$

24. The dissociation constant of a weak acid is 1×10^{-4} . In order to prepare a buffer solution with a $pH = 5$, the $[Salt]/[Acid]$ ratio should be

- (a) 4:5
- (b) 10:1
- (c) 5:4
- (d) 1:10

25. pH of a saturated solution of $Ba(OH)_2$ is 12. The value of solubility product (K_{sp}) of $Ba(OH)_2$ is

- (a) 3.3×10^{-7}
- (b) 5.0×10^{-7}
- (c) 4.0×10^{-6}
- (d) 5.0×10^{-6}

26. Equilibrium constant K_p for following reaction $\text{MgCO}_{(s)} \rightleftharpoons \text{MgO}_{(s)} + \text{CO}_{2(g)}$

- (a) $K_p = P_{\text{CO}_2}$
- (b) $K_p = P_{\text{CO}_2} \times \frac{P_{\text{CO}_2} P_{\text{MgO}}}{P_{\text{MgCO}_3}}$
- (c) $K_p = \frac{P_{\text{CO}_2} + P_{\text{MgO}}}{P_{\text{MgCO}_3}}$
- (d) $K_p = \frac{P_{\text{MgCO}_3}}{P_{\text{CO}_2} \times P_{\text{MgO}}}$

27. The strongest conjugate base is

- (a) SO_4^{2-}
- (b) Cl^-
- (c) NO_3^-
- (d) CH_3COO^-

28. The concentration of $[\text{H}^+]$ and concentration of $[\text{OH}^-]$ of a 0.1 aqueous solution of 2% ionised weak acid is [ionic product of water = 1×10^{-14}]

- (a) $2 \times 10^{-3} \text{ M}$ and $5 \times 10^{-12} \text{ M}$
- (b) $1 \times 10^{-3} \text{ M}$ and $3 \times 10^{-11} \text{ M}$
- (c) $0.02 \times 10^{-3} \text{ M}$ and $5 \times 10^{-11} \text{ M}$
- (d) $3 \times 10^{-2} \text{ M}$ and $4 \times 10^{-13} \text{ M}$

29. The solubility of a saturated solution of calcium fluoride is 2×10^{-4} moles per litre. its solubility product is

- (a) 22×10^{-11}
- (b) 14×10^{-4}
- (c) 2×10^{-2}
- (d) 32×10^{-12}

30. If K_1 and K_2 are the respective equilibrium constants for the two reactions,
 $\text{XeF}_6(g) + \text{H}_2\text{O}(g) \rightarrow \text{XeOF}_4(g) + 2\text{HF}(g)$
 $\text{XeO}_4 + \text{XeF}_6(g) \rightarrow \text{XeOF}_4(g) + \text{XeO}_3\text{F}_2(g)$
 the equilibrium constant of the reaction,

$\text{XeOF}_4(g) + 2\text{HF}(g) \rightleftharpoons \text{XeO}_3\text{F}_2(g) + \text{H}_2\text{O}(g)$
 will be

- (a) K_1/K_2
- (b) $K_1 \cdot K_2$
- (c) $K_1/(K_2)^2$
- (d) K_2/K_1

31. A physician wishes to prepare a buffer solution at $\text{pH} = 3.85$ that efficiently resists changes in pH yet contains only small concentration of the buffering agents. Which of the following weak acids together with its sodium salt would be best to use?

- (a) 2, 5-Dihydroxy benzoic acid ($\text{pK}_a = 2.97$)
- (b) Acetoacetic acid ($\text{pK}_a = 3.58$)
- (c) m-Chlorobenzoic acid ($\text{pK}_a = 3.98$)
- (d) p-Chlorocinnamic acid ($\text{pK}_a = 4.41$)

32. The hydride ion H^- is stronger base than its hydroxide ion OH^- . Which of the following reaction will occur if sodium hydride (NaH) is dissolved in water?

- (a) $\text{H}^- + \text{H}_2\text{O} \rightarrow \text{no reaction}$
- (b) $\text{H}^- (\text{aq}) + \text{H}_2\text{O} \rightarrow \text{H}_2\text{O}$
- (c) $\text{H}^- (\text{aq}) + \text{H}_2\text{O} (\text{l}) \rightarrow \text{OH}^- + \text{H}_2$
- (d) None of these.

33. The solubility product of CuS , Ag_2S and HgS are 10^{-31} , 10^{-44} and 10^{-54} respectively, The solubilities of these sulphides are in the order

- (a) $\text{HgS} > \text{Ag}_2\text{S} > \text{CuS}$
- (b) $\text{CuS} > \text{Ag}_2\text{S} > \text{HgS}$
- (c) $\text{Ag}_2\text{S} > \text{CuS} > \text{HgS}$
- (d) $\text{AgS} > \text{HgS} > \text{CuS}$

34. The equilibrium constant for the reaction $\text{N}_2 + 3\text{H}_2 \rightleftharpoons 2\text{NH}_3$ is K , then the equilibrium constant for the equilibrium $2\text{NH}_3 \rightleftharpoons \text{N}_2 + 3\text{H}_2$

- (a) \sqrt{K}

- (b) $\sqrt{\frac{1}{K}}$
 (c) $\frac{1}{K}$
 (d) $\sqrt{\frac{1}{K^2}}$
35. The ionic product of water at 25°C is 10^{-14} . Its ionic product at 90°C will be,
 (a) 1×10^{-14}
 (b) 1×10^{-16}
 (c) 1×10^{-20}
 (d) 1×10^{-12}
36. If α is dissociation constant, then the total number of moles for the reaction
 $2\text{HI} \longrightarrow \text{H}_2 + \text{I}_2$ will be
 (a) 1
 (b) $1 - \alpha$
 (c) 2
 (d) $2 - \alpha$
37. The pH value of N/10 NaOH solution is
 (a) 12
 (b) 13
 (c) 10
 (d) 11
38. Which of the following is not a Lewis acid?
 (a) SiF_4
 (b) C_2H_4
 (c) BF_3
 (d) FeCl_3
39. The pH value of blood does not appreciable change by a small addition of an acid or base because the blood
 (a) can be easily coagulated
 (b) contains iron as a part of the molecule
 (c) is a body fluid
 (d) Contains serum protein which acts as buffer.
40. The pH value of a 10 M solution of HCl is
 (a) equal to 1
 (b) equal to 2
 (c) less than 0
 (d) equal to 0
41. The solubility of AgCl will be minimum in
 (a) M CaCl_2
 (b) pure water
 (c) M AgNO_3
 (d) M NaCl
42. In liquid-gas equilibrium, the pressure of vapours above the liquid is constant at
 (a) constant temperature
 (b) low temperature
 (c) high temperature
 (d) none of these
43. Which one of the following is most soluble?
 (a) Bi_2S_3 ($K_{sp} = 1 \times 10^{-70}$)
 (b) Ag_2S_3 ($K_{sp} = 6 \times 10^{-51}$)
 (c) CuS ($K_{sp} = 8 \times 10^{-37}$)
 (d) MnS ($K_{sp} = 7 \times 10^{-16}$)
44. At 80°C, distilled water has $[\text{H}_3\text{O}^+]$ concentration equal to 1×10^{-6} mole/litre. The value of K_w at the temperature will be
 (a) 1×10^{-12}
 (b) 1×10^{-15}
 (c) 1×10^{-6}
 (d) 1×10^{-9}
45. According to LeChatelier's principle, adding heat to a solid and liquid in equilibrium will cause the
 (a) temperature to increase

- (b) temperature to decrease
- (c) amount of liquid to decrease
- (d) amount of solid to decrease.

- (b) NaHCO_3
- (c) Na_2CO_3
- (d) NH_4Cl

46. 0.1M solution of which one of these substances will act basic?

- (a) Sodium borate
- (b) Ammonium chloride
- (c) Calcium nitrate
- (d) Sodium sulphate

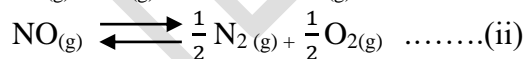
47. Which one of the following information can be obtained on the basis of Le Chatelier Principle?

- (a) Dissociation constant of a weak acid
- (b) Entropy change in a reaction
- (c) Equilibrium constant of a chemical reaction
- (d) Shift in equilibrium position on changing value of a constraint,

48. Aqueous solution of acetic acid contains

- (a) CH_3COO^- and H^+
- (b) CH_3COO^- , H_3O^+ and CH_3COOH
- (c) CH_3COO^- , H_3O^+ and H^+
- (d) CH_3COOH , CH_3COO^- , H^+

49. K_1 and K_2 are equilibrium constant for reactions



- (a) $K_1 = \left[\frac{1}{K_2}\right]^2$
- (b) $K_1 = K_2^2$
- (c) $K_1 = \frac{1}{K_2}$
- (d) $K_1 = (K_2)^0$

50. The compound whose water solution has the highest pH is

- (a) NaCl