Yakeen NEET 2.0 2026

Practice Sheet

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Equilibrium

Q1 Which is the **correct** representation of the solubility product constant of Ag_2CrO_4?
(A) $[Ag^+]^2 [CrO_4^{2-}]$
(B) $[Ag^+] [CrO_4^{2-}]$
(C) $[2Ag^+] [CrO_4^{2-}]$
(D) $[2Ag^+]^2 [CrO_4^{2-}]$

Q2 The solution of blue vitrol in water is acidic because:
(A) $CuSO_4$ reacts with water
(B) Cu^{2+} reacts with water
(C) SO_4^{2-} reacts with water
(D) $CuSO_4$ removes OH^- ions from water

Q3 A reversible reaction having two reactants is in equilibrium, if the concentration of reactants are doubled, the equilibrium constant will:
(A) Become 4 times
(B) Become $\frac{1}{4}^{th}$ times
(C) Become $\frac{1}{16}^{th}$ times
(D) Remains the same

Q4 When $0.1\ mole$ of ammonia is dissolved in sufficient water to make $1\ litre$ of solution. The solution is found to have a hydroxide ion concentration of 1.34×10^{-3}. The dissociation constant of ammonia is:
(A) 1.8×10^{-5}
(B) 1.6×10^{-6}
(C) 1.34×10^{-3}
(D) 1.8×10^{-4}

Q5 Consider the following reaction:
$PCl_5(g) \rightleftharpoons PCl_3(g) + Cl_2(g).$
The addition of an inert gas at constant volume:
(A) will shift the equilibrium to the right.
(B) will shift the equilibrium to the left.
(C) the equilibrium will remain unchanged.
(D) will explode the reaction.

Q6 IUPAC Name of $CH_2 = CH - CH = CH_2$ is:
(A) Prop-1-ene
(B) Buta-1,3-diene
(C) Buta-2,4-diene
(D) Butene

Q7 The equilibrium constant of a reaction is 300, if the volume of the reaction flask is tripled, the equilibrium constant will be:
(A) 100
(B) 300
(C) 250
(D) 150

Q8 Suitable conditions for melting of ice :
(A) high temperature and high pressure.
(B) high temperature and low pressure.
(C) low temperature and low pressure.
(D) low temperature and high pressure.

Q9 The solubility in water of a sparingly soluble salt AB_2 is $1.0 \times 10^{-5}\ molL^{-1}$. Its solubility product will be
(A) 4×10^{-15}
(B) 4×10^{-10}
(C) 1×10^{-15}
(D) 1×10^{-10}

Q10 What is the pH of a solution of 0.28 M acid and 0.84 M of its conjugate base if the ionization constant of acid is 4×10^{-4} ?
(A) 3.88
(B) 3.34
(C) 7
(D) 10.12

Q11 For the reaction, $CO_{(g)} + H_2O_{(g)} \rightleftharpoons CO_{2(g)} + H_{2(g)}$ At a given temperature, the equilibrium amount of $CO_{2(g)}$ can be increased by;

(A) Adding a suitable catalyst

(B) Adding of inert gas

(C) Decreasing the volume of the container

(D) Increasing the amount of $CO_{(g)}$

Q12 The pH of 0.001 M NaOH will be;

(A) 3   (B) 2

(C) 11   (D) 12

Q13 To a 10 mL of 10^{-4} N H_2SO_4 solution water has been added to make the total volume of one litre. Its pOH would be:

(A) 3   (B) 12

(C) 8   (D) 5

Q14 At infinite dilution, the percentage ionisation for both strong and weak electrolytes is

(A) 1%   (B) 20%

(C) 50%   (D) 100%

Q15 The value of ΔG° for a reaction in aqueous phase having $K_C = 1$, would be

(A) -RT   (B) -1

(C) 0   (D) +RT

**Q16** The strongest conjugate base is;

(A) NO_3^-

(B) Cl^-

(C) SO_4^{2-}

(D) CH_3COO^-

Q17 **Assertion (A):** If the equation for a reaction is reversed, the equilibrium constant is inverted and if the equation is multiplied by 2, the equilibrium constant is squared.

Reason (R): The numerical value of an equilibrium constant depends on the way the equation for the reaction is written.

(A) Both Assertion (A) and Reason (R) are True and the Reason (R) is a correct explanation of the Assertion (A).

(B) Both Assertion (A) and Reason (R) are True but Reason (R) is not a correct explanation of the Assertion (A).

(C) Assertion (A) is True but the Reason (R) is False.

(D) Assertion (A) is False but Reason (R) is True.
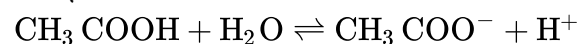
Q18 In equilibrium
$$CH_3\,COOH + H_2O \rightleftharpoons CH_3\,COO^- + H^+$$
The equilibrium constant may change when;

(A) CH_3COO^- are added.

(B) CH_3COOH is added.

(C) Catalyst is added.

(D) Mixture is heated.

Q19 In which of the following reaction, the value of K_p will be equal to K_c?

(A) $H_2(\,g) + I_2(\,g) \rightleftharpoons 2HI(g)$

(B) $PCl_5(\,g) \rightleftharpoons PCl_3(\,g) + Cl_2(\,g)$

(C) $2NH_3(\,g) \rightleftharpoons N_2(\,g) + 3H_2(\,g)$

(D) $2SO_2(\,g) + O_2(\,g) \rightleftharpoons 2SO_3(\,g)$

Q20 100 mL of 0.2 M H_2SO_4 is added to 100 mL of 0.2 M NaOH. The resulting solution will be;

(A) Acidic   (B) Basic

(C) Neutral   (D) Slightly basic

Q21 **Assertion (A):** The degree of dissociation of a weak base increases on dilution.

Reason (R): The value of K_b increases on dilution.

(A) Both Assertion (A) and Reason (R) are True and the Reason (R) is a correct explanation of the Assertion (A).

(B) Both Assertion (A) and Reason (R) are True but Reason (R) is not a correct explanation of the Assertion (A).

(C) Assertion (A) is True but the Reason (R) is False.

(D) Assertion (A) is False but Reason (R) is True.

Q22 In a mixture of a weak acid and its salt, the ratio of concentration of acid to salt is increased ten-fold. The pH of the solution;

(A) Decreases by one

(B) Increases by one-tenth

(C) Increases by one

(D) Increases ten-fold

Q23 Ammonium ion is;

(A) Neither an acid nor base.

(B) Both an acid and a base.

(C) A conjugate acid

(D) A conjugate base

Q24 Ostwalds dilution law gives satisfactory results with the solution of the electrolyte

(A) HCl

(B) HNO_3

(C) CH_3COOH

(D) $NaOH$

Q25 Which of the following expressions shows the saturated solution of $PbSO_4$?

(A) $K_{sp}(PbSO_4) = [Pb^{2+}][SO_4^{2-}]$

(B) $K_{sp}(PbSO_4) > [Pb^{2+}][SO_4^{2-}]$

(C) $K_{sp}(PbSO_4) = 2[Pb^{2+}][SO_4^{2-}]$

(D) $K_{sp}(PbSO_4) < [Pb^{2+}][SO_4^{2-}]$

Q26 Which one is reversible process?

(A) Melting of ice at $10°C$

(B) Mixing of two gases by diffusion

(C) Evaporation of water at $100°C$ and 1 atm pressure

(D) None of these

Q27 At a certain temperature, the value of pK_w is 13.4 and the measured pH of solution is 7 . The solution is;

(A) Acidic   (B) Basic

(C) Neutral   (D) Unpredictable

Q28 When equal volumes of the following solutions are mixed, precipitation of

$AgCl(K_{sp} = 1.8 \times 10^{-10})$ will occur only with

(A) $10^{-4}M(Ag^+)$ and $10^{-4}M(Cl^-)$

(B) $10^{-5}M(Ag^+)$ and $10^{-5}M(Cl^-)$

(C) $10^{-6}M(Ag^+)$ and $10^{-6}M(Cl^-)$

(D) $10^{-10}M(Ag^+)$ and $10^{-10}M(Cl^-)$

Q29 For the system $3A + 2B \rightleftharpoons C$, the expression for equilibrium constant is;

(A) $\dfrac{[3A][2B]}{[C]}$

(B) $\dfrac{[C]}{[3A][2B]}$

(C)

(D) $\dfrac{\frac{[A]^3[B]^2}{[C]}}{\frac{[C]}{[A]^3[B]^2}}$

Q30 The pK_a of a weak acid, HA, is 4.80 . The pK_b of a weak base, BOH, is 4.78 . The pH of an aqueous solution of the corresponding salt. BA, will be

(A) 8.58   (B) 4.79

(C) 7.01   (D) 9.22

Q31 **Statement-I:** The active mass of 64 gm of HI in a two litre flask would be 0.25.

Statement-II: The active mass is always equal to molar concentration.

(A) Both statement I and II are correct.

(B) Statement I is correct but statement II is incorrect

(C) Statement I is incorrect but statement II is correct

(D) Both statement I and II are incorrect.

Q32 **Statement-I :** If value of reaction quotient is greater than K_C, it means reaction is proceeding in backward direction.

Statement-II : K_C value is definite for any reaction at particular temperature while reaction quotient may be variable.

(A) Both statement I and II are correct

(B) Statement I is correct but statement II is incorrect

(C) Statement I is incorrect but statement II is correct

(D) Both statement I and II are incorrect.

Q33 **Statement-I :** If HI(g) is 30% dissociated at 2 atm, its degree of dissociation at 5 atm would be 0.3.

Statement-II : Degree of dissociation of HI would be independent of pressure.

(A) Both statement I and II are correct

(B) Statement I is correct but statement II is incorrect

(C) Statement I is incorrect but statement II is correct

(D) Both statement I and II are incorrect.

Q34 **Statement-I :** For the reaction,
$CH_3COOH(l) + C_2H_5OH(l) \rightleftharpoons CH_3COOC_2H_5 (l) + H_2O (l)$,
1 mole each of acid and alcohol were taken initially. At equilibrium, $\frac{2}{3}$ mole of ester will be formed if $K_c = 4$.
Statement-II : Concentration terms of solids and pure liquids are included in the expression of equilibrium constant.
(A) Both statement I and II are correct
(B) Statement I is correct but statement II is incorrect
(C) Statement I is incorrect but statement II is correct
(D) Both statement I and II are incorrect.

Q35 **Statement-I :** If $Q = K_{eq}$ then, $\Delta G^\circ = 0$ for any reversible reaction.
Statement-II : $\Delta G^\circ = 0$ is essential condition for a reversible reaction at equilibrium.
(A) Both statement I and II are correct
(B) Statement I is correct but statement II is incorrect
(C) Statement I is incorrect but statement II is correct
(D) Both statement I and II are incorrect.

Q36 **Statement-I :** At constant pressure, addition of an inert gas in aqueous solution of reversible reaction does not disturb the equilibrium.
Statement-II : Concentration change and temperature change does affect the equilibrium of aqueous solution of reversible reaction.
(A) Both statement I and II are correct
(B) Statement I is correct but statement II is incorrect
(C) Statement I is incorrect but statement II is correct
(D) Both statement I and II are incorrect.

Q37 **Statement-I :** HI is more acidic than HBr.
Statement-II : Stronger acid has weaker conjugate base.
(A) Both statement I and II are correct
(B)

Statement I is correct but statement II is incorrect
(C) Statement I is incorrect but statement II is correct
(D) Both statement I and II are incorrect.

Q38 **Statement-I :** The degree of dissociation of pure water at 25˚C is 1.8×10^{-9}.
Statement-II : Auto-ionization of water is an endothermic reaction.
(A) Both statement I and II are correct
(B) Statement I is correct but statement II is incorrect
(C) Statement I is incorrect but statement II is correct
(D) Both statement I and II are incorrect.

Q39 **Statement-I :** NaOH base will apply common ion effect on the ionization of HCN in same solution.
Statement-II : When strong base e.g. NaOH is added to the weak acid e.g. acetic acid, CH_3COOH, then dissociation of acetic acid increases; this effect is known as reverse ion effect.
(A) Both statement I and II are correct
(B) Statement I is correct but statement II is incorrect
(C) Statement I is incorrect but statement II is correct
(D) Both statement I and II are incorrect.

Q40 **Statement-I :** HCl acid will apply common ion effect on the ionization of HCN.
Statement-II : Degree of ionization of HCN is increased in presence of HCl.
(A) Both statement I and II are correct
(B) Statement I is correct but statement II is incorrect
(C) Statement I is incorrect but statement II is correct
(D) Both statement I and II are incorrect.

Q41 **Statement-I :** NaCl does not increase the degree of ionisation of water.

Statement-II : Solutions of salt of strong acid and strong base are neutral.

(A) Both statement I and II are correct

(B) Statement I is correct but statement II is incorrect

(C) Statement I is incorrect but statement II is correct

(D) Both statement I and II are incorrect.

Q42 S**tatement-I :** A solution of ammonium acetate is neutral buffer.

Statement-II : pKb value of NH_4OH is equal to pKa value of CH_3COOH.

(A) Both statement I and II are correct

(B) Statement I is correct but statement II is incorrect

(C) Statement I is incorrect but statement II is correct

(D) Both statement I and II are incorrect.

Q43 **Statement-I :** Aqueous solution of CH_3COONH_4, NaHS and NH_4HS act as buffer solution.

Statement-II : pH of aqueous solution of CH_3COONH_4, NaHS and NH_4HS do not depend upon concentration.

(A) Both statement I and II are correct

(B) Statement I is correct but statement II is incorrect

(C) Statement I is incorrect but statement II is correct

(D) Both statement I and II are incorrect.

Q44 Assertion- Mixture of CH_3COOH and CH_3COONH_4 is not a buffer solution.

Reason- Acidic buffer contains the mixture of weak acid and its salt with strong base.

(A) Both assertion and reason are correct and reason is a correct explanation for assertion

(B) Both assertion and reason are correct and reason is not a correct explanation for assertion

(C) Assertion is incorrect, Reason is correct

(D) Both assertion and reason are incorrect

Q45

Assertion- pH of blood does not change inspite of taking acidic foods.

Reason- Blood behaves as buffer solution.

(A) Both assertion and reason are correct and reason is a correct explanation for assertion

(B) Both assertion and reason are correct and reason is not a correct explanation for assertion

(C) Assertion is incorrect, Reason is correct

(D) Both assertion and reason are incorrect

Answer Key

Q1	(A)		Q24	(C)
Q2	(B)		Q25	(A)
Q3	(D)		Q26	(C)
Q4	(A)		Q27	(B)
Q5	(C)		Q28	(A)
Q6	(B)		Q29	(D)
Q7	(B)		Q30	(C)
Q8	(A)		Q31	(B)
Q9	(A)		Q32	(A)
Q10	(A)		Q33	(A)
Q11	(D)		Q34	(B)
Q12	(C)		Q35	(D)
Q13	(C)		Q36	(A)
Q14	(D)		Q37	(A)
Q15	(C)		Q38	(A)
Q16	(D)		Q39	(C)
Q17	(A)		Q40	(B)
Q18	(D)		Q41	(A)
Q19	(A)		Q42	(A)
Q20	(A)		Q43	(A)
Q21	(C)		Q44	(A)
Q22	(A)		Q45	(A)
Q23	(C)			