Yakeen NEET 2.0 2026

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DPP: 4

Ionic Equilibrium

Q1 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

Q2 Let the solubility of an aqueous solution of $Mg(OH)_2$ be x then its K_{sp} is;
(A) $4x^3$
(B) $108x^5$
(C) $27x^4$
(D) $9x$

Q3 The solubility in water of a sparingly soluble salt AB_2 is 1.0×10^{-5} molL^{-1}. Its solubility product will be
(A) 4×10^{-15}
(B) 4×10^{-10}
(C) 1×10^{-15}
(D) 1×10^{-10}

Q4 Solid $BaCO_3$ is gradually dissolved in a 1.0×10^{-4}M Na_2CO_3 solution. At what concentration of Ba^{+2} will a precipitate begin to form?
$(K_{sp}$ for $BaCO_3 = 5.1 \times 10^{-9})$;
(A) 4.1×10^{-5}M
(B) 5.1×10^{-5}M
(C) 8.1×10^{-8}M
(D) 8.1×10^{-7}M

Q5 Which is the **correct** representation of the solubility product constant of Ag_2CrO_4?
(A) $\left[Ag^+\right]^2\left[CrO_4^{-2}\right]$
(B) $\left[Ag^+\right]\left[CrO_4^{-2}\right]$
(C) $\left[2Ag^+\right]\left[CrO_4^{-2}\right]$
(D) $\left[2Ag^+\right]^2\left[CrO_4^{-2}\right]$

Q6 Zirconium phosphate $[Zr_3(PO_4)_4]$ dissociates into three zirconium cations of charge +4 and four phosphate anions of charge -3 . If molar solubility of zirconium phosphate is denoted by S and its solubility product by K_{sp} then which of the following relationship between S and K_{sp} is correct?
(A) $S = \{K_{sp}/(6912)^{1/7}\}$
(B) $S = (K_{sp}/6912)^{1/7}$
(C) $S = \left\{K_{sp}/144^{1/7}\right\}$
(D) $S = \{K_{sp}/(6912)^7\}$

Q7 K_{sp} of $Mg(OH)_2$ is 4.0×10^{-6}. At what minimum pH, Mg^{2+} ions starts precipitating $0.01 MgCl_2$
is
(A) $2 + \log 2$
(B) $2 - \log 2$
(C) $12 + \log 2$
(D) $12 - \log 2$

Q8

The pH of an aqueous solution of Ba $(OH)_2$ is 10. If the K_{sp} of Ba $(OH)_2$ is 1×10^{-9}, then the concentration of Ba^{2+} ions in the solution in mol L^{-1} is

(A) 1×10^{-2}

(B) 1×10^{-4}

(C) 1×10^{-1}

(D) 1×10^{-5}

Q9 The K_{sp} for $Cr(OH)_3$ is 1.6×10^{-30}. The molar solubility of this compound in water is

(A) $\sqrt[2]{1.6\times10^{-30}}$

(B) $\sqrt[4]{1.6\times10^{-30}}$

(C) $\sqrt[4]{\frac{1.6\times10^{-30}}{27}}$

(D) $\frac{1.6\times10^{-30}}{27}$

Q10 The molar solubility (in mol L^{-1}) of a sparingly soluble salt MX_4 is s. The corresponding solubility product is K_{sp}. s is given in terms of K_{sp} by the relation

(A) $s = \left(\frac{K_{sp}}{128}\right)^{1/4}$

(B) $s = \left(\frac{K_{sp}}{256}\right)^{1/5}$

(C) $s = (256\ K_{sp})^{1/5}$

(D) $s = (128\ K_{sp})^{1/4}$

Q11 The solubility of CaF_2 in water at $20^\circ C$ is $15.6mg$ per dm^3 solution. What will be the solubility product of CaF_2 ?

(A) 4.0×10^{-4}

(B) 8.0×10^{-8}

(C) 32.0×10^{-12}

(D) None

Q12 Given the solubility product $A_3\ B_2$ is 2×10^{-30}. What will be the solubility in moles/litre?

(A) $(1.85 \times 10^{-32})^{1/5}$

(B) $\left(\frac{2\times10^{-30}}{108}\right)^{1/5}$

(C) $\left(\frac{10-28}{5400}\right)^{\frac{1}{5}}$

(D) All

Q13 A salt M_2X_3 dissolves in water such that its solubility is x mole/litre. Its KSP_{SP} is

(A) x^5

(B) $6x^2$

(C) $108x^5$

(D) $6x^5$

Q14 Solubility product of $AgCl$ is 2.8×10^{-10} at $25^\circ C$. Calculate solubility of the salt in $0.1M AgNO_3$ solution

(A) 2.8×10^{-9} mole/ litre

(B) 2.8×10^{-10} mole/litre

(C) 3.2×10^{-9} mole/ litre

(D) 3.2×10^{-12} mole/litre

Q15 If s is the molar solubility of Ag_2SO_4, then

(A) $3\left[Ag^+\right] = s$

(B) $\left[Ag^+\right] = s$

(C) $\left[2Ag^+\right] = s$

(D) $\left[SO_4^{2-}\right] = s$

Q16 The aqueous solution of which of the following sulphides would contain maximum concentration of S^{2-} ions.

(A) $MnS\ (K_{sp} = 1.1 \times 10^{-21})$

(B) $ZnS\ (K_{sp} = 1.1 \times 10^{-23})$

(C) $PbS\ (K_{sp} = 1.1 \times 10^{-35})$

(D) $CuS\ (K_{sp} = 1.1 \times 10^{-30})$

Q17 Which of the following salts has maximum solubility?

(A) $\mathrm{HgS}, \mathrm{K_{sp}} = 1.6 \times 10^{-54}$
(B) $\mathrm{PbSO_4}, \ \mathrm{K_{sp}} = 1.3 \times 10^{-8}$
(C) $\mathrm{ZnS}, \mathrm{K_{sp}} = 7.0 \times 10^{-26}$
(D) $\mathrm{AgCl}, \mathrm{K_{sp}} = 1.7 \times 10^{-10}$

Q18 The necessary condition for saturated solution is
(A) Product of ionic concentrations = Solubility product
(B) Product of ionic concentrations < solubility product
(C) Product of ionic concentrations > solubility product
(D) None of the above

Q19 Which of the following expressions shows the saturated solution of $\mathrm{PbSO_4}$?
(A) $\mathrm{K_{sp}}\left(\mathrm{PbSO_4}\right) = \left[\mathrm{Pb^{2+}}\right]\left[\mathrm{SO_4^{2-}}\right]$
(B) $\mathrm{K_{sp}}\left(\mathrm{PbSO_4}\right) > \left[\mathrm{Pb^{2+}}\right]\left[\mathrm{SO_4^{2-}}\right]$
(C) $\mathrm{K_{sp}}\left(\mathrm{PbSO_4}\right) = 2\left[\mathrm{Pb^{2+}}\right]\left[\mathrm{SO_4^{2-}}\right]$
(D) $\mathrm{K_{sp}}\left(\mathrm{PbSO_4}\right) < \left[\mathrm{Pb^{2+}}\right]\left[\mathrm{SO_4^{2-}}\right]$

Q20 The correct relation between $\mathrm{K_{sp}}$ and solubility for the salt $\mathrm{KAl(SO_4)_2}$ is:
(A) $4\ \mathrm{s^3}$
(B) $4\ \mathrm{s^4}$
(C) $27\ \mathrm{s^4}$
(D) None

Q21 A precipitate of AgCl is formed when equal volumes of the following are mixed. $\left[\mathrm{K_{sp}}\right.$ for $\left.\mathrm{AgCl} = 10^{-10}\right]$
(A) $10^{-4}\mathrm{M}\mathrm{AgNO_3}$ and $10^{-7}\mathrm{MHCl}$
(B) $10^{-5}\mathrm{M}\mathrm{AgNO_3}$ and $10^{-7}\mathrm{MHCl}$
(C) $10^{-5}\mathrm{M}\mathrm{AgNO_3}$ and $10^{-4}\mathrm{MHCl}$
(D) $10^{-6}\mathrm{M}\mathrm{AgNO_3}$ and $10^{-6}\mathrm{MHCl}$

Answer Key

Q1 (B)
Q2 (A)
Q3 (A)
Q4 (B)
Q5 (A)
Q6 (B)
Q7 (C)
Q8 (C)
Q9 (C)
Q10 (B)
Q11 (C)
Q12 (D)
Q13 (C)
Q14 (A)
Q15 (D)
Q16 (A)
Q17 (B)
Q18 (A)
Q19 (A)
Q20 (B)
Q21 (C)