Common ion effect, Isohydric solutions, Solubility product, Ionic product of water and Salt hydrolysis

81. What is the minimum concentration of SO_4^{2-} required to precipitate $BaSO_4$ in a solution containing $1.0 \times 10^{-4} mol Ba^{2+}$? ($K_{sp}$ for $BaSO_4$ is 4×10^{-10})

(a) $4 \times 10^{-10} M$ (b) $2 \times 10^{-7} M$

(c) $4 \times 10^{-6} M$ (d) $2 \times 10^{-3} M$

82. Solubility product for salt AB_2 is 4×10^{-12}. Calculate solubility

(a) $1 \times 10^{-3} gmmol \rightleftarrows / \rightleftarrows litre$

(b) $1 \times 10^{-5} gmmol \rightleftarrows / \rightleftarrows litre$

(c) $1 \times 10^{-4} gmmol \rightleftarrows / \rightleftarrows litre$

(d) $1 \times 10^{-2} gmmol \rightleftarrows / \rightleftarrows litre$

83. Solubility product of a salt *AB* is 1×10^{-8} in a solution in which concentration of *A* is $10^{-3} M$. The salt will precipitate when the concentration of *B* becomes more than

(a) $10^{-4} M$ (b) $10^{-7} M$

(c) $10^{-6} M$ (d) $10^{-5} M$

84. At equilibrium, if to a saturated solution of $NaCl, HCl$ is passed, $NaCl$ gets precipitated because

(a) HCl is a strong acid

(b) Solubility of $NaCl$ decreases

(c) Ionic product of $NaCl$ becomes greater than its K_{sp}

(d) HCl is a weak acid

85. The solubility product of $BaSO_4$ is 1.3×10^{-9}. The solubility of this salt in pure water will be

(a) $1.69 \times 10^{-9} mollitre^{-1}$

(b) $1.69 \times 10^{-18} mollitre^{-1}$

(c) $3.6 \times 10^{-18} mollitre^{-1}$

(d) $3.6 \times 10^{-5} mollitre^{-1}$

86. The solubility product of $AgCl$ under standard conditions of temperature is given by

(a) 1.6×10^{-5}

(b) 1.5×10^{-8}

(c) 3.2×10^{-10}

(d) 1.5×10^{-10}

87. An aqueous solution of CH_3COONa will be

(a) Acidic

(b) Alkaline

(c) Neutral

(d) None of these

88. In which of the following salt hydrolysis takes place

(a) KCl (b) $NaNO_3$

(c) CH_3COOK (d) K_2SO_4

89. At 90^oC pure water has $[H_3O^+] = 10^{-6} M$, the value of K_w at this temperature will be

(a) 10^{-6} (b) 10^{-12}

(c) 10^{-14} (d) 10^{-8}

90. Solubility of MX_2 type electrolyte is $0.5 \times 10^{-4} mole \rightleftarrows / \rightleftarrows litre$. The value of K_{sp} of the electrolyte is
(a) 5×10^{-13} (b) 25×10^{-10}
(c) 1.25×10^{-13} (d) 5×10^{12}

91. According to the reaction $PbCl_2 = Pb^2 + 2Cl^-$, the solubility coefficient of $NaOH + HCl$is
(a) $[Pb^{2+}][Cl^-]^2$
(b) $[Pb^{2+}][Cl^-]$
(c) $[Pb^{2+}]^2[Cl^-]$
(d) None of these

92. K_{sp} value of $Al(OH)_3$ and $Zn(OH)_2$ are 8.5×10^{-23} and 1.8×10^{-14} respectively. If NH_4OH is added in a solution of $Al^{3+}$and Zn^{2+}, which will precipitate earlier
(a) $Al(OH)_3$ (b) $Zn(OH)_2$
(c) Both together (d) None

93. Why pure $NaCl$ is precipitated when HCl gas is passed in a saturated solution of $NaCl$
(a) Impurities dissolves in HCl
(b) The value of $[Na^+]$ and $[Cl^-]$ becomes smaller than K_{sp} of $NaCl$
(c) The value of $[Na^+]$ and $[Cl^-]$ becomes greater than K_{sp} of $NaCl$
(d) HCldissolves in the water

94. Pure $NaCl$is prepared by saturating a cold saturated solution of common salt in water with HCl gas. The principle used is
(a) Le Chatelier principle
(b) Displacement law
(c) Common ion effect
(d) Fractional distillation

95. What is the solubility of calcium fluoride in a saturated solution, if its solubility product is 3.2×10^{-11}
(a) $2.0 \times 10^{-4} mole/litre$
(b) $12.0 \times 10^{-3} mole/litre$
(c) $0.2 \times 10^{-4} mole/litre$
(d) $2 \times 10^{-3} mole/litre$

96. The following equilibrium exists in an aqueous solution of hydrogen sulphide :
$H_2S \rightleftarrows H^+ + HS^-$
If dilute HCl is added to an aqueous solution of H_2S without any change in temperature
(a) The equilibrium constant will change
(b) The concentration of HS^- will increase
(c) The concentration of undissociated H_2S will decrease
(d) The concentration of HS^- will decrease

97. Solubility of a salt M_2X_3 is $ymoldm^{-3}$. The solubility product of the salt will be

(a) $6y^4$ (b) $64y^4$

(c) $36y^5$ (d) $108y^5$

98. Which one of the following is most soluble

(a) $CuS(K_{sp} = 8 \times 10^{-37})$

(b) $MnS(K_{sp} = 7 \times 10^{-16})$

(c) $Bi_2S_3(K_{sp} = 1 \times 10^{-70})$

(d) $Ag_2S(K_{sp} = 6 \times 10^{-51})$

99. The solubility product of $PbCl_2$ at 20^oC is 1.5×10^{-4}. Calculate the solubility

(a) 3.75×10^{-4}

(b) 3.34×10^{-2}

(c) 3.34×10^{2}

(d) None of these

100. Which one of the following compounds is a Lewis acid

(a) PCl_3 (b) BCl_3

(c) NCl_3 (d) $CHCl_3$