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

1. The expression for the solubility product of $Al_2(SO_4)_3$is
(a) $K_{sp} = [Al^{3+}](SO_4^{2-}]$
(b) $K_{sp} = [Al^{3+}]^2(SO_4^{2-}]^3$
(c) $K_{sp} = [Al^{3+}]^3(SO_4^{2-}]^2$
(d) $K_{sp} = [Al^{3+}]^2(SO_4^{2-}]^2$

2. On addition of ammonium chloride to a solution of ammonium hydroxide
(a) Dissociation of NH_4OHincreases
(b) Concentration of OH^-increases
(c) Concentration of OH^-decreases
(d) Concentration of NH_4^+ and OH^- increases

3. 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) $2.0 \times 10^{-6}M$
(b) $1.0 \times 10^{-4}M$
(c) $1.6 \times 10^{-4}M$
(d) $4.0 \times 10^{-10}M$

4. In a saturated solution of electrolyte, the ionic product of their concentration are constant at constant temperature and this constant for electrolyte is known as
(a) Ionic product
(b) Solubility product
(c) Ionization constant
(d) Dissociation constant

5. If the solubility product K_{sp} of a sparingly soluble salt MX_2 at $25°C$ is 1.0×10^{-11}, the solubility of the salt in *mole litre*$^{-1}$ at this temperature will be
(a) 2.46×10^{14}
(b) 1.36×10^{-4}
(c) 2.60×10^{-7}
(d) 1.20×10^{-10}

6. The unit of ionic product of water K_w are
(a) $Mol^{-1}L^{-1}$ (b) $Mol^{-2}L^{-2}$
(c) $Mol^{-2}L^{-1}$ (d) Mol^2L^{-2}

7. A solution which is $10^{-3}M$ each in $Mn^{2+}, Fe^{2+}, Zn^{2+}$ and Hg^{2+} is treated with $10^{-16}M$ sulphide ion. If K_{sp} of MnS, FeS, ZnS and HgS are $10^{-15}, 10^{-23}, 10^{-20}$ and 10^{-54} respectively, which one will precipitate first
(a) FeS (b) MgS
(c) HgS (d) ZnS

8. 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) $9x$

9. The solubility product of $BaSO_4$ at $25°C$ is 1.0×10^{-9}. What would be the concentration of H_2SO_4 necessary to precipitate $BaSO_4$ from a solution of $0.01MBa^{2+}$ions

(a) 10^{-9} (b) 10^{-8}

(c) 10^{-7} (d) 10^{-6}

10. The solubility in water of a sparingly soluble salt AB_2 is $1.0 \times 10^{-5}moll^{-1}$. Its solubility product number will be

(a) 4×10^{-15} (b) 4×10^{-10}

(c) 1×10^{-15} (d) 1×10^{-10}

11. The solubility of CaF_2 is a *moles/litre*. Then its solubility product is

(a) s^2 (b) $4s^3$

(c) $3s^2$ (d) s^3

12. On passing a current of HCl gas in a saturated solution of $NaCl$, the solubility of $NaCl$

(a) Increases

(b) Decreases

(c) Remains unchanged

(d) $NaCl$decomposes

13. 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) $[2Ag^+]^2[CrO_4^{-2}]$

14. The solubility of CaF_2 is $2 \times 10^{-4}moles/litre$. Its solubilily product (K_{sp}) is

(a) 2.0×10^{-4} (b) 4.0×10^{-3}

(c) 8.0×10^{-12} (d) 3.2×10^{-11}

15. Solubility product of a sulphide *MS* is 3×10^{-25} and that of another sulphide *NS* is 4×10^{-40} . In ammoniacal solution

(a) Only *NS* gets precipitated

(b) Only *MS* gets precipitated

(c) No sulphide precipitates

(d) Both sulphides precipitate

16. Which of the following salts when dissolved in water will get hydrolysed

(a) $NaCl$ (b) NH_4Cl

(c) KCl (d) Na_2SO_4

17. The aqueous solution of $FeCl_3$ is acidic due to

(a) Acidic impurities

(b) Ionisation

(c) Hydrolysis

(d) Dissociation

18. A precipitate of $AgCl$ is formed when equal volumes of the following are mixed. [K_{sp} for $AgCl = 10^{-10}$]

(a) $10^{-4}MAgNO_3$ and $10^{-7}MHCl$
(b) $10^{-5}MAgNO_3$ and $10^{-6}MHCl$
(c) $10^{-5}MAgNO_3$ and $10^{-4}MHCl$
(d) $10^{-6}MAgNO_3$ and $10^{-6}MHCl$

19. The solubility of silver chromate in 0.01 $M\ K_2CrO_4$ is $2 \times 10^{-8} moldm^{-3}$. The solubility product of silver chromate will be
(a) 8×10^{-24} (b) 16×10^{-24}
(c) 1.6×10^{-18} (d) 16×10^{-18}

20. Some salts although containing two different metallic elements give test for only one of them in solution. Such salts are
(a) Double salts
(b) Normal salts
(c) Complex salts
(d) Basic salts