Date Planned : __ / __ / __	Daily Tutorial Sheet-1	Expected Duration : 90 Min
Actual Date of Attempt : __ / __ / __	JEE Main (Archive)	Exact Duration :_____

1. 1 M NaCl and 1 M HCl are present in an aqueous solution. The solution is: **(1991)**

(A) Not a buffer solution and with pH < 7 **(B)** Not a buffer solution with pH > 7

(C) A buffer solution with pH < 7 **(D)** A buffer solution with pH >7

2. Species acting as both Bronsted acid and base is: **(1992)**

(A) HSO_4^- **(B)** Na_2CO_3 **(C)** NH_3 **(D)** OH^-

3. If the solubility of an aqueous solution of $Mg(OH)_2$ be X mol lt^{-1} than K_{sp} of $Mg(OH)_2$ is: **(1992)**

(A) $4X^3$ **(B)** $108X^5$ **(C)** $27X^4$ **(D)** $9X$

4. The solubility of a sparingly soluble salt AB_2 in water is 1.0×10^{-5} mol L^{-1}. Its solubility product is:

(A) 10^{-15} **(B)** 10^{-10} **(C)** 4×10^{-15} **(D)** 4×10^{-10} **(1993)**

5. Which are of the following has highest proton affinity? **(1994)**

(A) NH_3 **(B)** PH_3 **(C)** H_2O **(D)** H_2S

6. Which statement is not true? **(1995)**

(A) pH of 1×10^8 M HCl is 8

(B) 96500 coulomb deposits 1 g equivalent of copper

(C) Conjugate base of $H_2PO_4^-$ is HPO_4^{2-}

(D) pH + pOH = 14 for all aqueous solution

7. When rain accompanied by a thunderstorm, the collected rain water will have a pH. **(1996)**

(A) Influenced by occurrence of thunderstorm

(B) Depends upon the amount of dust in water

(C) Slightly lower than that of rain water without thunderstorm

(D) Slightly higher than that when thunderstorm is not there

8. The conjugate base of $H_2PO_4^-$ is: **(1996)**

(A) HPO_4^{2-} **(B)** P_2O_5 **(C)** H_3PO_4 **(D)** PO_4^{3-}

9. K_{sp} of MX_4 and solubility of MX_4 is S mol/L is related by: **(1997)**

(A) $S = [K_{sp}/256]^{1/5}$ **(B)** $S = [128\ K_{sp}]^{1/4}$

(C) $S = [256\ K_{sp}]^{1/5}$ **(D)** $S = [K_{sp}/128]^{1/4}$

10. 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: **(1998)**

(A) 2×10^{-6} M **(B)** 1×10^{-4} M **(C)** 1.6×10^{-4} M **(D)** 4.0×10^{-6} M

11. Hydrogen ion concentration in mol/L in a solution of pH = 5.4 will be: **(2000)**

(A) 3.98×10^8 **(B)** 3.88×10^6 **(C)** 3.68×10^8 **(D)** 3.98×10^{-6}

12. The conjugate base of OH^- is: **(2000)**

(A) O_2 **(B)** H_2O **(C)** O^- **(D)** O^{2-}

13. The pK_a of a weak acid (HA) is 4.5. The pOH of an aqueous buffered solution of HA in which 50% of the acid is ionized is: **(2001)**

(A) 4.5 **(B)** 2.5 **(C)** 9.5 **(D)** 7.0

14. In a saturated solution of the sparingly soluble strong electrolyte $AgIO_3$ (molecular mass = 283) the equilibrium which sets in is

$$AgIO_3(s) \rightleftharpoons Ag^+(aq) + IO_3^-(aq)$$

If the solubility product constant K_{sp} of $AgIO_3$ at a given temperature is 1.0×10^{-8}, what is the mass of $AgIO_3$ contained in 100 mL of its saturated solution? **(2001)**

(A) 28.3×10^{-2}g **(B)** 28.3×10^{-3}g **(C)** 1.0×10^{-7}g **(D)** 1.0×10^{-4}g

15. 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: **(2005)**

(A) 8.58 **(B)** 4.79 **(C)** 7.01 **(D)** 9.22