AIPMT 2009

1. The ionization constant of ammonium hydroxide is 1.77×10^{-5} at 298 K. Hydrolysis constant of ammonium chloride is :-
(1) 5.65×10^{-12} (2) 5.65×10^{-10}
(3) 6.50×10^{-12} (4) 5.65×10^{-13}

2. What is the $[OH^-]$ in the final solution prepared by mixing 20.0 mL of 0.050 M HCl with 30.0 mL of 0.10M $Ba(OH)_2$?
(1) 0.12 M (2) 0.10 M
(3) 0.40 M (4) 0.0050M

3. The dissociation constants for acetic acid and HCN at 25°C are 1.5×10^{-5} and 4.5×10^{-10}, respectively. The equilibrium constant for the equilibrium
$CN^- + CH_3COOH \rightleftharpoons HCN + CH_3COO^-$
would be :-
(1) 3.3×10^4 (2) 3.0×10^5
(3) 3.3×10^{-5} (4) 3.0×10^{-4}

AIPMT 2010

4. If pH of a saturated solution of $Ba(OH)_2$ is 12, the value of its K_{sp} is :-
(1) $5.00 \times 10^{-7}\ M^3$ (2) $4.00 \times 10^{-6}\ M^3$
(3) $4.00 \times 10^{-7}\ M^3$ (4) $5.00 \times 10^{-6}\ M^3$

5. Find the pH of a buffer solution containing equal concentration of B^- and HB. (K_b for B^- is 10^{-10}) :-
(1) 4 (2) 10 (3) 7 (4) 6

AIPMT Mains 2011

6. In qualitative analysis, the metals of Group I can be separated from other ions by precipitating them as chloride salts. A solution initially contains Ag^+ and Pb^{2+} at a concentration of 0.10 M. Aqueous HCl is added to this solution until the Cl^- concentration is 0.10 M. What will the concentrations of Ag^+ and Pb^{2+} be at equilibrium ?
(K_{sp} for AgCl=1.8×10^{-10}, K_{sp} for $PbCl_2$=1.7×10^{-5})
(1) $[Ag^+] = 1.8 \times 10^{-11}$ M ; $[Pb^{2+}] = 1.7 \times 10^{-4}$ M;
(2) $[Ag^+] = 1.8 \times 10^{-7}$ M ; $[Pb^{2+}] = 1.7 \times 10^{-6}$ M;
(3) $[Ag^+] = 1.8 \times 10^{-11}$ M ; $[Pb^{2+}] = 8.5 \times 10^{-5}$ M;
(4) $[Ag^+] = 1.8 \times 10^{-9}$ M ; $[Pb^{2+}] = 1.7 \times 10^{-3}$ M;

7. A buffer solution is prepared in which the concentration of NH_3 is 0.30 M and the concentration of NH_4^+ is 0.20 M. If the equilibrium constant, K_b for NH_3 equals 1.8×10^{-5}, what is the pH of this solution ? (log 2.7 = 0.43)
(1) 9.08 (2) 9.43 (3) 11.72 (4) 8.73

AIPMT Mains 2012

8. Buffer solutions have constant acidity and alkalinity because:
(1) they have large excess of H^+ or OH^- ions
(2) they have fixed value of pH
(3) these give unionised acid or base on reaction with added acid or alkali
(4) acids and alkalies in these solutions are shielded from attack by other ions

9. Equimolar solutions of the following substances were prepared separately. Which one of the these will record the highest pH value?
(1) LiCl (2) $BeCl_2$ (3) $BaCl_2$ (4) $AlCl_3$

NEET UG 2013

10. Which is the strongest acid in the following ?
(1) H_2SO_3 (2) H_2SO_4
(3) $HClO_3$ (4) $HClO_4$

AIPMT 2014

11. Which of the following salts will give highest pH in water ?
(1) KCl (2) NaCl
(3) Na_2CO_3 (4) $CuSO_4$

AIPMT 2015

12. The K_{sp} of Ag_2CrO_4, AgCl, AgBr and AgI are respectively, 1.1×10^{-12}, 1.8×10^{-10}, 5.0×10^{-13}, 8.3×10^{-17}. Which one of the following salts will precipitate last if $AgNO_3$ solution is added to the solution containing equal moles of NaCl, NaBr, NaI and Na_2CrO_4 ?
(1) AgCl (2) AgBr (3) Ag_2CrO_4 (4) AgI

Re-AIPMT 2015

13. Which one of the following pairs of solution is not an acidic buffer ?
(1) H_2CO_3 and Na_2CO_3
(2) H_3PO_4 and Na_3PO_4
(3) $HClO_4$ and $NaClO_4$
(4) CH_3COOH and CH_3COONa

14. What is the pH of the resulting solution when equal volumes of 0.1 M NaOH and 0.01 M HCl are mixed?
(1) 7.0 (2) 1.04 (3) 12.65 (4) 2.0

NEET-I 2016

15. MY and NY_3, two nearly insoluble salts, have the same K_{sp} values of 6.2×10^{-13} at room temperature. Which statement would be **true** in regard to MY and NY_3 ?
(1) The molar solubilities of MY and NY_3 in water are identical.
(2) The molar solubility of MY in water is less than that of NY_3
(3) The salts MY and NY_3 are more soluble in 0.5 M KY than in pure water.
(4) The addition of the salt of KY to solution of MY and NY_3 will have no effect on their solubilities.

NEET-II 2016

16. The percentage of pyridine (C_5H_5N) that forms pyridinium ion ($C_5H_5N^+H$) in a 0.10 M aqueous pyridine solution (K_b for $C_5H_5N = 1.7 \times 10^{-9}$) is
(1) 0.77% (2) 1.6%
(3) 0.0060% (4) 0.013%

17. The solubility of AgCl(s) with solubility product 1.6×10^{-10} in 0.1 M NaCl solution would be
(1) 1.6×10^{-11} M (2) zero
(3) 1.26×10^{-5} M (4) 1.6×10^{-9} M

NEET(UG) 2017

18. Concentration of the Ag^+ ions in a saturated solution of $Ag_2C_2O_4$ is 2.2×10^{-4} mol L^{-1} Solubility product of $Ag_2C_2O_4$ is :-
(1) 2.66×10^{-12} (2) 4.5×10^{-11}
(3) 5.3×10^{-12} (4) 2.42×10^{-8}

NEET(UG) 2018

19. Following solutions were prepared by mixing different volumes of NaOH and HCl of different concentrations :

a. $60mL\,\frac{M}{10}HCl + 40mL\,\frac{M}{10}NaOH$

b. $55mL\,\frac{M}{10}HCl + 45mL\,\frac{M}{10}NaOH$

c. $75mL\,\frac{M}{5}HCl + 25mL\,\frac{M}{5}NaOH$

d. $100mL\,\frac{M}{10}HCl + 100mL\,\frac{M}{10}NaOH$

pH of which one of them will be equal to 1 ?
(1) b (2) a (3) d (4) c

20. The solubility of $BaSO_4$ in water 2.42×10^{-3} gL^{-1} at 298 K. The value of solubility product (K_{sp}) will be
(Given molar mass of $BaSO_4$ = 233 g mol^{-1})
(1) 1.08×10^{-10} mol^2 L^{-2}
(2) 1.08×10^{-12} mol^2 L^{-2}
(3) 1.08×10^{-14} mol^2 L^{-2}
(4) 1.08×10^{-8} mol^2 L^{-2}

NEET(UG) 2019

21. pH of a saturated solution of $Ca(OH)_2$ is 9. The solubility product (K_{sp}) of $Ca(OH)_2$ is :-
(1) 0.5×10^{-15} (2) 0.25×10^{-10}
(3) 0.125×10^{-15} (4) 0.5×10^{-10}

22. Which will make basic buffer ?
(1) 50 mL of 0.1 M NaOH + 25 mL of 0.1 M CH_3COOH
(2) 100 mL of 0.1 M CH_3COOH + 100 mL of 0.1M NaOH
(3) 100 mL of 0.1 M HCl + 200 mL of 0.1 M NH_4OH
(4) 100 mL of 0.1 M HCl + 100 mL of 0.1 M NaOH

NEET(UG) (Odisha) 2019

23. The pH of 0.01 M NaOH (aq) solution will be
(1) 7.01 (2) 2
(3) 12 (4) 9

24. Which of the following cannot act both as Bronsted acid and as Bronsted base ?
(1) HCO_3^- (2) NH_3
(3) HCl (4) HSO_4^-

25. The molar solubility of CaF_2 ($K_{sp} = 5.3 \times 10^{-11}$) in 0.1 M solution of NaF will be
(1) 5.3×10^{-11} mol L^{-1}
(2) 5.3×10^{-8} mol L^{-1}
(3) 5.3×10^{-9} mol L^{-1}
(4) 5.3×10^{-10} mol L^{-1}

NEET (UG) 2020

26. Find out the solubility of $Ni(OH)_2$ in 0.1M NaOH. Given that the ionic product of $Ni(OH)_2$ is 2×10^{-15}.
(1) 1×10^{8} M (2) 2×10^{-13} M
(3) 2×10^{-8} M (4) 1×10^{-13} M

NEET (UG) 2020 (COVID-19)

27. Which among the following salt solutions is basic in nature ?
(1) Ammonium chloride
(2) Ammonium sulphate
(3) Ammonium nitrate
(4) Sodium acetate

28. The solubility product for a salt of the type AB is 4×10^{-8}. What is the molarity of its standard solution?
(1) 2×10^{-4} mol/L (2) 16×10^{-16} mol/L
(3) 2×10^{-16} mol/L (4) 4×10^{-4} mol/L

NEET (UG) 2021

29. The pK_b of dimethylamine and pK_a of acetic acid are 3.27 and 4.77 respectively at T (K). The correct option for the pH of dimethylammonium acetate solution is:
(1) 8.50 (2) 5.50
(3) 7.75 (4) 6.25

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	**2**	**2**	**1**	**1**	**1**	**4**	**2**	**3**	**3**	**4**	**3**	**3**	**3**	**3**	**2**
Que.	16	17	18	19	20	21	22	23	24	25	26	27	28	29	
Ans.	**4**	**4**	**3**	**4**	**1**	**1**	**3**	**3**	**3**	**3**	**2**	**4**	**1**	**3**	