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TARGET : NEET (UG) 2024

Course : SARANSH (Youtube Live CRASH COURSE)

CHEMISTRY
DPP
DAILY PRACTICE PROBLEMS
DPP NO. 1

CHEMISTRY: Ionic Equilibrium

DPP No. : 1

1. Which of the following solution will have pH close to 1.0?

(1) 100 ml of M/10 HCl + 100 ml of M/10 NaOH

(2) 55 ml of M/10 HCl + 45 ml of M/10 NaOH

(3) 10 ml of M/10 HCl + 90 ml of M/10 NaOH

(4) 75 ml of M/5 HCl + 25 ml of M/5 NaOH

2. We have an aqueous solution whose pH is found to be '7' at 273K. What will be the nature of this solution?

(1) Basic (2) Neutral (3) Acidic (4) Can't be predicted

3. What is the approximate OH^- ion concentration of a 0.150 M NH_3 solution?

($K_b = 1.75 \times 10^{-5}$)

(1) 2.62×10^{-6} (2) 4.6×10^{-6} (3) 1.62×10^{-3} (4) 3.6×10^{-3}

4. The pH value of decinormal solution of NH_4OH, which is 20% ionized is: (Use log 2 = 0.3)

(1) 13.30 (2) 14.70 (3) 12.30 (4) 12.95

5. Which pair will show common ion effect?

(1) $BaCl_2 + Ba(NO_3)_2$ (2) NaCl + HCl

(3) $NH_4OH + NH_4Cl$ (4) NaOH + NaCl

6. The pK_a values of four acids are given below. Which one will correspond to the weakest acid?

(1) –1.3 (2) 4.72 (3) 9.2 (4) 16.0

7. A weak acid HA has a pH = 4. Which of the following conditions not satisfy the same?

(1) $C = 10^{-3}$, $\alpha = 10\%$ (2) $C = 10^{-2}$, $K_a = 10^{-6}$

(3) $[A^-] = 10^{-4}$ (4) $K_a = 10^{-2}$, $\alpha = 10\%$

8. **Assertion :** The pH of an aqueous solution of acetic acid remains unchanged on the addition of sodium acetate.

Reason : The ionisation of acetic acid is suppressed by the addition of sodium acetate.

(1) If both assertion and reason are true and reason is the correct explanation of assertion.

(2) If both assertion and reason are true but reason is not the correct explanation of assertion.

(3) If Assertion is true but reason is false.

(4) If both assertion and reason are false.

9. The equilibrium constant for the given reaction is approximately 10^{-3}

$HPO_4^{2-}(aq) + HCO_3^-(aq) \rightleftharpoons H_2PO_4^-(aq) + CO_3^{2-}(aq)$

Which is strongest conjugate base in the given reaction ?

(1) $HPO_4^{2-}(aq)$ (2) $HCO_3^-(aq)$

(3) $H_2PO_4^-(aq)$ (4) $CO_3^{2-}(aq)$

10. Which of the following constitutes a set amphoteric species.

(1) H_3O^+ , $H_2PO_4^-$, HCO_3^- (2) H_2O , HPO_4^{2-} , $H_2PO_2^-$

(3) H_2O , $H_2PO_3^-$, HPO_4^{2-} (4) $HC_2O_4^-$, $H_2PO_4^-$, SO_4^{2-}

11. Which of the following order represent the order for the strength of base ?

(1) $CH_3CH_2^-$ > NH_2^- > $HC \equiv C^-$ > OH^-

(2) $H - C \equiv C^-$ > $CH_3CH_2^-$ > NH_2^- > OH^-

(3) OH^- > NH_2^- > $HC \equiv C^-$ > $CH_3CH_2^-$

(4) NH_2^- > $HC \equiv C^-$ > OH^- > $CH_3CH_2^-$

12. The pH of $Ba(OH)_2$ solution is 13. The number millimoles of $Ba(OH)_2$ present in 10 ml of solution would be

(1) 1.00 (2) 0.50 (3) 10.00 (4) 15.00

13. At 25ºC the pH of a 10^{-8} (M) HCl solution in water is

(1) 8 (2) –8 (3) within 7 and 8 (4) within 6 and 7

Answer Key

1.	(4)	**2.**	(3)	**3.**	(3)	**4.**	(3)	**5.**	(3)	**6.**	(4)	**7.**	(4)
8.	(4)	**9.**	(4)	**10.**	(3)	**11.**	(1)	**12.**	(2)	**13.**	(4)		