DPP-10-[Salt Hydrolysis-1(Identification)]

Chapter: Ionic Equilibrium

"Every question you solve is an investment in your dream."

GROUP–1: Salts That Do Not Undergo Hydrolysis

Q1. **Which of the anions is not hydrolyzed in aqueous solution ?**

(i) Cl^-

(ii) NO_3^-

(iii) Br^-

(iv) ClO_4^-

(1) (i),(ii),(iii),(iv) (2) (ii),(iii),(iv) (3) (i),(ii),(iii) (4) (ii),(iv)

Q2. **Which of the following cations is not hydrolyzed in aqueous solution ?** (i) Mg^{2+} (ii) Ca^{2+} (iii) Na^+ (iv) K^+

(1) (i),(ii) (2) (iii),(iv) (3) (i),(ii),(iii) (4) (i),(ii),(iii)

Q3. **Which of the following salts does not undergo hydrolysis ?**

(1) KCN

(2) KCl

(3) NH_4NO_3

(4) $FeCl_3 \cdot 6H_2O$

Q4. **Which salt will not undergo hydrolysis :**

(1) KCl

(2) Na_2SO_4

(3) NaCl

(4) All

GROUP–2: Hydrolysis of Ions (Anions/Cations)

Q5. **Which of the following salts undergoes anionic hydrolysis ?**

(1) $AlCl_3$

(2) $CuSO_4$

(3) Na_2CO_3

(4) NH_4Cl

Q6. **Which of the following salts undergoes hydrolysis in water ?**

(1) Na_3PO_4

(2) CH_3COONa

(3) $NaNO_3$

(4) Both (1) and (2)

GROUP–3: Nature of Salt Solutions (Acidic / Basic / Neutral)

Q7. **Which of the following salts is neutral in water ?**

(1) KCl
(2) NH_4NO_3
(3) NH_4CN
(4) NH_4OH

Q8. **Which salt is not an example of acidic salt :**

(1) HCOONa
(2) NaH_2PO_2
(3) NaHS
(4) (1) and (2) both

Q9. **An example of a salt dissolved in water to give acidic solution is :**

(1) Ammonium chloride
(2) Sodium acetate
(3) Potassium nitrate
(4) Barium bromide

Q10. **The compound whose 0.1 M solution is basic is :**

(1) Ammonium acetate
(2) Ammonium chloride
(3) Ammonium sulphate
(4) Sodium acetate

Q11. **Solution of sodium carbonate is :**

(1) Strongly acidic
(2) Weakly basic
(3) Strongly basic
(4) Weakly acidic

Q12. **Aqueous solution of $Al_2(SO_4)_3$ is :**

(1) Basic & acidic
(2) Neutral
(3) Basic
(4) Acidic

Q13. **A solution of $FeCl_3$ in water acts as acidic due to :**

(1) Acidic impurities
(2) Ionisation
(3) Hydrolysis of Fe^{3+}
(4) Dissociation

Q14. **Maximum efficiency of cationic hydrolysis will be shown by :**

(1) Al^{3+}
(2) Ga^{3+}
(3) Tl^{+}
(4) Tl^{3+}

Q15. **Which is/are not correctly matched ?**

(1) $FeCl_3$ in water – Basic
(2) NH_4Cl in water – Acidic
(3) Ammonium acetate – Acidic
(4) Na_2CO_3 in water – Basic

Q16. Which of the following is not an acidic salt :
(1) $NaHSO_4$
(2) HCOONa
(3) NaH_2PO_3
(4) None of them

Q17. Which is a basic salt :
(1) PbS
(2) $PbCO_3$
(3) $PbSO_4$
(4) $2PbCO_3 \cdot Pb(OH)_2$

Q18. Which of the following is an acid salt :
(1) Na_2S
(2) Na_2SO_3
(3) $NaHSO_3$
(4) Na_2SO_4

Q19. Which ion does not show acid behaviour :
(1) $Al(H_2O)_6^{3+}$
(2) $Fe(H_2O)_6^{3+}$
(3) HPO_4^{2-}
(4) ClO_3^-

GROUP–4: pH Comparison / Increasing–Decreasing Order

Q20. The salt whose aqueous solution has highest pH is :
(1) KCl
(2) NH_4Cl
(3) $(NH_4)_2CO_3$
(4) Na_2CO_3

Q21. Which of the following salts will give highest pH in water ?
(1) KCl
(2) NaCl
(3) Na_2CO_3
(4) $CuSO_4$

Q22. pH of salt of weak acid with strong base at 25°C is :
(1) 7
(2) >7
(3) <7
(4) None

Q23. A solution of $MgCl_2$ in water has pH :

(1) < 7
(2) > 7
(3) 7
(4) 14.2

Q24. Which salt will have pH less than 7 when dissolved in water ?

(1) $CuSO_4$
(2) K_2CO_3
(3) Na_3PO_4
(4) KCN

Q25. The aqueous solution of which salt will have the lowest pH :

(1) NaClO
(2) $NaClO_2$
(3) $NaClO_3$
(4) $NaClO_4$

Q26. Correct increasing order of pH of 0.1 M solutions of A = $HCOONH_4$, B = CH_3COONH_4, C = CH_3COONa, D = NH_4Cl :

(1) A < D < B < C
(2) D < A < C < B
(3) A < D < C < B
(4) D < A < B < C

Q27. Which equimolar solution records the highest pH ?

(1) $BaCl_2$
(2) $MgCl_2$
(3) $CaCl_2$
(4) $SrCl_2$

Q28. Which equimolar solution records the highest pH ?

(1) LiCl
(2) $BeCl_2$
(3) $BaCl_2$
(4) $AlCl_3$

Q29. The pH of 0.1 M solution of the following salts increases in order :

(1) NaCl < NH_4Cl < NaCN < HCl
(2) NaCN < NH_4Cl < NaCl < HCl
(3) HCl < NaCl < NaCN < NH_4Cl
(4) HCl < NH_4Cl < NaCl < NaCN

Q30. Minimum pH is shown by aqueous solution of :

(1) 0.1 M $BaCl_2$
(2) 0.1 M $Ba(NO_3)_2$
(3) 0.1 M $BeCl_2$
(4) 0.1 M $Ba(OH)_2$

Q31. At 90°C, the pH of 0.1 M NaCl solution is :

(1) <7
(2) >7
(3) 7

(4) 0.1

Q32. A salt 'X' in water of pH 7 becomes alkaline. The salt is made of :

(1) Strong acid + strong base
(2) Strong acid + weak base
(3) Weak acid + weak base
(4) Weak acid + strong base

Q33. The highest pH value is of :

(1) 0.1 M NaCl
(2) 0.1 M NH_4Cl
(3) 0.1 M CH_3COONa
(4) 0.1 M CH_3COONH_4

Q34. pH of K_2S solution is :

(1) 7
(2) Less than 7
(3) More than 7
(4) 0

Q35. The pH of aqueous solution of sodium acetate is :

(1) 7
(2) Very low
(3) >7
(4) <7

GROUP–5: Ion Behaviour / Mixed Hydrolysis Reasoning

Q36. Which of the following ions or compounds tend to produce acidic, basic or neutral solution ? (a) $C_2H_5O^-$ (b) Cu^{2+} (c) SO_3^{2-} (d) F^- (e) NH_4^+ (f) CH_3COONa (g) KNO_3 (h) NaOCl (i) Na_2CO_3 (j) $ZnCl_2$

(a) Basic, (b) Acidic, (c) Basic, (d) Basic, (e) Acidic, (f) Basic, (g) Neutral, (h) Basic, (i) Basic, (j) Acidic

Q37. pH of solution of $HCOONH_4$ is 6.48. This can be explained by :

(1) Hydrolysis of both cation and anion
(2) Hydrolysis of cation
(3) Hydrolysis of anion
(4) Hydrolysis of water

Q38. The process of neutralisation invariably produces :

(1) H^+ ions
(2) OH^- ions
(3) Both H^+ and OH^- ions
(4) Molecules of water