

Prayas JEE 2026

Chemistry

Solutions

DPP: 5

- Q1** The Van't Hoff's factor (i) for a dilute aqueous Solution of Na_2SO_4 is
 (A) $1 + \alpha$
 (B) $1 - \alpha$
 (C) $1 + 2\alpha$
 (D) $1 - 2\alpha$
- Q2** The degree of dissociation (α) of a weak electrolyte A_xB_y is related to van't Hoff factor (i) by the expression
 (A) $\alpha = \frac{i-1}{(x+y-1)}$
 (B) $\alpha = \frac{i-1}{(x+y+1)}$
 (C) $\alpha = \frac{(x+y-1)}{i-1}$
 (D) $\alpha = \frac{(x+y+1)}{i-1}$
- Q3** For the given electrolyte X_mY_n , the degree of dissociation ' α ' is given by ' i ' is the van't Hoff factor
 (A) $\alpha = \frac{i-1}{m+n-1}$
 (B) $i = (1 - \alpha) + m\alpha + n\alpha$
 (C) $\alpha = \frac{1-i}{1-m-n}$
 (D) All of these
- Q4** $0.04\text{MNa}_2\text{SO}_4$ solution is isotonic with 0.1M glucose at the same temperature. What is the apparent degree of dissociation of Na_2SO_4 ?
 (A) 0.25 (B) 0.50
 (C) 0.75 (D) 0.85
- Q5** Observe the following abbreviations π_{obs} = observed colligative property π_{cal} = theoretical colligative property assuming normal behaviour of solute.
 Van't Hoff factors (i) is given by
 (A) $i = \pi_{\text{obs}} \times \pi_{\text{cal}}$
 (B) $i = \pi_{\text{obs}} + \pi_{\text{cal}}$
 (C) $i = \pi_{\text{obs}} - \pi_{\text{cal}}$
 (D) $i = \pi_{\text{obs}} / \pi_{\text{cal}}$
- Q6** The vant's Hoff factor for $0.1\text{M Ba}(\text{NO}_3)_2$ solution is 2.74. The degree of dissociation is
 (A) 91.3% (B) 87%
 (C) 100% (D) 74%
- Q7** The freezing point depression of 0.001m , $K_x [\text{Fe}(\text{CN})_6]$ is $7.4 \times 10^{-3}\text{K}$. The value of x is: (Assuming complete dissociation, $K_f = 1.85\text{K kgmol}^{-1}$ for water)
 (A) 4 (B) 3
 (C) 2 (D) 1
- Q8** For a binary ideal liquid solution, the total pressure of the solution is given as
 (A) $P_{\text{total}} = P_A^\circ + (P_A^\circ - P_B^\circ) X_B$
 (B) $P_{\text{total}} = P_B^\circ + (P_A^\circ - P_B^\circ) X_A$
 (C) $P_{\text{total}} = P_B^\circ + (P_B^\circ - P_A^\circ) X_A$
 (D) $P_{\text{total}} = P_B^\circ + (P_B^\circ - P_A^\circ) X_B$
- Q9** If 0.1M solutions of each electrolyte are taken and if all electrolytes are completely dissociated, then whose boiling point will be highest?
 (A) Glucose
 (B) KCl
 (C) BaCl_2
 (D) $\text{K}_4[\text{Fe}(\text{CN})_6]$
- Q10** Which of the following solutions will have highest boiling point
 (A) 0.1MFeCl_3
 (B) 0.1MBaCl_2
 (C) 0.1MNaCl
 (D) $0.1\text{M urea } (\text{NH}_2\text{CONH}_2)$



Answer Key

Q1 (C)

Q2 (A)

Q3 (D)

Q4 (C)

Q5 (D)

Q6 (B)

Q7 (B)

Q8 (B)

Q9 (D)

Q10 (A)



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