Yakeen NEET 2.0 2026

Physical Chemistry By Amit

Mahajan Sir 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 van't Hoff's factor of $K_4[Fe(CN)_6]$ assuming 100% dissociation is:
(A) 5 (B) 4
(C) 11 (D) 6

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 M Na_2SO_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 A 0.001 molal solution of $[Pt(NH_3)_4Cl_4]$ in water had a freezing point depression of $0.0054^\circ C$. If K_f for water is 1.80 , the correct formula for the above compound assuming its complete dissociation is
(A) $[Pt(NH_3)_4Cl_3]Cl$
(B) $[Pt(NH_3)_4Cl_2]Cl_2$
(C) $[Pt(NH_3)_4Cl]Cl_3$
(D) $[Pt(NH_3)_4Cl_4]$

Q6 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) $\alpha=\frac{(x+y+1)}{i-1}$

Q7 Calculate the apparent degree of ionization of an electrolyte MX_2 in water, if the observed molar mass of the solute by measuring elevation in boiling point is 65.6 (Normal molar mass of the solute =164)
(A) 75% (B) 85%
(C) 65% (D) 25%

Q8 Observe the following abbreviations $\pi_{obs}=$ observed colligative property $\pi_{cal}=$ theoretical colligative property assuming normal behaviour of solute.
Van't Hoff factors (i) is given by
(A) $i=\pi_{obs}\times\pi_{cal}$
(B) $i=\pi_{obs}+\pi_{cal}$
(C) $i=\pi_{obs}-\pi_{cal}$
(D) $i=\pi_{obs}/\pi_{cal}$

Q9 Phenol dimerises in benzene having van't Hoff factor 0.54. What is the degree of association?
(A) 1.92 (B) 0.98
(C) 1.08 (D) 0.92

Q10 Van't hoff factor of $\mathrm{Ca(NO_3)_2}$ is

(A) 1 (B) 2

(C) 3 (D) 4

Q11 The vant's Hoff factor for $0.1\ \mathrm{M\ Ba(NO_3)_2}$ solution is 2.74. The degree of dissociation is

(A) 91.3% (B) 87%

(C) 100% (D) 74%

Q12 The freezing point depression of $0.001\ \mathrm{m}$, $\mathrm{K_x\left[Fe(CN)_6\right]}$ is $7.4 \times 10^{-3}\ \mathrm{K}$. The value of x is: (Assuming complete dissociation, $\left(K_f = 1.85\mathrm{K\ kgmol^{-1}\ \ for\ \ water}\right)$

(A) 4 (B) 3

(C) 2 (D) 1

Q13 The molecular weight of NaCl determined by studying freezing point depression of its 0.5% aqueous solution is 30 . The apparent degree of dissociation of NaCl is

(A) 0.60 (B) 0.50

(C) 0.30 (D) 0.95

Q14 What is the freezing point of a solution containing $8.1\ \mathrm{g\ HBr}$ in $100\ \mathrm{g}$ water assuming the acid to be 90% ionized $\left(\mathrm{k_f}\right.$ for water $\left.= 1.86^{\circ}\mathrm{Ckgmol^{-1}}\right)$?

(A) $-0.35^{\circ}\mathrm{C}$

(B) $-1.35^{\circ}\mathrm{C}$

(C) $-2.35^{\circ}\mathrm{C}$

(D) $-3.53^{\circ}\mathrm{C}$

Answer Key

Q1	(C)	Q8	(D)
Q2	(A)	Q9	(D)
Q3	(D)	Q10	(C)
Q4	(C)	Q11	(B)
Q5	(B)	Q12	(B)
Q6	(A)	Q13	(D)
Q7	(A)	Q14	(D)