Solutions

Question1

Arrange the following compounds in increasing order of their solubilities in chloroform:

NaCl, CH_3OH, cyclohexane, CH_3CN

[NEET 2024 Re]

Options:

A.

NaCl < CH_3CN < CH_3 OH < Cyclohexane

B.

CH_3 OH < CH_3 CN < NaCl < Cyclohexane

C.

NaCl < CH_3 OH < CH_3 CN < Cyclohexane

D.

Cyclohexane < CH_3 CN < CH_3 OH < NaCl

Answer: A

Solution:

Since $CHCl_3$ is an organic solvent so, covalent (non-polar) compounds will be more soluble in it. As the dipole moment of solute increases, solubility in chloroform decreases. Hence increasing order of solubility.

NaCl < CH_3 CN < CH_3 OH < Cyclohexane

Question2

Mass of glucose ($C_6H_{12}O_6$) required to be dissolved to prepare one litre of its solution which is isotonic with $15 gL^{-1}$ solution of urea (NH_3CONH_2) is (Given: Molar mass in $g mol^{-1}$ C : 12, H : 1, O : 16, N : 14)

[NEET 2024 Re]

Options:

A.

55 g

B.

15 g

C.

30 g

D.

45 g

Answer: D

Solution:

For isotonic solutions [osmotic pressure must be equal]

$$\pi_1 = \pi_2$$

$$C_1RT = C_2RT$$

$$C_1 = C_2$$

$$\frac{m}{180 \times 1} = \frac{15}{60 \times 1} \quad (\text{ m is the mass of glucose})$$

$$m = \frac{180}{4} = 45g$$

Question3

The Henry's law constant (K_H) values of three gases (A, B, C) in water are 145,2 × 10^{-5} and 35 kbar, respectively. The solubility of these gases in water follow the order:

[NEET 2024]

Options:

A.

B > A > C

B.

B > C > A

C.

A > C > B

D.

A > B > C

Answer: B

Solution:

Value of Henry's law constant $\propto \frac{1}{\text{Solubility of gas}}$

Higher the value of K_H at a given pressure, lower is the solubility of the gas in the liquid.

K_H value of gases (given) : $A > C > B$

$\therefore$ Order of solubility of gases in water : $B > C > A$

Question4

During the preparation of Mohr's salt solution (Ferrous ammonium sulphate), which of the following acid is added to prevent hydrolysis of Fe^{2*} ion?

[NEET 2024]

Options:

A.

dilute hydrochloric acid

B.

concentrated sulphuric acid

C.

dilute nitric acid

D.

dilute sulphuric acid

Answer: D

Solution:

During the preparation of Mohr's salt, dilute sulphuric acid is added to prevent the hydrolysis of Fe^{2+} ion.

Question5

The plot of osmotic pressure (Π) vs concentration (mol L^{-1}) for a solution gives a straight line with slope 25.73L barmol^{-1}. The temperature at which the osmotic pressure measurement is done is

(Use R = 0.083L barmol^{-1}K^{-1})

[NEET 2024]

Options:

A.

37°C

B.

310°C

C.

25.73°C

D.

12.05°C

Answer: A

Solution:

$\Pi = CRT$

$\text{Slope} = RT$

$25.73 = 0.083 \times T$

$T = \frac{25.73}{0.083} = 309.47 \approx 310K$

$\therefore$ Temperature in $^{\circ}C = 310 - 273$

$= 37^{\circ}C$

Question6

Which amongst the following aqueous solution of electrolytes will have minimum elevation in boiling point? Choose the correct option :-

[NEET 2023 mpr]

Options:

A.

0.05M NaCl

B.

0.1M KCl

C.

$0.1 M MgSO_4$

D.

1M NaCl

Answer: A

Solution:

$i \times M \downarrow \Rightarrow \Delta T_b \downarrow$

Question7

In one molal solution that contains 0.5 mole of a solute, there is [NEET-2022]

Options:

A. 500mL of solvent

B. 500g of solvent

C. 100mL of solvent

D. 1000g of solvent

Answer: B

Solution:

Solution

Molality is the moles of solute dissolved per kg of solvent therefore $500g$, 1 molal solution contains 0.5 of solute, as

$$m = \frac{\text{Moles of solute}}{\text{Mass of solvent (in } kg\text{)}}$$

$$1 = \frac{0.5}{\text{Mass of solvent (in } kg\text{)}}$$

$$\therefore \quad \text{Mass of solvent (in } kg\text{)} = 0.5$$

$$= 500g$$

Question8

The density of the solution is $2.15 \mathrm{gmL}^{-1}$, then mass of $2.5\,\mathrm{mL}$ solution in correct significant figures is : [NEET Re-2022]

Options:

A. 53.75g

B. 5375×10^{-3}g

C. 5.4g

D. 5.38g

Answer: C

Solution:

Solution

In case of multiplication and division, the final result should be reported as having the same number of significant digits as the number with least number of significant digits.

$\therefore$ Density $= \frac{\text{Mass}}{\text{Volume}}$

So, Mass $= 2.15 \times 2.5$

$= 5.375$

$\approx 5.4\text{g}$

Question9

gas	$K_H / K\ bar$
Ar	40.3
CO_2	1.67
HCHO	1.83×10^{-5}
CH_4	0.413

where K_H is Henry's Law constant in water. The order of their solubility in water is:
[NEET Re-2022]

Options:

A. HCHO < CH_4 < CO_2 < Ar

B. Ar < CO_2 < CH_4 < HCHO

C. Ar < CO_2 < CH_4 < HCHO

D. HCHO < CO_2 < CH_4 < Ar

Answer: B

Solution:

$$\text{Solubility of a gas} \propto \frac{1}{K_H \text{ value}}$$

Question10

The following solutions were prepared by dissolving 10g of glucose ($C_6H_{12}O_6$) in 250ml of water (P_1), 10g of urea (CH_4N_2O) in 250ml of water (P_2) and 10g of sucrose ($C_{12}H_{22}O_{11}$) in 250ml of water (P_3). The right option for the decreasing order of osmotic pressure of these solutions is :
[NEET 2021]

Options:

A. $P_2 > P_1 > P_3$

B. $P_1 > P_2 > P_3$

C. $P_2 > P_3 > P_1$

D. $P_3 > P_1 > P_2$

Answer: A

Solution:

- Osmotic pressure (π) = iCRT
where C is molar concentration of the solution
- With increase in molar concentration of solution osmotic pressure increases.
- Since, weight of all solutes and its solution volume are equal, so higher will be the molar mass of solute, smaller will be molar concentration and smaller will be the osmotic pressure.
- Order of molar mass of solute decreases as Sucrose > Glucose > Urea
- So, correct order of osmotic pressure of solutionis $P_3 < P_1 < P_2$

Question11

The correct option for the value of vapour pressure of a solution at 45°C with benzene to octane in molar ratio 3 : 2 is :
[At 45°C vapour pressure of benzene is 280 mm Hg and that of octane is 420 mm Hg. Assume Ideal gas]
[NEET 2021]

Options:

A. 160 mm of Hg

B. 168 mm of Hg

C. 336 mm of Hg

D. 350 mm of Hg

Answer: C

Solution:

Given : $n_{C_6H_6} : n_{C_8H_{18}} = 3 : 2$

So, $\chi_{C_8H_6} = \frac{3}{5}, \chi_{C_8H_{18}} = \frac{2}{5}$

$p_s = p^\circ_{C_6H_6}\chi_{C_6H_B} + p^\circ_{C_8H_{18}}\chi_{C_8H_{18}}$

$= 280 \times \frac{3}{5} + 420 \times \frac{2}{5}$

$= 168 + 168$

$= 336$ mm of Hg

Question12

The mixture which shows positive deviation from Raoult's law is (2020)

Options:

A. Benzene + Toluene

B. Acetone + Chloroform

C. Chloroethane + Bromoethane

D. Ethanol+ Acetone

Answer: D

Solution:

Hydron bond of ethanol gets weakened by addition of acetone. Thus the mixture of ethanol and acetone show positive deviation from Raoult's law.

Question13

The freezing point depression constant (K_f) of benzene is $5.12 \mathrm{K\,kg mol^{-1}}$. The freezing point depression for the solution of molality 0.078m containing a non-electrolyte solute in benzene is (rounded off upto two decimal places) : 2020

Options:

A. 0.80K

B. 0.40K

C. 0.60K

D. 0.20K

Answer: B

Solution:

$\Delta T_f = K_f m = 5.12 \times 0.078 = 0.399K = 0.40K$

Question14

For an ideal solution, the correct option is (NEET 2019)

Options:

A. $\Delta_{mix}G = 0$ at constant T and P

B. $\Delta_{mix}S = 0$ at constant T and P

C. $\Delta_{mix}V \neq 0$ at constant T and P

D. $\Delta_{mix}H = 0$ at constant T and P.

Answer: D

Question15

The mixture that forms maximum boiling azeotrope is (NEET 2019)

Options:

A. heptane + octane

B. water + nitric acid

C. ethanol + water

D. acetone + carbon disulphide.

Answer: B

Solution:

Solution:
Maximum boiling azeotropes are formed by those solutions which show negative deviations from Raoult's law. H_2O and HNO_3 mixture shows negative deviations.

Question16

Which of the following statements is correct regarding a solution of two components A and B exhibiting positive deviation from ideal behaviour? (Odisha NEET 2019)

Options:

A. Intermolecular attractive forces between $A-A$ and $B-B$ are stronger than those between $A-B$

B. $\Delta_{mix}H = 0$ at constant T and P.

C. $\Delta_{mix}V = 0$ at constant T and P.

D. Intermolecular attractive forces between $A-A$ and $B-B$ are equal to those between $A-B$.

Answer: A

Solution:

Solution:
In case of positive deviation from Raoult's law, $A-B$ interactions are weaker than those between $A-A$ or $B-B$, i.e., in this case the intermolecular attractive forces between the solute-solvent molecules are weaker than those between the solute-solute and solvent-solvent molecules. This means that in such solution, molecules of A (or B) will find it easier to escape than in pure state. This will increase the vapour pressure and result in positive deviation.

Question17

In water saturated air, the mole fraction of water vapour is 0.02. If the total pressure of the saturated air is 1.2 atm, the partial pressure of dry air is
(Odisha NEET 2019)

Options:

A. 1.18 atm

B. 1.76 atm

C. 1.176 atm

D. 0.98 atm.

Answer: C

Solution:

$p_{\text{water vapour}} = x_{\text{water vapour}} \times p_{\text{total}} = 0.02 \times 1.2 = 0.024\,\text{atm}$
$p_{\text{total}} = p_{\text{water vapour}} \times p_{\text{Dry air}}$
$\Rightarrow 1.2 = 0.024 + p_{\text{Dry air}}$
$\Rightarrow p_{\text{Dry air}} = 1.176\,\text{atm}$
Partial vapour pressure is directly proportional to mole fraction, $p \propto x$

Question18

If molality of the dilute solution is doubled, the value of molal depression constant (K_f) will be
(NEET 2017)

Options:

A. halved

B. tripled

C. unchanged

D. doubled.

Answer: C

Solution:

Solution:
The value of molal depression constant, K_f is constant for a particular solvent, thus, it will be unchanged when molality of the dilute solution is doubled.

Question19

Which of the following is dependent on temperature?
(NEET 2017)

Options:

A. Molarity

B. Mole fraction

C. Weight percentage

D. Molality

Answer: A

Question20

The van't Hoff factor (i) for a dilute aqueous solution of the strong electrolyte barium hydroxide is
(NEET-II 2016)

Options:

A. 0

B. 1

C. 2

D. 3

Answer: D

Solution:

Being a strong electrolyte, $Ba(OH)_2$ undergoes 100% dissociation in a dilute aqueous solution,
$Ba(OH)_{2(aq)} \rightarrow Ba_{(aq)}^{2+} + 2OH^{-}_{(aq)}$
Thus, van't Hoff factor $i = 3$.

Question21

Which one of the following is incorrect for ideal solution?
(NEET-II 2016)

Options:

A. $\Delta H_{mix} = 0$

B. $\Delta U_{mix} = 0$

C. $\Delta P = P_{obs} - P_{\text{calculated by Raoult′ s law}} = 0$

D. $\Delta G_{mix} = 0$

Answer: D

Solution:

For an ideal solution,
$\Delta H_{mix} = 0$, $\Delta V_{mix} = 0$,
Now, $\Delta U_{mix} = \Delta H_{mix} - P\Delta V_{mix}$
$\therefore \Delta U_{mix} = 0$
Also, for an ideal solution,
$P_A = x_A p_A{}^{\circ}$, $p_B = x_B p_B{}^{\circ}$
$\therefore \Delta P = P_{obs} - P_{\text{calculated by Raoult's law}} = 0$
$\Delta G_{mix} = \Delta H_{mix} - T\,\Delta S_{mix}$
For an ideal solution, $\Delta S_{mix} \neq 0$
$\therefore \Delta G_{mix} \neq 0$

Question22

Which of the following statements about the composition of the vapour over an ideal 1: 1 molar mixture of benzene and toluene is correct? Assume that the temperature is constant at 25°C. (Given, vapour pressure data at 25°C, benzene $= 12.8\,\text{kPa}$, toluene $= 3.85\,\text{kPa}$) (NEET-I 2016)

Options:

A. The vapour will contain equal amounts of benzene and toluene.

B. Not enough information is given to make a prediction.

C. The vapour will contain a higher percentage of benzene.

D. The vapour will contain a higher percentage of toluene.

Answer: C

Solution:

$p_{Benzene} = x_{Benzene}\ \ p^{\circ}{}_{Benzene}$
$p_{Toluene} = x_{Toluene}\ \ p^{\circ}{}_{Toluene}$
For an ideal 1: 1 molar mixture of benzene and toluene, $x_{Benzene} = \frac{1}{2}$ and $x_{Toluene} = \frac{1}{2}$

$p_{\text{Benzene}} = \frac{1}{2}p^\circ_{\text{Benzene}} = \frac{1}{2} \times 12.8\,\text{kPa} = 6.4\,\text{kPa}$

$p_{\text{Toluene}} = \frac{1}{2}p^\circ_{\text{Toluene}} = \frac{1}{2} \times 3.85\,\text{kPa} = 1.925\,\text{kPa}$

Thus, the vapour will contain a high percentage of benzene as the partial vapour pressure of benzene is higher as compared to that of toluene.

Question23

At 100°C the vapour pressure of a solution of 6.5g of a solute in 100g water is 732 mm. If $K_b = 0.52$, the boiling point of this solution will be (NEET-I 2016)

Options:

A. 102°C

B. 103°C

C. 101°C

D. 100°C

Answer: C

Solution:

Solution:

Given : $W_B = 6.5\text{g}, W_A = 100\text{g}$,

$p_s = 732\text{mm}, K_b = 0.52, T^\circ_b = 100^\circ\text{C}, p^\circ = 760\text{mm}$

$$\frac{p^\circ - p_s}{p^\circ} = \frac{n_2}{n_1}$$

$$\Rightarrow \frac{760 - 732}{760} = \frac{n_2}{100 / 18}$$

$$\Rightarrow n_2 = \frac{28 \times 100}{760 \times 18} = 0.2046\,\text{mol}$$

$$\Delta T_b = K_b \times m$$

$$T_b - T_b^\circ = K_b \times \frac{n_2 \times 1000}{W_A(\text{g})}$$

$$T_b - 100^\circ\text{C} = \frac{0.52 \times 0.2046 \times 1000}{100} = 1.06$$

$$T_b = 100 + 1.06 = 101.06^\circ\text{C}$$

Question24

What is the mole fraction of the solute in a 1.00 m aqueous solution? (2015)

Options:

A. 1.770

B. 0.0354

C. 0.0177

D. 0.177

Answer: C

Solution:

Solution:
1 molal aqueous solution means 1 mole of solute is present in 1000 g of water.

$\therefore x_{solute} = \frac{1}{1 + \frac{1000}{18}} = \frac{1}{56.5} = 0.0177$

Question25

Which of them is not equal to zero for an ideal solution? (2015 Cancelled)

Options:

A. ΔV_{mix}

B. $\Delta P = P_{observed} - P_{Raoult}$

C. ΔH_{mix}

D. ΔS_{mix}

Answer: D

Solution:

Solution:
For an ideal $\Delta S_{mix} > 0$ while ΔH_{mix}, ΔV_{mix} and $\Delta P = 0$

Question26

Which one of the following electrolytes has the same value of van’t Hoff factor (i) as that of $Al_2(SO_4)_3$ (if all are 100% ionised) ?

(2015 Cancelled)

Options:

A. $Al(NO_3)_3$

B. $K_4[Fe(CN)_6]$

C. K_2SO_4

D. $K_3[Fe(CN)_6]$

Answer: B

Solution:

$Al_2(SO_4)_3 \rightarrow 2Al^{3+} + 3SO_4^{2-}, i = 5;$
$Al(NO_3)_3 \rightarrow Al^{3+} + 3NO_3^{-}, i = 4$
$K_4[Fe(CN)_6] \rightarrow 4K^{+} + [Fe(CN)_6]^{4-}, i = 5$
$K_2SO_4 \rightarrow 2K^{+} + SO_4^{2-}, i = 3$
$K_3[Fe(CN)_6] \rightarrow 3K^{+} + [Fe(CN)_6]^{3-}, i = 4$

Question27

The boiling point of 0.2 mol kg^{-1} solution of X in water is greater than equimolar solution of Y in water. Which one of the following statements is true in this case?
(2015 cancelled)

Options:

A. Molecular mass of X is less than the molecular mass of Y

B. Y is undergoing dissociation in water while X undergoes no change.

C. X is undergoing dissociation in water

D. Molecular mass of X is greater than the molecular mass of Y.

Answer: C

Solution:

Solution:
$\Delta T_b = iK_bm$
For equimolal solutions, elevation in boiling point will be higher if solution undergoes dissociation i.e.,$i > 1$

Question28

Of the following 0.10 m aqueous solutions, which one will exhibit the largest freezing point depression?
(2014)

Options:

A. KCl

B. $C_6H_{12}O_6$

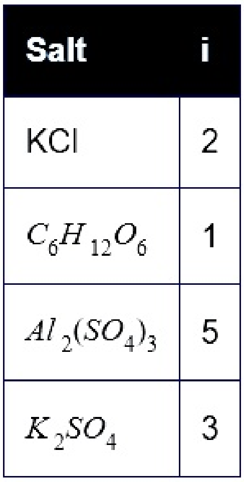
C. $AL_2(SO_4)_3$

D. K_2SO_4

Answer: C

Solution:

$\Delta T_f = i \times K_f \times m$
So, $\Delta T_f \propto i$ (van't Hoff factor)



Salt	i
KCl	2
$C_6H_{12}O_6$	1
$Al_2(SO_4)_3$	5
K_2SO_4	3

Hence, i is maximum i.e, 5 for $Al_2(SO_4)_3$

Question29

How many grams of concentrated nitric acid solution should be used to prepare 250 mL of 2.0 M HNO_3? The concentrated acid is 70% HNO_3 (2013 NEET)

Options:

A. 70.0g conc. HNO_3

B. 54.0g conc. HNO_3

C. 45.0g conc. HNO_3

D. 90.0g conc. HNO_3

Answer: C

Solution:

Solution:

$$M = \frac{W \times 1000}{M_w \times V_{sol.(mL)}} \Rightarrow 2 = \frac{\text{Mass}}{63} \times \frac{1000}{250}$$

Mass $= \frac{63}{2}$g

Mass of acid $\times \frac{70}{100} = \frac{63}{2}$

Mass of acid = 45g

Question30

Vapour pressure of chloroform ($CHCl_3$) and dichloromethane (CH_2Cl_2) at 25°C are 200 mm Hg and 41.5 mm Hg respectively. Vapour pressure of the solution obtained by mixing 25.5 g of $CHCl_3$ and 40 g of CH_2Cl_2 at same temperature will be (Molecular mass of $CHCl_3$ = 119.5 u and molecular mmass of CH_2Cl_2 = 85u
(2012 Mains)

Options:

A. 173.9 mm Hg

B. 90.63 mm Hg

C. 347.9 mm Hg

D. 285.5 mm Hg

Answer: B

Solution:

(None):
$P°_{CHCl_3} = 200Hg, P°_{CH_2Cl_2} = 41.5mmHg$

Moles of $CHCl_3 = \frac{\text{weight}}{\text{Moleccular weight}} = \frac{25.5}{119.5} = 0.213$

Moles of $CH_2Cl_2 = \frac{40}{85} = 0.470$

$X_{CHCl_3} = \frac{0.213}{0.213 + 0.470} = 0.31$

$X_{CH_2Cl_2} = \frac{0.470}{0.213 + 0.470} = 0.69$

$PT = P°_{CHCl_3}X_{CHCl_3} + P°_{CH_2Cl_2}X_{CH_2Cl_2}$

$= 200 \times 0.31 + 41.5 \times 0.69$

$= 62 + 28.63 = 90.63$

Question31

P_A and P_B are the vapour pressure of pure liquid components, A and B, respectively of an ideal binary solution. If x_A represents the mole fraction of component A,the total pressure of the solution will be (2012)

Options:

A. $P_A + x_A(P_B - P_A)$

B. $P_A + x_A(P_A - P_B)$

C. $P_B + x_A(P_B - P_A)$

D. $P_B + x_A(P_A - P_B)$

Answer: D

Solution:

According to Raoult’s law,
$P = x_A P_B - x_B P_B$)...(i)
For binary solution,
$x_A + x_B = 1$, $x_B = 1 - x_A$.......(ii)
Putting value of x_B from eqn. (ii) to eqn. (i)
$P = x_A P_A + (1 - x_A)P_B = x_A P_A + P_B - x_A P_B$

$P = P_B + x_A(P_A - P_B)$

Question32

200 mL of an aqueous solution of a protein contains its 1.26 g. The osmotic pressure of this solution at 300 K is found to be $2.57 x 10^{-1}$ bar. The molar mass of protein will be(R = 0.083 L bar mol $^{-1}$ K $^{-1}$)
(2011 Mains)

Options:

A. 51022 g mol $^{-1}$

B. 122044 g mol $^{-1}$

C. 31011 g mol $^{-1}$

D. 61038 g mol $^{-1}$

Answer: D

Solution:

Solution:

We know that $\pi V = nRT$,where $n = \frac{w}{M}$

$\pi V = \frac{w}{M} RT$

$$M = \frac{wRT}{\pi V} = \frac{1.26 \times 0.083 \times 300}{2.57 \times 10^{-3} \times \frac{200}{100}}$$

$$= \frac{1.26 \times 0.083 \times 300}{2.57 \times 10^{-3} \times 0.2} = 61038 \text{gmol}^{-1}$$

Question33

A 0.1 molal aqueous solution of a weak acid is 30% ionized.If K_f for water is $1.86°\frac{C}{m}$,the freezing point of the solution will be (2011 Mains)

Options:

A. -0.18°C

B. -0.54°C

C. -0.36°C

D. -0.24°C

Answer: D

Solution:

We know that $\Delta T_f = i \times K_f \times m$
Here i is van’t Hoff’s factor.
i for weak acid is 1 + α.
Here a is degree of dissociation i.e. 30%
1.e, 30/100=0.3
$\therefore i = 1 + \alpha = 1 + 0.3 = 1.3$
$\Delta T_f = i \times K_f \times m = 1.3 \times 186 \times 0.1 = 0.24$

∴ Frezing point= -0.24

Question34

Mole fraction of the solute in a 1.00 molal aqueous solution is (2011)

Options:

A. 0.1770

B. 0.0177

C. 0.0344

D. 1.7700

Answer: B

Solution:

Mole fraction of solute

$$= \frac{\text{Moles of solute}}{\text{Mole of solute + moles of solvent}}$$
$$= \frac{1}{1 + 55.56}[\because \text{Moles of solvent} = \frac{1000}{18} = 55.56]$$
$$= \frac{1}{55.56} = 0.0177$$

Question35

The van’t Hoff factor i for a compound which undergoes dissociation in one solvent and association in other solvent is respectively
(2011)

Options:

A. less than one and greater than one

B. less than one and less than one

C. greater than one and less than one

D. greater than one and greater than one

Answer: C

Solution:

Solution:
From the value of van’t Hoff factor i it is possible to determine the degree of dissociation or association. In case of dissociation, i is greater than 1 and in case of association i is less than 1.

Question36

The freezing point depression constant for water is $= 1.86°Cm^{-1}$.If $5.00g Na_2SO_4$ is dissolved in $45.0g H_2O$, the freezing point is changed by -3.82°C. Calculate the van’t Hoff factor for $NaSO_4$
(2011)

Options:

A. 2.05

B. 2.63

C. 3.11

D. 0.381

Answer: B

Solution:

We know that $\Delta T_f = i \times K_f \times \frac{w_B \times 1000}{m_B \times w_A}$

Given: $\Delta T_f = 3.82$, $K_f = 1.86$

$w_B = 5$, $m_B = 142$, $w_A = 45$

$$i = \frac{\Delta T \ \times m_B \times w_A}{K_f \times w_B \times 1000} = \frac{3.82 \times 142 \times 45}{1.86 \times 5 \times 1000} = 2.63$$

Question37

A solution of sucrose (molar mass $= 342 \mathrm{gmol}^{-1}$) has been prepared by dissolving 68.5 g of sucrose in 1000 g of water. The freezing point of the solution obtained will be (K_f for water $= 1.86 \mathrm{K\ kg\,mol}^{-1}$

(2010)

Options:

A. $-0.372°\mathrm{C}$

B. $-0.520°\mathrm{C}$

C. $+0.372°\mathrm{C}$

D. $-0.570°\mathrm{C}$

Answer: A

Solution:

We know that, $\Delta T_f = K_f m$

here, $m = \frac{68.5}{342}(1000\mathrm{g} = 1\mathrm{kg})$

$\therefore \Delta T_f = 0.2000 \times 1.86 = 0.3725°\mathrm{C}$

$T_f = 0 - 0.3725°\mathrm{C} = -0.3725°\mathrm{C}$

Question38

An aqueous solution is 1.00 molal in KI. Which change will cause the vapour pressure of the solution to increase?

(2010)

Options:

A. Addition of NaCl

B. Addition of Na_2SO_4

C. Addition of 1.00 molal KI

D. Addition of water

Answer: D

Solution:

Solution:
Addition of water to an aqueous solution of KI causes the concentration of the solution to decrease thereby increasing the vapour pressure. In the other three options the electrolytes undergo ionization, which leads to lowering of vapour pressure.

Question39

A 0.0020 m aqueous solution of an ionic compound $[Co(NH_3)_5(NO_2)]Cl$ freezes at $-0.00732°C$, Number of moles of ions which 1 mol of ionic compound produces on being dissolved in water will be $\left(K_f = -1.86°\frac{C}{m}\right)$

(2009)

Options:

A. 3

B. 4

C. 1

D. 2

Answer: D

Solution:

The number of moles of ions produced by 1 mol of ionic compound = i
Applying, $\Delta T_f = i \times K_f \times m$
$0.00732 = i \times 1.86 \times 0.002$
$\Rightarrow i = \frac{0.00732}{1.86 \times 0.002} = 1.96 = 2$

Question40

0.5 molal aqueous solution of a weak acid (HX) is 20% ionised. If K_f for water is 1.86K kg mol^{-1}, the lowering in freezing point of the solution is (2007)

Options:

A. 0.56 K

B. 1.12 K

C. -0.56 K

D. -1.12 K

Answer: B

Solution:

$HX \rightleftharpoons H^{+} + X^{-}$
1-α α α
Total = 1 + α
$\therefore i = 1 + \alpha = 1 + 0.2 = 1.2$
$\Delta T_f = i \times K_f \times m = 1.2 \times 1.86 \times 0.5$
$= 1.116\text{K} = 1.12\text{K}$

Question41

Concentrated aqueous sulphuric acid is 98% H_2SO_4 by mass and has a density of 1.80gmL^{-1}. Volume of acid required to make one litre of $0.1\text{M } H_2SO_4$ solution is
(2006)

Options:

A. 16.65 mL

B. 22.20 mL

C. 5.55 mL

D. 11.10 mL

Answer: C

Solution:

H_2SO_4 is 98% by weight.
Weight of H_2SO_4 = 98g
Weight of solution = 100 g
∴ Volume of solution = $\frac{\text{Mass}}{\text{Density}} = \frac{100}{1.80}$mL
=55.55 mL=0.0555 L
Molarity of solution $= \frac{98}{98 \times 0.0555}\text{M} = 18.02\text{M}$
Let V mL of this H_2SO_4 are used to prepare
1 liter of 0.1 M H_2SO_4
∴ mM of concentration H_2SO_4=mM of dilute H_2SO_4
or, $V \times 18.02 = 1000 \times 0.1$
or, $V = \frac{1000 \times 0.1}{18.02} = 5.55\text{mL}$

Question42

During osmosis, flow of water through a semipermeable membrane is (2006)

Options:

A. from solution having lower concentration only

B. from solution having higher concentration only

C. from both sides of semipermeable membrane with equal flow rates

D. from both sides of semipermeable membrane with unequal flow rates.

Answer: D

Solution:

Solution:
Osmosis is the phenomenon of flow of pure solvent from the solvent to the solution or from a less concentrated solution to a more concentrated solution through a semipermeable membrane. Common semipermeable membranes are permeable to certain solute particles also. Infact, there is no perfect semipermeable membrane. Therefore we can say that flow of water through a semipermeable membrane takes place both sides with unequal rates.

Question43

A solution of acetone in ethanol (2006)

Options:

A. obeys Raoult’s law

B. shows a negative deviation from Raoult’s law

C. shows a positive deviation from Raoult’s law

D. behaves like a near ideal solution.

Answer: C

Solution:

Both the components escape easily showing higher vapour pressure than the expected value

----

Question44

1.00 g of a non-electrolyte solute (molar mass $250 \mathrm{gmol}^{-1}$) was dissolved in 51.2 g of benzene. If the freezing point depression constant, K_f of benzene is 5.12 K kg mol^{-1}, the freezing point of benzene will be lowered by
(2006)

Options:

A. 0.2 K

B. 0.4 K

C. 0.3 K

D. 0.5 K

Answer: B

Solution:

$$m=\frac{1000 \times K_f \times w}{W \times \Delta T} \text{ or } 250=\frac{1000 \times 5.12 \times 1}{5.12 \times \Delta T}$$

$$\therefore \Delta T=\frac{1000 \times 5.12 \times 1}{5.12 \times 250}=0.4 K$$

Question45

A solution containing 10 g per dm^3 of urea (molecular mass = 60 g mol^{-1}) is isotonic with a 5% solution of a non volatile solute is
(2006)

Options:

A. $200 \mathrm{gmol}^{-1}$

B. $250 \mathrm{gmol}^{-1}$

C. $300 \mathrm{gmol}^{-1}$

D. $350 \mathrm{gmol}^{-1}$

Answer: C

Solution:

For isotonic solution, osmotic pressure of urea = osmotic pressure of non-volatile solute

$$\frac{10}{60 \times 1000} = \frac{5}{m \times 100} \Rightarrow m = 300 \mathrm{gmol}^{-1}$$

Question46

The mole fraction of the solute in one molal aqueous solution is (2005)

Options:

A. 0.009

B. 0.018

C. 0.027

D. 0.036

Answer: B

Solution:

1 molal aqueous solution means 1 mole of solute present in $1 \mathrm{~kg}$ of H_2O.

1 mole of solute present in $\frac{1000}{18}$ mole of H_2O

$$X_{\text{solute}} = \frac{1}{\frac{1000}{18}+1} = \frac{18}{1018} = 0.01768 \approx 0.018$$

Question47

The vapour pressure of two liquids P and Q are 80 and 60 torr, respectively. The total vapour pressure of solution obtained by mixing 3 mole of P and 2 mol of Q would be (2005)

Options:

A. 72 torr

B. 140 torr

C. 68 torr

D. 20 torr

Answer: A

Solution:

By Raoult's Law
$P_T = p^\circ_P x_P^\circ + p^\circ_Q x_Q$
where $p^\circ_P = 80$ torr, $p^\circ_Q = 60$ torr, $x_P = \frac{3}{5}$; $x_Q = \frac{2}{5}$
$P_T = 80 \times \frac{3}{5} + 60 \times \frac{2}{5} = 48 + 24 = 72$ torr

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Question48

A solution has a 1: 4 mole ratio of pentane to hexane. The vapour pressures of the pure hydrocarbons at 20°C are 440 mm Hg for pentane and 120 mm Hg for hexane. The mole fraction of pentane in the vapour phase would be
(2005)

Options:

A. 0.200

B. 0.549

C. 0.786

D. 0.478

Answer: D

Solution:

$\frac{n_{C_5H_{12}}}{n_{C_6H_{14}}} = \frac{1}{4}$
$\Rightarrow x_{C_5H_{12}} = \frac{1}{5}$ and $x_{C_6H_{14}} = \frac{4}{5}$
$p^\circ_{C_5H_{12}} = 440\,\text{mm Hg}$; $p^\circ_{C_6H_{14}} = 120\,\text{mm Hg}$
$P_{total} = p^\circ C_5H_{12} x_{C_5H_{12}} + p^\circ_{C_6H_{14}} x_{C_6H_{14}}$
$= 440 \times \frac{1}{5} + 120 \times \frac{4}{5} = 88 + 96 = 184\,\text{mm of Hg}$
By Raoult's Law, $P_{C_5H_{12}} = p^\circ_{C_5H_{12}} x_{C_5H_{12}}$....(1)

$x_{C_5H_{12}}$ ⇒ mole fraction of pentane in solution
By Dalton's Law, $p_{C_5H_{12}} = x'_{C_5H_{12}} P$...(2)
$x'_{C_5H_{12}}$ ⇒ mole fraction of pentane above the solution.
From (1) and (2)
$P_{C_5H_{12}} = 440 \times 15 = 88 \text{ mm of Hg}$
$\Rightarrow 88 = x'_{C_5H_{12}} \times 184$
$x' = \frac{88}{184}; x' = 0.478$

Question49

A solution of urea (mol. mass 56gmol^{-1}) boils at 100.18°C at the atmospheric pressure. If K_f and K_b for water are 1.86 and $0.512 \text{K kg mol}^{-1}$ respectively, the above solution will freeze at (2005)

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Options:

A. 0.654°C

B. −0.654°C

C. 6.54°C

D. −6.54°C

Answer: B

Solution:

$\Delta T_f \& = K_f m$...(1)
$\Delta T_b = K_b m$...(2)
$\Rightarrow \frac{\Delta T_f}{\Delta T_b} = \frac{K_f}{K_b}$ ....(3)
ΔT_f ⇒ depression in freezing point
ΔT_b ⇒ elevation in b.pt.
$K_f = 1.86 \text{K kg mol}^{-1}$
$K_b = 0.512 \text{K kg mol}^{-1}, \Delta T_b = 0.18$
⇒ From eq. (3), $\frac{\Delta T_f}{0.18} = \frac{1.86}{0.512}$
$\Rightarrow \Delta T_f = 0.654$
⇒ f.pt. of urea in water $= -0.654°C$

Question50

A solution containing components A and B follows Raoult's law (2002)

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Options:

A. $A-B$ attraction force is greater than $A-A$ and $B-B$

B. $A-B$ attraction force is less than $A-A$ and $B-B$

C. $A-B$ attraction force remains same as $A-A$ and $B-B$

D. volume of solution is different from sum of volume of solute and solvent.

Answer: C

Solution:

Solution:
Raoult's law is valid for ideal solution only. The element of non-ideality enters into the picture when the molecules of the solute and solvent affect each others intermolecular forces.
A solution containing components of A and B behaves as ideal solution when $A-B$ attraction force remains same as $A-A$ and $B-B$.

Question51

A solution contains non volatile solute of molecular mass M_2. Which of the following can be used to calculate the molecular mass of solute in terms of osmotic pressure? ($m_2 =$ mass of solute, $V =$ volume of solution, $\pi =$ osmotic pressure) (2002)

Options:

A. $M_2 = \left(\frac{m_2}{\pi}\right) V RT$

B. $M_2 = \left(\frac{m_2}{V}\right) \frac{RT}{\pi}$

C. $M_2 = \left(\frac{m_2}{V}\right) \pi RT$

D. $M_2 = \left(\frac{m_2}{V}\right) \frac{\pi}{RT}$

Answer: B

Solution:

For dilute solution, $\pi = \frac{n}{V} RT$

$$\Rightarrow \pi V = \frac{m_2}{M_2} RT$$

$$\Rightarrow M_2 = \frac{m_2 RT}{\pi V}$$

Question52

2.5 litre of 1 M NaOH solution is mixed with another 3 litre of 0.5 M NaOH solution. Then find out molarity of resultant solution.
(2002)

Options:

A. 0.80 M

B. 1.0 M

C. 0.73 M

D. 0.50 M

Answer: C

Solution:

Solution:
Molecular weight of $\mathrm{NaOH} = 40$
2.5 litre of $1\mathrm{M}\,\mathrm{NaOH}$ solution contain $40 \times 2.5\mathrm{g}$ of NaOH
3 litre of $0.5\mathrm{M}\,\mathrm{NaOH}$ solution contain $40 \times 0.5 \times 3\mathrm{g}$ of NaOH
If these two solutions are mixed, the volume of the resultant solution $= (2.5 + 3) = 5.5$ litre.
5.5 litre of the resultant solution contain $40(2.5 + 1.5)\mathrm{g}$ of NaOH
1 litre of the resultant solution contain $\frac{40 \times 4}{5.5}\mathrm{g}$ of NaOH $= \frac{40 \times 4}{5.5 \times 40}$ mole of NaOH
The molarity of the resultant solution $= 0.727 \approx 0.73\mathrm{M}$

Question53

The beans are cooked earlier in pressure cooker because
(2001)

Options:

A. boiling point increases with increasing pressure

B. boiling point decreases with increasing pressure

C. extra pressure of pressure cooker softens the beans

D. internal energy is not lost while cooking in pressure cooker.

Answer: B

Solution:

The beans are cooked earlier in a pressure cooker because the boiling point decreases with increasing pressure. As the pressure increases the particles come closer and due to their Kinetic energy and temperature inside the container increases and thus the boiling point decreases which lead to faster cooking.

Question54

Pure water can be obtained from sea water by
(2001)

Options:

A. centrifugation

B. plasmolysis

C. reverse osmosis

D. sedimentation.

Answer: C

Question55

From the colligative properties of solution, which one is the best method for the determination of molecular weight of proteins and polymers?
(2000)

Options:

A. Osmotic pressure

B. Lowering in vapour pressure

C. Lowering in freezing point

D. Elevation in boiling point

Answer: A

Question56

The vapour pressure of benzene at a certain temperature is 640mm of Hg. A nonvolatile and non-electrolyte solid, weighing 2.175g is added to 39.08 of benzene. The vapour pressure of the solution is 600mm of Hg. What is the molecular weight of solid substance?
(1999)

Options:

A. 69.5

B. 59.6

C. 49.50

D. 79.8

Answer: A

Solution:

$P° = 640\text{mm}, P_s = 600\text{mm}$
$w = 2.175\text{g}, W = 39.08\text{g}$
From Raoult's law

$$\frac{P° - P_s}{P°} = \frac{w \times M}{W \times m}$$

$$\Rightarrow \frac{640 - 600}{640} = \frac{2.175 \times 78}{39.08 \times m}$$

$\Rightarrow m = 69.5$

Question57

How many g of dibasic acid (mol. weight 200) should be present in $100\,\text{mL}$ of the aqueous solution to give strength of 0.1N ?
(1999)

Options:

A. 10g

B. 2g

C. 1g

D. 20g

Answer: C

Solution:

The strength of the solution is 0.1 N

$\frac{w}{E} = \frac{V \times N}{1000}\left(\text{ Equivalent weight } = \frac{200}{2} = 100\right)$

$\Rightarrow w = \frac{100 \times 0.1 \times 100}{1000} = 1g$

Question58

If 0.15g of a solute, dissolved in 15g of solvent, is boiled at a temperature higher by 0.216°C, than that of the pure solvent. The molecular weight of the substance (Molal elevation constant for the solvent is 2.16°C) is

(1999)

Options:

A. 10.1

B. 100

C. 1.01

D. 1000

Answer: B

Solution:

$w = 0.15g,\ W = 15g,\ \Delta T_b = 0.216°C$

$K_b = 2.16,\ m = ?$

As $\Delta T_b = \frac{1000 \times K_b \times w}{m \times W}$

$\Rightarrow m = \frac{1000 \times 2.16 \times 0.15}{0.216 \times 15} = 100$

Question59

The vapour pressure of a solvent decreased by 10mm of mercury when a non-volatile solute was added to the solvent. The mole fraction of the solute in the solution is 0.2. What should be the mole fraction of the solvent if the decrease in the vapour pressure is to be 20mm of mercury?

(1998)

Options:

A. 0.4

B. 0.6

C. 0.8

D. 0.2

Answer: B

Solution:

x_1(mole fraction of solute) = 0.2
From Raoult's law,
$$\frac{P^\circ - P_s}{P^\circ} = x_1$$
$$\Rightarrow \frac{10}{P^\circ} = 0.2 \Rightarrow P^\circ = 50\text{mm}$$
Again, when $P^\circ - P_s = 20\text{mm}$, then
$$\frac{P^\circ - P_s}{P^\circ} = \text{ mole fraction of solute } = \frac{20}{50} = 0.4$$
$\Rightarrow$ mole fraction of solvent $= 1 - 0.4 = 0.6$

Question60

A 5% solution of cane sugar (mol. wt. $= 342$) is isotonic with 1% solution of a substance X . The molecular weight of X is (1998)

Options:

A. 68.4

B. 171.2

C. 34.2

D. 136.8

Answer: A

Solution:

Cane Sugar	X
$W_1 = 5\text{g}$	$W_2 = 1\text{g}$
$V_1 = 100\,\text{mL}$	$V_2 = 100\,\text{mL}$
$= 0.1\text{L}$	$= 0.1\text{L}$
$M_1 = 342$	$M_2 = ?$

For isotonic solutions, $C_1 = C_2$
$$\frac{W_1}{M_1V_1} = \frac{W_2}{M_2V_2}$$
$$\Rightarrow \frac{5}{342 \times 0.1} = \frac{1}{M_2 \times 0.1}$$

$\Rightarrow M_2 = \frac{342}{5} = 68.4$

Question61

Which of the following 0.10m aqueous solution will have the lowest freezing point?
(1997)

Options:

A. KI

B. $C_{12}H_{22}O_{11}$

C. $Al_2(SO_4)$

D. $C_5H_{10}O_5$

Answer: C

Solution:

Solution:
Since $Al_2(SO_4)$ gives maximum number of ions on dissociation, therefore it will have the lowest freezing point.

Question62

What is the molarity of H_2SO_4 solution, that has a density 1.84g / cc at 35°C and contains 98% by weight?
(1996)

Options:

A. 18.4M

B. 18M

C. 4.18M

D. 8.14M

Answer: A

Solution:

We know that 98% H_2SO_4 by weight means 98g of H_2SO_4 is present in 100g of solution.

Therefore, its weight is 98 and moles of H_2SO_4

$$= \frac{\text{Weight of } H_2SO_4}{\text{Molecular Weight}} = \frac{98}{98} = 1$$

and volume of solution $= \frac{\text{Mass}}{\text{Density}} = \frac{100}{1.84} = 54.35\,\text{mL} = \frac{54.35}{1000}\text{L}$

Therefore, molarity of H_2SO_4 $= \frac{\text{Moles of } H_2SO_4}{\text{Volume (in litres)}} = \frac{1 \times 1000}{54.35} = 18.4\text{M}$

Question63

The vapour pressure of CCl_4 at 25°C is 143mmHg. If 0.5g of a non-volatile solute (mol. weight $= 65$) is dissolved in 100g CCl_4, the vapour pressure of the solution will be

(1996)

Options:

A. $199.34\,\text{mm Hg}$

B. $143.99\,\text{mm Hg}$

C. $141.43\,\text{mm Hg}$

D. $94.39\,\text{mm Hg}$

Answer: C

Solution:

Vapour pressure of pure solvent ($P°_A$) = 143 mm Hg, weight of solute (w) = 0.5 g weight of solvent (W) = 100 g, molecular weight of solute (m) = 65 and molecular weight of solvent (M) = 154

$$\frac{P°_A - P}{P°_A} = \frac{wM}{mW} \text{ or } \frac{143 - P}{143} = \frac{0.5 \times 154}{65 \times 100}$$

or $P = 141.43\,\text{mm Hg}$

Question64

The relationship between osmotic pressure at 273K when 10g glucose (p_1), 10g urea (p_2), and 10g sucrose (p_3) are dissolved in 250mL of water is

(1996)

Options:

A. $p_2 > p_1 > p_3$

B. $p_2 > p_3 > p_1$

C. $p_1 > p_2 > p_3$

D. $p_3 > p_1 > p_2$

Answer: A

Solution:

Solution:
Weight of glucose $= 10g$
Weight of urea $= 10g$ and weight of sucrose $= 10g$.
The number of moles of glucose $(n_1) = \frac{\text{Weight}}{\text{Molecular weight}} = \frac{10}{180} = 0.05$
Similarly, number of moles of urea $(n_2) = \frac{10}{60} = 0.16$ and the number of moles of sucrose $(n_3) = \frac{10}{342} = 0.03$
The osmotic pressure is a colligative property and it depends upon the number of moles of solute.
since $n_2 > n_1 > n_3$, therefore $p_2 > p_1 > p_3$

Question65

The concentration unit, independent of temperature, would be (1995, 1992)

Options:

A. normality

B. weight volume percent

C. molality

D. molarity

Answer: C

Solution:

Solution:
The molality involves weights of the solute and the solvent. since the weight does not change with the temperatures, therefore molality does not depend upon the temperature.

Question66

According to Raoult's law, the relative lowering of vapour pressure for a solution is equal to
(1995)

Options:

A. mole fraction of solute

B. mole fraction of solvent

C. moles of solute

D. moles of solvent.

Answer: A

Question67

How many grams of CH_3OH should be added to water to prepare 150mL solution of 2M CH_3OH ? (1994)

Options:

A. 9.6×10^3

B. 2.4×10^3

C. 9.6

D. 2.4

Answer: C

Solution:

since the molecular mass of CH_3OH is 32 , therefore quantity of CH_3OH to prepare 150mL solution of 2M CH_3OH

$= \left(\frac{2}{1000}\right) \times 150 \times 32 = 9.6g$

Question68

At 25°C, the highest osmotic pressure is exhibited by 0.1 M solution of (1994)

Options:

A. glucose

B. urea

C. $CaCl_2$

D. KCl

Answer: C

Solution:

In solution, $CaCl_2$ gives three ions, KCl gives two ions while glucose and urea are covalent molecules so they do not undergo ionisation. since osmotic pressure is a colligative property and it depends upon the number of solute particles (ions), therefore, 0.1 M solution of $CaCl_2$ exhibits the highest osmotic pressure.

Question69

Which of the following salts has the same value of van't Hoff factor (i) as that of $K_3[Fe(CN)_6]$?

(1994)

Options:

A. Na_2SO_4

B. $Al(NO_3)_3$

C. $Al_2(SO_4)_3$

D. NaCl

Answer: B

Solution:

$K_3[Fe(CN)_6] \rightleftharpoons 3K^+ + [Fe(CN)_6]^3$
and $Al(NO_3)_3 \rightleftharpoons Al^{3+} + 3NO_3^-$
since both $Al(NO_3 right)_3$ and $K_3[Fe(CN)_6]$ give the same number of ions, therefore they have the same van't Hoff factor.

Question70

If 0.1 M solution of glucose and 0.1 M solution of urea are placed on two sides of the semipermeable membrane to equal heights, then it will be correct to say that

(1992)

Options:

A. there will be no net movement across the membrane

B. glucose will flow towards glucose solution

C. urea will flow towards glucose solution

D. water will flow from urea solution to glucose.

Answer: A

Solution:

Solution:
There is no net movement of the solvent through the semipermeable membrane between two solutions of equal concentration.

Question71

Which one is a colligative property?
(1992)

Options:

A. Boiling point

B. Vapour pressure

C. Osmotic pressure

D. Freezing point

Answer: C

Solution:

Solution:
The properties which depend only upon the number of solute particles present in the solution irrespective of their nature are called colligative properties. Lowering in vapour pressure, elevation in boiling point, depression in freezing point and osmotic pressure are colligative properties.

Question72

Blood cells retain their normal shape in solution which are
(1991)

Options:

A. hypotonic to blood

B. isotonic to blood

C. hypertonic to blood

D. equinormal to blood.

Answer: B

Solution:

Blood cells neither swell nor shrink in isotonic solution.
The solutions having same osmotic pressure are called isotonic solutions.
When blood cells are placed in a solution of similar concentration as that of blood, then they neither swell nor shrink it means the concentration of solution is same as that of inside the blood cells, i.e. they are isotonic to each other.

Question73

Which of the following aqueous solution has minimum freezing point? (1991)

Options:

A. $0.01 m NaCl$

B. $0.005 m C_2H_5OH$

C. $0.005 m MgI_2$

D. $0.005 m MgSO_4$

Answer: A

Solution:

Here, $\Delta T_f = i \times K_f \times m$
van't Hoff factor, $i = 2$ for $NaCl$, so conc. $= 0.02$, which is maximum in the present case.
Hence, ΔT_f is maximum or freezing point is minimum in 0.01 m $NaCl$.

Question74

The relative lowering of the vapour pressure is equal to the ratio between the number of (1991)

Options:

A. solute molecules to the solvent molecules

B. solute molecules to the total molecules in the solution

C. solvent molecules to the total molecules in the solution

D. solvent molecules to the total number of ions of the solute.

Answer: A

Question75

All form ideal solution except
(1988)

Options:

A. C_6H_6 and $C_6H_5CH_3$

B. C_2H_6 and C_2H_5I

C. C_6H_5Cl and C_6H_5Br

D. C_2H_5I and C_2H_5OH

Answer: D

Solution:

Because C_2H_5I and C_2H_5OH are dissimilar liquids.

Question76

An ideal solution is formed when its components
(1988)

Options:

A. have no volume change on mixing

B. have no enthalpy change on mixing

C. have both the above characteristics

D. have high solubility.

Answer: C

Solution:

For ideal solution,
$\Delta V_{mixing} = 0$ and $\Delta H_{mixing} = 0$
