

LAKSHYA (JEE)

Solution

DPP-10

- If 1 mole of a non-volatile and non-electrolyte solute in 1000 g of water depresses the freezing point by 1.86°C , then what will be the freezing point of solution of 1 mole of the solute in 500 g of water?
(A) -0.93°C (B) -1.86°C
(C) 3.72°C (D) -3.72°C
- What is the molecular mass of a non-ionizing solid if 10 g of this solid, when dissolved in 100 g of water forms a solution which freezes at -1.24°C ? $K_f(\text{H}_2\text{O}) = 1.86^{\circ}\text{C kg mol}^{-1}$.
(A) 250 (B) 150
(C) 120 (D) 75
- It is more convenient to obtain the molecular mass of an unknown solute by measuring the freezing point depression than by measuring the boiling point elevation because
(A) freezing point depression is a colligative property, whereas boiling point elevation is not.
(B) freezing point depressions are larger than boiling point elevations for the same solution.
(C) freezing point depressions are smaller than boiling point elevations for the same solution.
(D) freezing point depressions depends more on the amount of solute than boiling point elevation.
- When the depression in freezing point is carried out, the equilibrium exist between
(A) liquid solvent and solid solvent.
(B) liquid solute and solid solvent.
(C) liquid solute and solid solute.
(D) liquid solvent and solid solute.
- The molal depression constant for four liquids P, Q, R and S, respectively, are 1.84, 2.20, 3.15 and 3.92. If 0.1 m urea solution is made in all the solvents, then the solution in which solvent will show maximum depression in freezing point is
(A) P (B) Q
(C) R (D) S
- Among the colligative properties of solution, which one is the best method for the determination of molecular masses of proteins and polymers?
(A) Osmotic pressure
(B) Lowering in vapour pressure
(C) Lowering in freezing point
(D) Elevation in boiling point
- 5 g of urea is dissolved in one kg of water. Up to what temperature, the solution may be cooled before ice starts crystallizing out? (K_f of water = 1.86)
(A) -0.310°C (B) -0.240°C
(C) -0.195°C (D) -0.155°C
- In the above problem, if the solution is cooled to -0.200°C , then how many grams of ice would separate?
(A) 200 (B) 225
(C) 325 (D) 175
- Of the following measurements, the one most suitable for the determination of the molecular mass of oxyhaemoglobin, a molecule with a molecular mass of many thousands, is
(A) the elevation of the boiling point.
(B) the depression of the freezing point.
(C) the osmotic pressure.
(D) any of the previous three, as they are all equally good.

10. On freezing an aqueous solution of sodium chloride, the solid that starts separating out is
- (A) ice
 - (B) sodium chloride
 - (C) solution
 - (D) none of these



ANSWERS

1. (D)
2. (B)
3. (B)
4. (A)
5. (D)
6. (A)
7. (D)
8. (B)
9. (C)
10. (A)



***Note* - If you have any query/issue**

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