

COLLIGATIVE PROPERTIES

STD: XI
CODE: AX

UNIT TEST

MARKS: 50
TIME: 1 Hr

PART - I

CHOOSE THE CORRECT ANSWER:

(10X1=10)

- Properties which depend only on number of particles present in solution are called
(a) Additive (b) Constitutive (c) Colligative (d) None
- Which solution would possess the lowest boiling point?
(a) 1% NaCl solution (b) 1% Urea solution
(c) 1% glucose solution (d) 1% sucrose solution
- In cold countries, ethylene glycol is added to water in the radiators of cars during winters. It results in:
(a) Lowering boiling point (b) Reducing viscosity
(c) Reducing specific heat (d) Lowering freezing point
- Which of the following 0.1M aqueous solution will have the lowest freezing point?
(a) Potassium sulphate (b) Sodium chloride (c) Urea (d) Glucose
- The Van't Hoff factor of 0.005M aqueous solution of KCl is 1.95. The degree of ionisation of KCl is
(a) 0.94 (b) 0.95 (c) 0.96 (d) 0.59
- Which of the following particles can pass through a semi permeable membrane?
(a) Molecules of solute only (b) complex ions only
(c) Molecules of solvent only (d) simple ions only
- Which of the following is not colligative property?
(a) Depression of freezing point (b) Elevation is boiling point
(c) Optical activity (d) Relative lowering of vapour pressure.
- Osmotic pressure of a solution is 0.0821 atm at a temperature of 300K. The Concentration in mol dm^{-3} will be
(a) 0.33 (b) 0.066 (c) 0.3×10^{-2} (d) 3
- A 5% solution of cane sugar (mol wt=342) is isotonic with 1% solution of substance x. The molecular weight of 'X' is
(a) 34.2 (b) 171.2 (c) 68.4 (d) 136.8
- Benzoic acid undergoes dimerisation in benzene solution. The Van't Hoff factor (i) is related to the degree of association 'x' of the acid is
(a) $i = (1-x)$ (b) $i = (1+x)$ (c) $i = (1-x/2)$ (d) $i = (1+x/2)$

PART - II

ANSWER ALL THE QUESTIONS:

(10x3=30)

- What are colligative properties?
- Define relative lowering of vapour pressure.
- What do you understand by molal elevation of boiling point? What are abnormal solutes?
- Addition of non-volatile solute always increases the boiling point of the solution. Why?
- Volatile hydrocarbons are not used in the brakes of automobile as lubricant, but non-volatile hydrocarbon are used as lubricants. Why?
- Prove that the depression in freezing point is a colligative property.
- Explain the terms osmosis and osmotic pressure.
- What are isotonic solutions?
- What are the advantages of Berkley-Hartley method?
- Explain how the degree of dissociation of an electrolyte may be determined from the measurement of a colligative property.

PART - III

ANSWER ALL THE QUESTIONS:

(1x10=10)

- (a) Describe about Beckmann thermometer:
(b) Explain the laws of osmotic pressure?
Explain its determination by Berkley-Hartley method.