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Questions:

5 Marks

1. (a) What is Van't Hoff factor? Under what conditions Van't Hoff factor is
   (i) > 1
   (ii) = 1
   (iii) < 1. Explain.
   (b) What will happen to the boiling point of a solution if mass of the solute dissolved is doubled and that of the solvent taken is halved?
2. Neeru observed that her mother kept shrinked or dried vegetables in water before cutting these for cooking. After some time, these dried vegetables looked fresh and their shrinkness has been reduced. Answer the following questions.
   (i) Why did Neeru's mother kept the dried vegetables in water?
   (ii) Name this process and define it.
   (iii) Would an increase in temperature accelerate the process?
   (iv) Write the values associated with Neeru's mother.
3. (i) Give the differences (any three) between ideal and non-ideal solutions.
   (ii) Which of the following solutions will have the highest and lowest osmotic pressure? and why?
   (a) Sugar in water (b) Salt in water

3 Marks

4. Explain with example the concept of minimum boiling azeotropes and maximum boiling azeotropes.
5. (i) Define molality in terms of elevation in boiling point.
   (ii) Derive the relation between elevation in boiling point and the molecular mass of a non-volatile solute.
6. State the law correlating the pressure of a gas and its solubility in a liquid. State an application of this law.

2 Marks

7. Define osmotic pressure.
8. Define 'mole fraction' of a substance in a solution.
9. Define Ebullioscopic constant or molal elevation constant.
10. What is meant by 'reverse osmosis'?
11. State Henry's law and mention some important applications.

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