

Board – CBSE

Class – 12<sup>th</sup>

Topic – Solutions

1. Calculate the volume of water which could be added to 20 ml of 0.65 m HCl to dilute the solution to 0.2 m?
2. Plot a graph between vapor pressure and mole fraction of a solution obeying Raoult's Law at constant temperature?
3. Give the characteristics of ideal solution?
4. Name different colligative properties?
5. 0.90 g of a non – electrolyte was dissolved in 87.90 g of benzene. This raised the boiling point of benzene by 25°C. If the molecular mass of non – electrolyte is 103.0 g/mol, calculate the molal elevation constant for benzene?
6. Show graphically the depression in freezing point on adding a non-volatile solute?
7. Give various expressions for van't Hoff factor?
8. The boiling point elevation of 0.6 g acetic acid in 100 g benzene is 0.1265 k. What conclusion can you draw about the state of solute in solution? Molar elevation constant for benzene is 2.53 deg per molar?
9. At 300 K, 36 g of glucose present in a liter of its solution has an osmotic pressure of 4.98 bar. If the osmotic pressure of the solution is 1.52 bars at the same temperature, what would be its concentration?
10. Calculate the mole fraction of ethanol and water in a sample of rectified spirit which contains 46% ethanol by mass?
11. Calculate the % composition in terms of mass of a solution obtained by mixing 300g of a 25% and 400 g of a 40% solution by mass?
12. Obtain a relationship between relative lowering of vapor pressure and mole fraction of solute?
13. Draw the graphs of both deviations from ideal behaviors?
14. A weak electrolyte AB is 5% dissociated in aqueous solution? What is the freezing point of a 0.10 molar aqueous solution of AB?  $K_f = 1.86 \text{ deg/molal}$ ?
15. A solution is obtained by mixing 300 g of 25% solution and 400 g of 40% solution by mass. Calculate the mass percentage of the resulting solution.
16. Define the term solution. How many types of solutions are formed? Write briefly about each type with an example.