Holiday Homework Class 12th A Chemistry

1. Calculate the molarity of a solution containing 0.5 moles of NaCl dissolved in 250 mL of water.
2. A solution is prepared by dissolving 10 grams of glucose (C6H12O6) in 100 grams of water. Calculate the molality of the solution.
3. If 25 grams of urea (NH2CONH2) is dissolved in 500 grams of water, calculate the mole fraction of urea in the solution.
4. A solution contains 5 moles of glucose (C6H12O6) in 1 liter of water. Calculate the molarity of the solution.
5. If 20 grams of NaOH is dissolved in water to make a final volume of 500 mL, calculate the molarity of the resulting solution.
6. Calculate the freezing point depression of a solution containing 0.1 moles of glucose (C6H12O6) dissolved in 500 grams of water. Given that the freezing point depression constant for water is 1.86 °C kg/mol.
7. A solution contains 0.2 moles of urea (NH2CONH2) in 100 grams of water. Calculate the boiling point elevation of the solution. (Given: Boiling point elevation constant for water is 0.52 °C/m).
8. Calculate the vapor pressure of a solution containing 0.1 moles of sucrose (C12H22O11) dissolved in 200 grams of water. The vapor pressure of pure water at the same temperature is 23.8 mmHg.
9. If the solubility of NaCl in water is 35.7 g per 100 g water at 25°C, what is its molarity in a saturated solution?
10. Calculate the osmotic pressure of a solution containing 0.2 moles of glucose (C6H12O6) dissolved in 500 mL of water at 25°C. (Given: R = 0.0821 L atm K^-1 mol^-1)
11. Define the term "solution" in chemistry and give examples from daily life.
12. Explain the difference between a solute and a solvent in a solution.
13. Describe the factors that affect the solubility of a solute in a solvent.
14. What is meant by the term "saturated solution"? Provide an example.
15. Discuss the concept of solubility curves and how they are used in determining solubility.
16. Define the terms "molarity" and "molality" and explain how they differ.
17. Calculate the molarity of a solution if 0.5 moles of solute are dissolved in 250 mL of solvent.