

**ST. ANDREWS SCOTS SR. SEC. SCHOOL**  
**9th Avenue I.P. Extension, Patparganj,**  
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**(Session - 2026-2027)**

**Class XII – Chemistry**  
**Chapter: Solutions – Assignment (25 Questions)**

1. Define solution and classify different types of solutions with examples.
2. What is molarity? Derive its formula and mention its unit.
3. Differentiate between molarity and molality.
4. Define mole fraction. Show that sum of mole fractions in a solution is 1.
5. What is vapour pressure of a liquid? Explain Raoult's law.
6. State the limitations of Raoult's law.
7. Explain ideal and non-ideal solutions with examples.
8. Define azeotropes. Distinguish between minimum and maximum boiling azeotropes.
9. What is Henry's law? Write its mathematical expression.
10. Explain the significance of Henry's law constant.
11. What are colligative properties? Name the four colligative properties.
12. Define relative lowering of vapour pressure.
13. Derive the formula for elevation in boiling point.
14. Derive the formula for depression in freezing point.
15. What is osmotic pressure? Write its formula and unit.
16. Define van't Hoff factor and explain its significance.
17. Explain abnormal molar mass with an example.
18. Why do electrolytes show abnormal colligative properties?
19. Calculate molarity of a solution containing 5 g NaOH in 500 mL solution.
20. A solution contains 10 g glucose in 1 kg water. Calculate molality.
21. Calculate mole fraction of ethanol in a solution containing 46 g ethanol and 54 g water.
22. At 298 K, vapour pressure of pure water is 23.8 mm Hg. Calculate vapour pressure of solution containing 1 mole sucrose in 9 moles water.
23. Calculate boiling point elevation when 2 g urea is dissolved in 100 g water. ( $K_b = 0.52 \text{ K kg mol}^{-1}$ )
24. Calculate depression in freezing point when 1 g NaCl is dissolved in 100 g water. ( $K_f = 1.86 \text{ K kg mol}^{-1}$ )

25. Calculate osmotic pressure of 0.1 M glucose solution at 300 K. ( $R = 0.0821 \text{ L atm mol}^{-1} \text{ K}^{-1}$ )