Class 12 – Chemistry Date 30 Apr 2026.
Chapter: Solutions

Time: 30 Minutes **Maximum Marks: 15**

Section A – MCQs **and Very Short Answer (1 x 7)** - 10 Minutes

1. NEM1. Which of the following units is useful in relating concentration of solution with its vapour pressure?
a. mole fraction b. parts per million c. mass percentage d. molality
2. NEM 4. A beaker contains a solution of substance 'A'. Precipitation of substance 'A'
takes place when small amount of 'A' is added to the solution. The solution is _____.
a. saturated b. supersaturated c. unsaturated d. concentrated
3. NEM 6. Low concentration of oxygen in the blood and tissues of people living at high
altitude is due to _____.
a. low temperature b. low atmospheric pressure c. high atmospheric pressure
d. both low temperature and high atmospheric pressure
4. NEM 7. Considering the formation, breaking and strength of hydrogen bond, predict which of the following mixtures will show a positive deviation from Raoult's law?
5. NEM 9. Which of the following aqueous solutions should have the highest boiling point?
a. 1.0 M NaOH
b. 1.0 M Na_2SO_4
c. 1.0 M NH_4NO_3
d. 1.0 M KNO_3
6. NEM 10. The unit of ebulioscopic constant is _____.
a. K kg mol^{-1} or K $(molality)^{-1}$
b. mol kg K^{-1} or K^{-1}(molality)
c. kg mol^{-1} K^{-1} or $K^{-1}(molality)^{-1}$
d. K mol kg^{-1} or K (molality)

7. NEM 14. Which of the following statements is false?
a. Two different solutions of sucrose of same molality prepared in different solvents will have the same depression in freezing point.
b. The osmotic pressure of a solution is given by the equation $\Pi = CRT$ (where C is the molarity of the solution).
c. Decreasing order of osmotic pressure for 0.01 M aqueous solutions of barium chloride, potassium chloride, acetic acid and sucrose is $BaCl_2 > KCl > CH_3COOH >$ sucrose.
d. According to Raoult's law, the vapour pressure exerted by a volatile component of a solution is directly proportional to its mole fraction in the solution.

Section B – Short Answer (2x2)
8.B1. Define the term solution. How many types of solutions are formed? Write briefly about each type with an example. **Or**
B12. State Henry's law and mention some important applications.
9.E1. Calculate the mole fraction of ethylene glycol ($C_2H_6O_2$) in a solution containing 20% of ($C_2H_6O_2$) by mass. **Or**
N2. Calculate the mole fraction of benzene in solution containing 30% by mass in carbon tetrachloride.
Section C – Long Answer (1x4)
10.N5. 1.5 Calculate (a) molality (b) molarity and (c) mole fraction of KI if the density of 20% (mass/mass) aqueous KI is 1.202 g mL^{-1}.