

Assignment:

- 1) Calculate osmotic pressure of 5% solution of sucrose at 288K. ($R=8.314 \text{ J/mol/K}$) (4M)
- 2) A solution containing 6g of a solute in 50g of diethyl ether has a vapour pressure of $5.4 \times 10^4 \text{ Nm}^{-2}$ at 300K. If the vapour pressure of diethyl ether at the same temperature is $5.8 \times 10^4 \text{ Nm}^{-2}$, calculate the molecular mass of the solute. Molecular mass of diethyl ether = 74. (4M)
- 3) A solution of 0.83 g of an organic compound of molecular mass 182 in 20.55g of water boiled at temperature 0.114°C higher than the boiling point of water. Calculate the molar elevation constant for 1000g of the solvent. (4M)
- 4) What is the molarity of a solution of HCl which contains 4g of HCl in 1000ml of solution? (2M)

- 5) The refractive index of CCl_4 at 20°C is 1.453. If density at the given temperature is 1.595g/cm^3 . Calculate the molar refraction. (4M)
- 6) Calculate the dipole moment of HCl , assuming the distance between the point charges be 1.25 \AA .
(Point charge = 4.8×10^{-10} esu.) (2M)