

12/12/12

(2 Hours)

[Total Marks : 40

- N. B. :** (1) Question No. 1 is **compulsory**.
 (2) Attempt any **four** from remaining **five** questions.
 (3) Draw neat and labelled diagrams wherever **necessary**.

1. (a) Derive Vander Waal's equation. 4
 (b) Differentiate between Reversible and Irreversible process. 4
 2. (a) With the help of a diagram, discuss the relationship between elevation of boiling point and lowering of Vapour Pressure. 4
 (b) Define equivalent conductance. Discuss variation of equivalent conductance with concentration. 4
 3. (a) What will be the boiling point of solution containing 0.6 g of urea (molecular mass = 60) in 2.5 g of water? (Boiling point of water = 373 K, $k_b = 0.52 \text{ K mol}^{-1} \text{ kg}^{-1}$) 4
 (b) Explain optical activity and a method to determine optical rotation of a compound. 4
 4. (a) Derive $C_p - C_v = R$. 4
 (b) Write a note on azeotropic distillation. 4
 5. (a) Write principle of liquefaction of gases and its application in aerosols. 4
 (b) (i) State Faraday's laws of Electrolysis. 2
 (ii) 0.5 N solution of a salt placed between two platinum electrodes, 20 cm apart and of area of cross-section 4.0 sq cm has a resistance of 25 ohms. 2
 Calculate the equivalent conductance of solution.
 6. Write short notes on (any two) :— 8
 - (a) Abbe's refractometer
 - (b) Conductometric titrations
 - (c) Types of thermodynamic processes.
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