

1.4. B. Pharm Sem I Rescan. Physical Pharmacy I
(CBGS)

ws Feb. 2013-(b) 19

Con. 953-13.

DC-6655

(3 Hours)

[Total Marks : 70]

- N. B. :** (1) All questions are **compulsory**.
(2) Draw **neat labelled** diagrams wherever **necessary**.

1. (a) Give the structure, properties and significance of liquid crystals. 3
(b) Define optical rotation and give its applications. 3
(c) What is the freezing point of a solution Containing 3.42 gm of sucrose and 500 gm of water ? The molecular weight of sucrose is 342. In this relatively dilute solution, value of $k_f = 1.86$. 3
(d) State the different types of thermodynamic systems. 3
(e) State and explain Faraday's laws of electrolysis. 3
2. (a) Explain the principle and method of liquefaction of gases by Claude's method. 4

OR

 (a) Explain the principle behind liquefaction of gases and write a note on aerosols.
(b) What do you mean by Dielectric Constant and write its significance to pharmacy. 3
(c) Give the various statements of first law of thermodynamic and give its drawbacks. 4
3. (a) Explain Raoult's law and discuss with the help of diagram positive and negative deviation from Raoult's law. 4
(b) Explain the efficiency of heat engine. A steam engine operates between the temperatures of 373 and 298 K : 4
 (i) what is the theoretical efficiency of the engine ?
(ii) If the engine is supplied with 1000 cal of heat Q_{hot} , what is the theoretical work in ergs.

OR

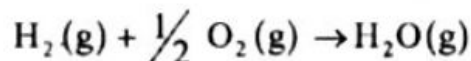
 (b) Define entropy and its significance. Calculate the entropy increase in the evaporation of One Kilomole of water at 100°C. Molar heat of vaporisation is 40.670 MJ/Kmol.
(c) What is the effect of dilution of a weak-electrolyte on specific and equivalent conductance ? 3
4. (a) Define critical constants. Explain the experimental determination of critical constants. 4
(b) Define Refractive index. Discuss the principle and working of Abbe's refractometer. 3
(c) With the help of diagram, discuss the relationship between elevation of b.p. and lowering of vapour pressure. 4

OR

 (c) Describe a method to determine depression in freezing point of a non-volatile solute in solution with the help of a neat labelled diagram.

[TURN OVER]

5. (a) State the different forms of crystal habits. 4
(b) Explain the term 'Osmotic pressure.' Describe modern osmometer method for measuring Osmotic pressure with a labelled diagram. 4
(c) What is bond energy ? Given that energies for H – H, O = O and O – H bonds are 104, 118, 111, Kcalmol⁻¹ respectively. Calculate the heat of reaction. 3



OR

- (c) Write a short note on Hess's law of Constant Heat Summation.
6. (a) Two moles of NH₃ are enclosed in a five litre flask at 27°C. Calculate the pressure exerted by the gas by using Vander Walls equation. 3
Given :- a = 4.14 litre² atm mol⁻¹, b = 0.037 litre mol⁻¹
R = 0.082 atm.litre K⁻¹ mol⁻¹
(b) Write a short note on steam distillation. 3
(c) Write a short note on Gibbs free energy. 3
(d) Define :- 2
(i) Molar Conductance
(ii) Equivalent Conductance.