

507B

Subsidiary for B.Sc. Honours/II A
CHEMISTRY - Paper III
Inorganic and Physical Chemistry

Time : 3 Hours

Maximum Marks : 50

(Write your Roll No. on the top immediately on receipt of this question paper.)

Answer to Section - A and Section - B should be written in separate answer books.

Attempt four questions from Part A and two from Part B

Serial No. of Question	PART-B (SECTION-B)	No. of Marks
Q.N. 1.(a)	Explain the salient features of the phase diagram of the system of sulphur.	3
(b)	Calculate the osmotic pressure of 5% solution of cane sugar ($C_{12}H_{22}O_{11}$) at 288 K. Given : $R = 0.082 \text{ l atm. K}^{-1} \text{ mol}^{-1}$	$2\frac{1}{2}$
(c)	What are the number of components in the decomposition of $CaCO_3$. $\begin{array}{ccc} CaCO_3 & \rightleftharpoons & CaO + CO_2 \\ \text{(Solid)} & & \text{(Solid)} \quad \text{(Gas)} \end{array}$	3
Q.N. 2(a)	What is meant by the terms osmosis and osmotic pressure. Describe the Berzeley and Hartley method for the determination of osmotic pressure of a solution.	$3\frac{1}{2}$

Question

(b) State the phase rule and explain the terms involved in it. 2

(c) The water flow time for an Ostwald viscometer is 59.2 sec at 25°C. If 46.2 sec are required for the same volume of ethyl benzene (density = 0.867 g/cm³) to flow through the capillary, calculate its relative viscosity at 25°C. 3

Given: viscosity of H₂O at 25°C = 0.009 poise
Density of water at 25°C = 0.999 g/cm³

3 (a) What is Van't-Hoff factor and how it is related with the abnormal molecular weight of solutes in solution? 3

(b) What is meant by the surface tension of a liquid? Describe the capillary rise method for determining the surface tension of a liquid. 2½

1. 3(c) Derive a relationship between depression of freezing point and molecular weight of the solute. 3 /