PC-703/MH

AS/2051

PHYSICAL CHEMISTRY

Paper - III

Time : Three Hours] [Maximum Marks : 26

Note : Attempt *two* questions each from Section A and B. Section C will be compulsory.

SECTION–A

I. Define osmotic pressure and prove that the osmotic pressure of a solution is a colligative property. Also derive the relationship between osmotic pressure of a solution and molecular mass of solute in case of a dilute solutions. 4

II. (a) Differentiate between ideal and non-ideal solutions. 2

(b) What is Vant Hoff factor ? How is it used for the determination of degree of dissociation of a solute in the solution. 2

III. (a) Write a short note on Tyndall effect. 2

(b) Define and explain Brownian movement. Give its significance. 2

IV. (a) Differentiate between Lyophilic and Lyophobic Colloids. 2

(b) Define and explain electrophoresis. 2

SECTION–B

V. (a) Discuss the effect of temperature on the rate of a reaction on the basis of effective collision. 2

(b) Derive Arrhenius equation. 2

VI. What do you mean by second order reaction ? Mention its important characteristics. Derive an expression for rate constant of second order reaction. 4

VII. Compare the collision theory and transition state theory of reaction rates. 4

VIII. Define enzyme catalysis. Derive Michaelis-Menten equation for enzyme catalysis. 4

SECTION–C

IX. (a) Define Peptisation. Mention its cause. 2

(b) Describe briefly the cleansing action of soap. 2

(c) Differentiate between order and molecularity of a reaction. 2

(d) State and explain Raoult's Law. 2

(e) What do you mean by catalytic poison and promotors ? 2