PC-5166/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. (a) What do you mean by depression in freezing point ? Show that depression in freezing point of a solution containing non-volatile solute is a colligative property. 2

(b) Derive thermodynamically the relation between molecular mass of solute and depression in freezing point. 2

II. (a) Differentiate between osmosis and diffusion. 2

(b) What do you mean by Van't Haff factor ? How do certain ? 2

III. (a) Define peptisation. Mention its cause. 2

(b) Discuss dialysis. 2

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

(b) What is coagulation ? Explain Hardy-Schulze rule. 2

SECTION–B

V. Name and explain the various factors affecting the rate of a reaction in brief. 4

VI. (a) Derive an expression of rate constant for zero order reaction. Mention units of rate constant for zero order reaction. 2

(b) Derive Arrhenius equation. 2

VII. Derive Michaelis-Menten equation for enzyme catalysed reaction. 2

VIII. Describe kinetics of acid-base catalysed reaction in general. 4

SECTION–C

(Compulsory Question)

IX. (a) Define reaction inhibitors and catalytic poisons.

(b) What are gels ? How are they prepared ?

(c) What are emulsion ? Mention their types with example.

(d) Define and explain collision theory of reaction rates.

(e) What are colligative properties ? Name important colligative properties of solutions. (2×5=10)