

[Time: Three Hours]

[Marks : 80]

N.B : 1. All questions are compulsory.

2. Draw neat and labelled diagram wherever necessary

Q1.

- a. Explain First order reaction. (2)
- b. Define the term diffusion. (2)
- c. Classify complexation. (2)
- d. What is biopharmaceutics (2)
- e. Write properties of coarse dispersion. (2)
- f. Enlist factors affecting dissolution. (2)
- g. Enlist methods used in determination of order of reaction. (2)
- h. What are colloids?Classify colloids. (2)
- i. How are drugs classified as per BCS? (2)
- j. Define shelf life and explain its significance in pharmaceuticals. (2)

Q2.

- a. Explain different driving forces of diffusion

OR

State Fick's First law of diffusion and derive an expression for permeability coefficient. (4)

- b. Explain the Solubility method for analysis of complexation. (4)
- c. Discuss DLVO theory with respect to suspension. (4)

Q3.

- a. Discuss chemical factors influencing the degradation of pharmaceutical products. (4)
- b. Elaborate on factors affecting rate of dissolution. (4)
- c. Explain the effect of dosage form on absorption.

OR

Discuss pH partition hypothesis. (4)

Q4

- a. Describe use of any one diffusion cell for measurement of diffusion rate (4)
- b. Classify drug transport mechanisms and explain passive drug transport. (4)
- c. Explain organic molecular complexes. (4)

Q5

- a. Derive an equation for rate constant and half life of a first order reaction. (4)
- b. Explain the electric properties of colloids

OR

- Explain interfacial properties of suspensions and discuss effect of electrolytes. (4)
- c. Explain the optical properties of colloids. (4)

Q6

- a. The color intensity of a drug preparation exposed at $40\text{ }^{\circ}\text{C}$ from 1.245 to 1.235 in 90 days Estimate the rate constant (k).

OR

In the saponification of methyl acetate at $250\text{ }^{\circ}\text{C}$, the concentration of sodium hydroxide remaining after 75 mins was 0.00552M. The initial concentration of ester and the base was 0.01 M. Calculate the second order rate constant and half life of the reaction. (4)

- b. Enlist the theories of emulsification and explain any one in-detail. (4)
- c. Explain the protective colloidal action and gold number. (4)
