

(3 Hours)

(Total Marks : 80)

Please check whether you have got the right question paper.

- N.B.:**
- 1) All questions are **compulsory**.
 - 2) **Figures** to the **right** indicate **full marks**.
 - 3) Draw **neat** and **labelled diagrams** where **necessary**.

1. a) Define pseudo zero order reaction and molecularity of reaction. (02)
- b) Explain how diffusion process is used for controlling release of drug from dosage forms. (02)
- c) Enlist the areas in pharmacy where complexation is used. (02)
- d) Define Absorption and Distribution. (02)
- e) Classify colloids with examples. (02)
- f) What is the necessity of dissolution study? (02)
- g) State any two methods to study reaction kinetics. (02)
- h) Discuss any one method for preparation of colloids. (02)
- i) Explain the need for BCS classification of drugs. (02)
- j) State the equation used for calculation of shelf life of formulation and explain the terms in it. (02)

2. a) Explain – Permeability and steady state diffusion. (04)

OR

- a) State how Fick's law is useful in study of absorption of drug. (04)
- b) Briefly explain potentiometric method for analysis of complexation. (04)
- c) What is deflocculation? Explain factors responsible for it. (04)

3. a) Enlist physical factors influencing the degradation of pharmaceutical product and write in brief about effect of temperature and solvent. (04)

- b) Elaborate on factors affecting rate of dissolution. (04)
- c) State the effect of following on drug absorption – particle size, polymorphism, salt form, pKa. (04)

OR

- c) Explain effect of dosage form on the absorption of drug. (04)

4. a) Describe use of any one diffusion cell for measurement of diffusion rate. (04)
b) State and explain any two mechanisms of drug absorption with help of suitable diagram. (04)
c) Detail on inorganic complexes. (04)
5. a) Enlist methods to determine order of reaction and discuss Equal Fraction Method. (04)
b) "Zeta potential is more relevant to stability of suspension than Nernst potential". (04)
State True or False and Justify.

OR

- b) What is electrical double layer? Explain its impact on stability of suspension. (04)
c) Write short note on stability of colloids. (04)
6. a) The half-life of a first order reaction was found to be 10 min at room temperature. (04)
Calculate time required for 90% product formation.

OR

- a) If 4 gm of a drug degrades to 0.8 gm by first order mechanism in 40 min, What is the reaction rate constant and shelf life of drug? (04)
b) Enlist problems of stability of emulsion and suggest measures to overcome them. (04)
c) Give any one method for preparation of colloids and state Schulz Hardy Rule. (04)