

(3 Hours)

Total Marks: 80

Q1.

- | | |
|---|---|
| a. Define specific rate constant and molecularity of reaction. | 2 |
| b. Enlist different driving forces for diffusion with examples | 2 |
| c. State applications of complexation in pharmaceuticals. | 2 |
| d. Define absorption and distribution | 2 |
| e. Classify dispersed systems on the basis of particle size with examples. | 2 |
| f. Explain concept of dissolution | 2 |
| g. Define energy of activation and explain its importance in reaction kinetics. | 2 |
| h. Discuss applications of colloids. | 2 |
| i. What is the significance of BCS Classification of drugs? | 2 |
| j. Explain the significance of Arrhenius equation in pharmaceuticals. | 2 |

Q2.

- a. Explain unsteady state and steady state diffusion.

OR

- | | |
|---|---|
| a. State Fick's law first law and Ficks second law of diffusion. | 4 |
| b. Briefly explain the pH titration method for analysis of complexation. | 4 |
| c. Write the distinguishing points between flocculated system and deflocculated system. | 4 |

Q3.

- | | |
|--|---|
| a. Enlist the physical factors influencing the degradation of pharmaceutical product and write in brief about the effect of temperature and solvent. | |
| b. Elaborate on factors affecting rate of dissolution. | 4 |
| c. State the effect of the following on absorption: Particle size, polymorphism, salt form, pK_a . | 4 |

OR

- | | |
|--|---|
| c. Explain the dosage form related factors affecting absorption. | 4 |
|--|---|

Q4

- | | |
|---|---|
| a. Describe use of any one diffusion cell for measurement of diffusion rate | 4 |
| b. State and explain active transport and carrier mediated drug transport mechanism with the help of suitable diagrams. | 4 |
| c. Write a note on Inclusion compounds. | 4 |

Q5

- | | |
|--|---|
| a. Enlist methods to determine order of reaction and discuss half life method. | 4 |
| b. Explain any two optical properties of colloids. | |

OR

- | | |
|--|---|
| b. Write a note on electrical double layer | 4 |
| c. Define a gold number and write a note on protective colloids. | 4 |

Q6

- a. The half life of a drug that decomposes by first order is 45 days. Calculate k_1 and shelf life.

OR

- | | |
|---|---|
| a. 50% of a first order reaction is complete in 28 minutes. Calculate the time required to complete 90% of the reaction.? | 4 |
| b. Enlist problems of stability of emulsion and suggest measures to overcome them. | 4 |
| c. What is an association colloid? Give any one method for preparation of lyophobic colloids. | 4 |