

Exam Code: 0433
Sub. Code: 25929

2125
M.Sc. Applied Chemistry (Pharmaceutical)
Third Semester
Paper – 302: Physical Pharmacy

Time allowed: 3 Hours

Max. Marks: 60

NOTE: Attempt five questions in all, including Question No. 1 which is compulsory and selecting one question from each Unit.

x-x-x

1. a) Differentiate between hydrophilic and lipophilic balance.
b) Mention two pharmaceutical applications of surface tension.
c) What is protective colloidal action? Give one example.
d) How does pH affect solubility of weak electrolytes?
e) Differentiate between shear stress and shear rate.
f) Explain the influence of pH on drug stability. (6x2)

UNIT: I

2. a) Describe and derive Young's equation and Gibbs adsorption equation. Explain their roles in understanding surface and interfacial phenomena. (8)
b) Discuss solubilization and micellar systems. Explain how surfactants aid in solubilization of poorly soluble drugs. (4)
3. a) Write a short on Wetting Phenomena. (6)
b) Discuss the pharmaceutical significance of zeta potential, double layer thickness, and crystal growth control. (6)

UNIT: II

4. a) Discuss the solubility of gases in liquids and solids in liquids. Explain the factors influencing each. (6)
b) Discuss the various solubility parameters. (6)
5. a) Discuss sensitization of protective colloidal action. (6)
b) Explain the interaction between solute and solvent and how it governs solubility and dissolution. (6)

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(2)

UNIT: III

6. a) Describe pseudoplastic, thixotropic, and dilatant types of flow. Give pharmaceutical examples for each. (6)
- b) Explain the rheological behavior of semisolids and emulsions. How does it affect their application and stability? (6)
7. a) Describe the construction and working of a Couette viscometer. How is it used to determine viscosity? (6)
- b) Write notes on isoelectric properties and their pharmaceutical significance. (3)
- c) What is a penetrometer and what does it measure? Explain its principle. (3)

UNIT: IV

8. Discuss in detail the influence of various factors in stability of drugs. (12)
9. a) Define complexation. Discuss the types of complexes formed in pharmaceutical systems with suitable examples. (6)
- b) Describe inclusion and occlusion compounds. How do they differ? Give pharmaceutical examples. (6)

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