Physical pharmaceutics-II
(B pharmacy IV Sem)
Question bank.

UNIT I: **COLLOIDAL DISPERSIONS**

Long Essays (10 Marks)

1. Discuss the electrical properties and kinetic properties of colloids
2. Discuss the optical and electrical properties of colloids.
3. Discuss the kinetic and optical properties of colloids.
4. What are colloids? Give example. Explain any four methods of preparation of different types of colloids.
5. Explain different methods of preparation and purification of colloids.
6. Explain different purification methods and protection of colloids.

Short Essays (05 Marks)

1. What are colloids? Classify the colloids. Differentiate between different types of colloids.
2. What are hydrophobic colloids? Describe any four preparation methods.
3. Discuss association colloids with example.
4. Explain protection of colloids.
5. With the help of a neat labeled diagram explain methods for purification of colloids.
6. Explain optical properties of colloids
7. Explain kinetic properties of colloids
8. Explain electrical properties of colloids.
9. Explain DME and its applications.
10. Explain the concept DLVO theory with energy curves. How this theory is applied in stabilizing the colloidal dispersion.
11. What are association colloids? Mention the mechanism of formation of micelles with suitable example.

Short Answers (02 Marks)

1. State and explain Hardy schulze rule
2. What is craft point?
3. Define and classify colloids.
4. What are association colloids?
5. What is gold number?
6. What is Tyndall effect
7. What is zeta potential? Give example.
8. What is nernst potential? Give example.
9. What is electro osmosis and electrophoresis?
10. What is streaming potential?
11. Explain the term colloid and mention its applications.

12. Explain condensation method of preparation of colloids.
13. What is meant by protective colloids? Mention one example for the same.
14. Explain Hofmeister series with example
15. List the effect of mixing different types of colloids.

UNIT II: Rheology

Long Essay (10 Marks)

1. Define and explain Non Newtonian flow of liquids
2. Define Newtonian flow of liquids. Explain shear thinning system of liquids
3. Define Thixotropy. Explain different methods for its determination and give its application in pharmacy.
4. Define the mechanism of thixotropy and give its applications in pharmacy.
5. Define Viscosity. Classify different viscometers with examples. With the help of neat diagram explain the principle and working of any one single point viscometer.
6. Define Viscosity. Classify different viscometers with examples. With the help of neat diagram explain the principle and working of any one multipoint viscometer.
7. With the help of neat diagram explain the working principle of Cup & bob and Cone & plate viscometer with its advantages and disadvantages.

Short Essay (05 Marks)

1. Explain the Newtonian system of flow with examples
2. Explain Plastic and dilatant flow of liquids
3. Discuss plastic and pseudoplastic system of flow
4. Explain shear thickening system with examples
5. Explain the mechanism of thixotropy with examples
6. Explain the methods to determine the thixotropic behavior of liquids.
7. Explain the principle of cup & bob viscometer
8. Explain the principle of Ostwald's viscometer
9. Explain the physical stability if suspension.
10. Explain the different methods to evaluate the stability of suspensions.

Short Answer (02 Marks)

1. Define Rheology. Give any two applications
2. Describe a Rheogram and Rheopexy
3. What is yield value? Give its applications
4. Define dilatancy with examples
5. Define Newton's law of flow with equation
6. Give examples for plastic and pseudoplastic system of flow
7. What is Negative thixotropy
8. What are Bulges and Spurs
9. Explain Bulges with example.
10. Explain Spurs with example.
11. Define Viscosity along with its units of expressions
12. What is plug flow? How do you overcome it.
13. Define microemulsions and multiple emulsions
14. Draw flow curve for anti-thixotropy flow and explain its mechanism.

15. Explain the terms shear thinning and shear thickening system. Give example for each type of material.

Unit III: Coarse Dispersions

Long Essays

1. Explain in detail interfacial properties of suspended particles.
2. Discuss formulation parameters of suspension.
3. Discuss in detail the theories of emulsion.
4. Define emulsion. Explain in detail rheological properties of emulsions.

SHORT ESSAYS

1. Explain the formulation of emulsion by HLB method.
2. Classify emulsions with examples.
3. Write a note on identification tests of emulsions.
4. Settling of suspensions.
5. Write a note on preservation of emulsions.
6. Classify suspension with examples.
7. Differentiate between flocculated and deflocculated suspensions.
8. Write a note on phase equilibrium in coarse dispersions.

Short Answers

1. Define suspensions
2. Define emulsions
3. Define phase inversions
4. Differentiate between creaming and cracking.
5. Stokes law
6. Sedimentation volume

Unit IV: Micromeritics

Short answers (02 Marks)

1. State Edmundson's equation
2. State stokes law
3. Explain frequency distribution curve
4. Explain normal distribution curve
5. Explain percent log normal distribution curve
6. What is polydisperse system
7. What are equivalent diameters? Explain martins diameter
8. Explain ferret diameter and projected diameter
9. What is particle size distribution and particle number
10. What is quantasorb. Explain its principle
11. What are fundamental properties? Give examples
12. What is bulk density ant true density
13. Define angle of repose. Write its significance
14. What is void volume and porosity
15. What is granular density and true density
16. What is compressibility index
17. What is rate of flow of powder and explain carr's index

18. Give packaging arrangement of powders
19. Define volume-surface mean diameter. Give the equation for its calculation.
20. Define shape factor. What is its importance in micromeritics?
21. List four methods to improve the flow properties of granules and powders.
22. List the ways to characterize a powder

Short Essay (05 Marks)

1. How do you represent particle size distribution
2. Enumerate methods to determine the particle size. Explain any two methods to determine the particle size
3. With the help of neat diagram explain Andreason's pipette method to determine the particle size
4. With the help of neat diagram explain principle and working of coulter counter method to determine the particle size
5. What is specific surface area? How is it measured by air permeability method
6. What are derived properties of powders? Explain any two
7. Define angle of repose. Explain the method to determine the same
8. Explain porosity. Give its applications in pharmacy
9. Enumerate different methods of determination of true density and explain any one.
10. List different types of densities of powder/granules. Write the experimental method for the determination of any one of them.

UNIT V: Drug stability

Long Essay (10 Marks)

1. Define first order reaction with suitable examples. Deduce an equation for the determination of rate constant, half-life and shelf life for first order reaction kinetics.
2. Define Zero order reaction with suitable examples. Deduce an equation for the determination of rate constant, half-life and shelf life for zero order reaction kinetics.
3. Explain chemical degradation of pharmaceutical compounds due to hydrolysis. Explain its preventive measures.
4. Explain chemical degradation of pharmaceutical compounds due to oxidation. Explain its preventive measures.
5. Explain chemical degradation of pharmaceutical compounds due to hydrolysis and oxidation.
6. Enumerate the different methods of determination of order of reaction. Explain any two methods in detail
7. Define stability studies. Explain in detail how the shelf life of pharmaceutical product is determined.
8. Give the objectives, salient features, methodology and limitations of accelerated stability studies.

Short essay (05 Marks)

1. Explain the factors influencing the rate of a reaction.
2. Explain the preventive measures for chemical degradation due to oxidation.
3. Explain the preventive measures for chemical degradation due to hydrolysis.
4. Explain the graphical and half-life method for determination of order of reaction.
5. Define order of reaction. Explain the substitution method for determination of order of reaction.

6. Define order of reaction. Explain the differential method for determination of order of reaction.
7. Explain physical degradation of pharmaceuticals and its preventive measures.
8. Explain environmental factors affecting degradation of drugs.
9. Define Arrhenius plot and give its significance in calculation of shelf life.
10. Explain effect of temperature on rate of a reaction.
11. Explain methodology to calculate shelf life of a drug with graphical representation.

Short answers (02 Marks)

1. Define rate and order of a reaction
2. Define molecularity of reaction with example
3. Define pseudo zero order reaction with example
4. Define pseudo first order reaction with example
5. Enlist different methods of determination of order of reaction
6. Define zero order reaction with suitable example
7. Define first order reaction with suitable example
8. Give expressions for rate constant and half-life of zero and first order rate of a reaction
9. Give expressions for rate constant and half-life of first and second order rate of a reaction
10. How are pharmaceuticals stabilized against hydrolysis
11. How are pharmaceuticals stabilized against oxidation
12. Define physical and chemical degradation with examples
13. Enlist environmental factors affecting degradation of drugs
14. Enlist various applications of chemical kinetics in pharmacy
15. Give Arrhenius equation and its significance
16. Define shelf life of a medicinal product
17. Draw Arrhenius plot and mention its use
18. Derive an expression for the time taken for 90% retention of potency for a zero order reaction
19. Derive an equation to show that half life is independent of the concentration in first order reaction
20. Explain why suspension mostly follow zero order
21. Define half life. Explain concept of half life in first order reaction