

AUGUST - 2005

[KN 738]

Sub. Code : 4229

FIRST B.Pharm. DEGREE EXAMINATION.

(Modified Regulations)

Paper IV — PHYSICAL PHARMACEUTICS

Time : Three hours

Maximum : 90 marks

**Theory : Two hours and
forty minutes**

Theory : 70 marks

M.C.Q. : Twenty minutes

M.C.Q. : 20 marks

I. Long Essay : (2 × 15 = 30)

Answer any TWO questions.

**1. Define and classify colloids with examples.
Discuss their optical and kinetic properties of colloids.**

**2. Define rate and order of reaction. Derive first
order and second order rate constant.**

**3. Discuss the diffusion principles in biological
systems. Explain factors affecting drug pulse.**

II. Short notes : (8 × 5 = 40)

Answer any EIGHT questions.

**1. Differentiate flocculated and deflocculated
Suspensions.**

2. Discuss preservation of Emulsions.

**3. Classify different types of complexes with brief
description.**

4. Define and classify Emulsifying agents.

5. Explain purification of colloids.

**6. Discuss any one instrument used to measure the
viscosity of Newtonian system.**

7. Explain various factors affecting solubility.

**8. Describe particle size measurement by microscopic
method.**

9. Derive Gibb's adsorption Equation.

10. Explain Mechanism of protein binding.

FEBRUARY - 2006

[KO 738]

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Maximum : 90 marks

**Theory : Two hours and
forty minutes**

Theory : 70 marks

M.C.Q. : Twenty minutes

M.C.Q. : 20 marks

I. Long Essay : (2 × 15 = 30)

Answer any TWO questions.

1. Discuss the physical stability of emulsions.
2. Differentiate zero, first and second order reaction kinetics of Pharmaceuticals.
3. Classify complexes of pharmaceutical significance.

II. Short Notes on : (8 × 5 = 40)

Answer any EIGHT questions.

1. Describe the mechanism of action of surfactant as emulsifier.
2. Classify Flocculating agents, with their importance.

3. Differentiate between hydrophillic and hydrophobic colloids.

4. Explain the stabilization of drugs susceptible for hydrolytic degradation.

5. Discuss the applications of zeta potential.

6. What is angle of repose, how is it determined?

7. Define and explain :

- (a) Latent heat of vaporisation.
- (b) Aerosol.
- (c) Liquid crystal.
- (d) Polymorphism.

8. What is drug-protein binding, how is it quantified?

9. Write a note on Semi solid dosage forms.

10. Explain any one method for determination of Sw (Specific Surface area).

AUGUST - 2006

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Time : Three hours

Maximum : 90 marks

**Theory : Two hours and
forty minutes**

Theory : 70 marks

M.C.Q. : Twenty minutes

M.C.Q. : 20 marks

Answer any TWO questions.

I. Long Essay : (2 × 20 = 40)

1. (a) What do you mean by polymorphism? Explain.

(b) Describe the principle involved in cone and plate viscometer.

2. Explain shear thickening and shear thinning systems with suitable examples.

3. Explain Freundlich and Langmuir adsorption isotherms.

4. (a) What do you mean by melting? Give its importance.

(b) How do you carry out controlled flocculation?

Answer any SIX questions.

II. Short notes : (6 × 5 = 30)

1. Explain decomposition of ascorbic acid and how do you prevent it.

2. Define angle of repose. What is its significance?

3. Differentiate Creaming and Cracking of an emulsion.

4. Explain Miscellar solubilization.

5. What are Eutectic mixtures? Give example.

6. Define Fick's law of diffusion and explain.

7. What are Clathrates? Give its applications with example.

8. How do you analyse complex by solubility method?

FEBRUARY - 2007

[KQ 738]

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Time : Three hours

Maximum : 90 marks

Theory : Two hours and
forty minutes

Theory : 70 marks

M.C.Q. : Twenty minutes

M.C.Q. : 20 marks

Answer any TWO questions.

I. Long Essay : (2 × 20 = 40)

1. (a) Define order of a reaction. How do you determine order of a reaction?

(b) Explain various theories of emulsification.
(10 + 10)

2. (a) How do you determine the particle size by sedimentation method?

(b) Define thixotropy. How do you measure thixotropic breakdown?
(10 + 10)

3. Classify complexes giving examples. Explain analysis of complexes by solubility method. (20)

4. (a) Explain the principle and procedure involved in dissolution apparatus.

(b) What are protective colloids? How do they act?
(12 + 8)

II. Short notes :

Answer any SIX questions. (6 × 5 = 30)

1. What do you mean by polymorphism? Give examples.

2. What are the limitations of accelerated stability studies?

3. What are structured vehicles? Give its significance.

4. State and explain Freundlich's adsorption isotherm.

5. What is critical micellar concentration? What are the factors which affect it?

6. Define solubility and give its applications.

7. What are pseudo plastic flow systems? Explain.

8. Define bulk density and true density. How do you determine bulk density?

August-2007

[KR 738]

Sub. Code : 4229

(For candidates admitted from 2004–05 onwards)

FIRST B.Pharm. DEGREE EXAMINATION.

(Common to II B.Pharm. admitted from 2006 onwards)

(Modified Regulations)

Paper IV — PHYSICAL PHARMACEUTICS

Time : Three hours

Maximum : 90 marks

Theory : Two hours and
forty minutes

Theory : 70 marks

M.C.Q. : Twenty minutes

M.C.Q. : 20 marks

SECTION A — (2 × 15 = 30 marks)

Answer any TWO questions.

1. (a) Enlist the various methods available for determination of order of a reaction and explain any one method available for order determination.

(b) Discuss the various approaches available for conferring protection against oxidative breakdown of drugs.

2. (a) With the help of rheograms, explain the flow behaviour of newtonean and Non-newtonean systems.

(b) Define Thixotropy. How do you quantify thixotropy?

3. (a) How do you differentiate lyophilic, lyophobic and association colloids?

(b) Discuss the various electrical properties of colloidal dispersions.

4. (a) Enumerate the various methods available for particle size determination.

(b) Discuss the construction and working of a coulter counter.

(c) Deduce an expression for particle number.

SECTION B — ($8 \times 5 = 40$ marks)

Answer any EIGHT questions.

1. Write in brief about polymorphism and give the pharmaceutical significance of polymorphs.

2. What do you mean by steady state diffusion?

3. What do you mean by gold number?

4. Discuss the origin of zetapotential in cause of biphasic systems.

5. Describe sedimentation parameters.

6. State Gibb's adsorption equation and give the interpretation of the equation.

7. Give the construction of Arrhenius plot. Mention the limitations of Arrhenius plot.

8. Write in brief about free flowing properties of powders.

9. Give the working principle of Ostwalds viscometer.

10. Write on pharmaceutical applications of complexation.

February-2008

[KS 738]

Sub. Code : 4229

(For candidates admitted from 2004–05 onwards)

FIRST B.Pharm. DEGREE EXAMINATION.

(Common to II B.Pharm. admitted from 2006 onwards)

(Modified Regulations)

Paper IV — PHYSICAL PHARMACEUTICS

Q.P. Code : 564229

Time : Three hours

Maximum : 90 marks

**Theory: Two hours and
forty minutes**

Theory : 70 marks

M.C.Q. : Twenty minutes

M.C.Q. : 20 marks

I. Long Essay :

(2 × 15 = 30)

Answer any TWO questions.

1. Discuss in detail the use of Film balance in understanding the Insoluble monolayers formed at the liquid interfaces and its significance. Write above ribbs adsorption equation.

2. Describe the principle and working of (a) Cup and Bob viscometer (b) Cone and plate viscometer.
3. Define complexation. Classify the complex with suitable examples. Discuss the various methods of Analysis to determine the metal complex ratio.
4. Define diffusion and discuss the diffusion laws. Write a detailed notes on diffusion of drugs through membranes and write the methods assessing the drug diffusion.

II. Short notes: (8 × 5 = 40)

Answer any EIGHT questions.

- (1) Write about liquid crystals and its significance.
- (2) Discuss the pH partition theory and its modifications.
- (3) Discuss the kinetic properties of colloids.
- (4) Discuss the interfacial properties and stability of suspended particles.
- (5) Define solubilisation and the factors influencing the solubilization.

(6) Discuss the medium effects in the stability of medicinal agents.

(7) Discuss the significance of pore size in pharmaceutical powders.

(8) Write short notes on prediction of 'shelf life'.

(9) Discuss the binding equilibria of protein binding.

(10) Write the methods to determine the order of reaction.

August 2008

[KT 738]

Sub. Code : 4229

(For candidates admitted from 2004-05 onwards)

FIRST B.Pharm. DEGREE EXAMINATION.

(Common to II B. Pharm. admitted from 2006 onwards)

(Modified Regulations)

Paper IV — PHYSICAL PHARMACEUTICS

Q.P. Code : 564229

Time : Three hours

Maximum : 90 marks

I. Essay : (2 × 20 = 40)

Answer any TWO questions.

1. (a) Explain the phenomena of adsorption. What are the factors affecting adsorption.

(b) Write about Freundlich and Langmuir Adsorption Isotherm.

2. (a) How will you predict the stability of pharmaceutical product.

(b) Explain the decomposition Reaction of a drug with suitable eg. How will you prevent it.

August 2008

3. (a) Discuss the Rheology of semisolid and gel.
(b) Quantify the Thixotrophy and write about application of Thixotrophy.

II. Short notes : (8 × 5 = 40)

Answer any EIGHT of the following.

1. Significance of particle size in pharmacy.
2. Short notes on no bond complexes.
3. What is Zeta potential and Nernst – potential. Write the importance of Zeta potential in pharmacy.
4. Short notes on Protein Binding.
5. Write about the sedimentation parameters of suspended particles.
6. Explain the eutectic Mixture.
7. Short notes on Isotonic solution.
8. Explain Noyes-Whitney equation.
9. Write about Multiple point Viscometer.
10. Preservation of emulsion.

III. Short Answers : (5 × 2 = 10)

Answer any FIVE of the following.

1. Bancraft's Rule.
2. Kraft point.

3. Gold Number.
 4. Phase Volume Ratio.
 5. BET Equation.
 6. Edmunson Equation.
 7. Stokes Equation.
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February 2009

[KU 738]

Sub. Code: 4229

FIRST B.PHARM. DEGREE EXAMINATION
(Common to Second B.Pharm Paper I. Admitted from 2006 onwards)
(Regulations 2004)
(For Candidates admitted from 2004-05 onwards)
Paper IV – PHYSICAL PHARMACEUTICS
Q.P. Code : 564229

Time : Three hours

Maximum : 90 marks

I. Essay Questions : Answer any TWO questions (2 x 20 = 40)

1. a) Write about different types of collidal systems. (5)
b) Discuss the optical and electrical properties of colloids (15)
2. a) Explain the term micromeritics and its applications in pharmacy (5)
b) Explain any two methods for determining the surface area of a powder. (15)
3. a) Explain the term rheology and its application in pharmacy. (6)
b) Write about ostwald viscometer and cone and plate viscometer (14)

II. Write Short Notes : Answer any EIGHT questions (8 x 5 = 40)

1. Effect of temperature in solubility with examples.
2. Explain the Half life with equation.
3. Significance of protein binding.
4. Describe the steady state diffusion through a membrane diagrammatically.
5. Write a short note on accelerated stability testing of pharmaceutical products.
6. Isotonic solutions.
7. Define surface tension and its determination.
8. Differentiate flocculated suspension from deflocculated suspension.
9. Applications of emulsion in pharmacy.
10. Andreason apparatus – Explain.

III. Short Answers: Answer any FIVE questions (5 x 2 = 10)

1. Osmosis.
2. Surface free energy.
3. Order of a reaction.
4. Critical micellar concentration.
5. HLB value.
6. Liquid crystals.
7. Complexation.

August 2009

[KV 738]

Sub. Code: 4229

FIRST B.PHARM. DEGREE EXAMINATION
(Common to Second B.Pharm Paper I. Admitted from 2006 onwards)

(Regulations 2004)
(For Candidates admitted from 2004-05 onwards)
Paper IV – PHYSICAL PHARMACEUTICS

Q.P. Code : 564229

Time : Three hours

Maximum : 90 marks

I. Essay Questions : Answer any TWO questions (2 x 20 = 40)

1. a) What is oxidation. How drugs undergo decomposition by oxidation. Describe methods to prevent oxidative degradation.
b) Explain accelerated stability testing. Give its advantages and limitations.
2. Describe various methods of determining particle size distribution.
3. a) What is thixotropy? Give its applications.
b) Describe multipoint viscometers.

II. Write Short Notes : Answer any EIGHT questions (8 x 5 = 40)

1. Explain eutectic mixtures.
2. Write short notes on pseudoplastic and dilatant flow.
3. Instabilities of emulsions.
4. Write short notes on Donnan membrane effect.
5. Determination of solubility.
6. Inclusion complexes.
7. Classification of surfactants.
8. Formulation of suspensions.
9. Write short notes on liquid.
10. Describe the rate and order of reactions.

III. Short Answers: Answer any FIVE questions (5 x 2 = 10)

1. Polymorphism.
2. Fick's law of diffusion.
3. Gold number.
4. Zeta potential.
5. Porosity.
6. Rheophexy.
7. Clathrates.

February 2010

[KW 738]

Sub. Code: 4229

FIRST B.PHARM. DEGREE EXAMINATION
(Common to Second B.Pharm Paper I. Admitted from 2006 onwards)
(Regulations 2004)
(For Candidates admitted from 2004-05 onwards)
Paper IV – PHYSICAL PHARMACEUTICS
Q.P. Code : 564229

Time : Three hours

Maximum : 90 marks

I. Essay Questions : Answer any TWO questions (2 x 20= 40)

1. **a)** Explain different types of colloids.
 b) Describe the electrical properties of colloids.
2. **a)** Explain non Newtonian flow of fluids.
 b) Explain single and multiple point viscometers.
3. **a)** Give the differences between flocculated and deflocculated suspensions.
 b) How will you formulate a stable suspension?

II. Write Short Notes : Answer any EIGHT questions (8 x 5 = 40)

1. Applications of thixotropy in pharmacy.
2. Preservation of emulsions.
3. Describe noyes whitneyi equation.
4. Zeta potential and Nernst equation.
5. Write short notes on protein binding.
6. Structured vehicle.
7. Short note on overages.
8. Surface tension and one method of its determination.
9. Monomolecular inclusion complexes.
10. Cup and pob viscometer.

III. Short Answers: Answer any FIVE questions (5 x 2 = 10)

1. Eutectic mixture.
2. Define angle of repose.
3. Stocke's equation.
4. Plastic flow.
5. Isotonic solutions.
6. Define critical miscellar concentration.
7. Kraft's point.

[KX 738]

September 2010

Sub. Code: 4229

FIRST B.PHARM. DEGREE EXAMINATION
(Common to Second B.Pharm Paper I. Admitted from 2006 onwards and
2009-2010 Lateral Entry Batch)

(Regulations 2004)

(For Candidates admitted from 2004-05 onwards)

Paper IV – PHYSICAL PHARMACEUTICS

Q.P. Code : 564229

Time : Three hours

Maximum : 90 marks

I. Essay Questions :

(2 X 20 = 40)

Answer any TWO questions.

1. a) Discuss the methodology and limitations of accelerated stability Testing.
b) Explain the measurement of Thixotropic co-efficient.
2. a) Classify the different types of complexes with brief descriptions.
b) Enumerate the methods for analysis of complexes and explain in detail about pH titration method.
3. Describe the method to determine particle size and particle size distribution.

II. Write Short Notes :

(8X 5 = 40)

Answer any EIGHT questions.

1. Explain the various methods for determination of order of reaction.
2. Write a note on liquid crystals.
3. Explain the factors affecting adsorption.
4. Describe controlled flocculation.
5. State and explain Freundlich Isotherm.
6. Explain the Fick's law of diffusion.
7. Explain Kinetic properties of colloids.
8. What is Protein binding of drugs? Explain its significance.
9. Explain about Non-Newtonian System.
10. Explain the formation of Electrical double layer around a dispersed particle and define Zeta potential and Nernst potential.

III. Short Answers:

(5X2 = 10)

Answer any FIVE questions.

1. Eutectic mixture.
2. BET Equation.
3. Coalescence and breaking.
4. Burger's model.
5. Stoke's law
6. Kinematic viscosity.
7. Isotonic Solution.

FEBRUARY 2011

[KY 738]

Sub. Code : 4229

FIRST B. PHARM. DEGREE EXAMINATION.

**(Common to Second B.Pharm Paper I. Admitted from 2006 onwards
and 2009-2010 Lateral Entry Batch)**

(Regulations 2004)

(For Candidates admitted from 2004–2005 onwards)

Paper IV — PHYSICAL PHARMACEUTICS

Q.P. Code : 564229

Time : Three hours

Maximum : 90 marks

I. Essay Questions:

(2 x 20 = 40)

Answer any TWO questions.

1. (a) Describe the various types of rheological systems with suitable rheogram and examples.
(b) With suitable diagram explain the commercial Ferrante – Shirley cone and plate viscometer.
2. (a) Explain the stability of colloids by DLVO theory.
(b) Describe the various methods of purification of colloids.
3. Explain the various theories of emulsification.

II. Write short notes:

(8 x 5 = 40)

Answer any EIGHT questions.

1. Give the various applications of complexes.
2. Explain the cryoscopic and sodium chloride equivalent methods to adjust tonicity of hypotonic solutions.
3. Write note on surface and interfacial tension.
4. Explain the solubility method for the analysis of complex.
5. Differentiate flocculated and deflocculated suspensions.
6. How will you determine shelf life of a drug?
7. Briefly describe protein binding of drugs and discuss its significance.
8. Describe the diffusion principles in biological systems.
9. Explain the electrical method to determine particle volume.
10. What the various factors affecting adsorption? Briefly Explain each.

III. Short answer:

(5 x 2 = 10)

Answer any FIVE questions.

1. Fick's laws.
2. Dissolution.
3. Coalescence and breaking.
4. Stoke's law.
5. Kraft point and cloud point.
6. Clathrates.
7. Zeta potential.
