APRIL - 1990

0 1 6

SECOND B. Pharm. EXAMINATION, APRIL 1990.

PHYSICAL PHARMACY

Time : Three hours Maximum : 100 marks

Answer QUESTION No. 5 and any FIVE other questions.

1. (*a*) Discuss drug dissolution and factors affecting dissolution.

(*b*) How are dissolution studies carried out in pharmaceutical products ?

(*c*) Differentiate bio-absorption and bio-availability and factors affecting drug release.

(*d*) How distribution law finds application in pharmacy ? (4+3+2+3=12 marks)

2. Write explanatory notes on any *three* :

(*a*) True solution and various types of solutions in pharmacy.

(*b*) Aerosoles and their working mechanisms.

(*c*) Rheological studies in pharmacy.

(*d*) Fluorescence and phosphorescence. (3×4=12 marks)

3. (*a*) What is meant by micromeretics ?

(*b*) Explain with examples the importance of particle size in pharmaceutical systems. Enumerate the various methods of particle size determination.

(*c*) How does surface area affect drug absorption and formulation ?

(*d*) Bring out the importance of bulk density, porocity and packing of powders. (4×3=12 marks)

4. (*a*) Discuss he various theories of emulsion. How are the types of emulsions identified ?

(*b*) What are the factors affecting stability and deterioration of emulsions ? (2×6=12 marks)

5. (*a*) What are the various types of physical phenomena that affect drug complexation and binding forces ?

(*b*) What are meant by dielectric constant, polarity, and dipole moments ?

(*c*) Explain the principle and application of I.R. spectroscopy.

(*d*) Define electrone spin and N.M.R. (4×3¾=15 marks)

6. (*a*) State the second law of thermodynamics.

(*b*) What is thermal analysis ?

(*c*) What is solid-solid dispersion ?

(*d*) Explain the properties of solid particles, crystalline nature and solubility in drug formulation. (4×3=12 marks)

7. (*a*) Discuss the importance of viscosity and surface tension.

(*b*) Explain the construction and working of Stormer viscometer.

(*c*) What is mixotropy and its application in semi-solid formulations ? (3×4=12 marks)

APRIL - 1990

8. Write short notes on any *four* :

(*a*) Phase rule.

(*b*) Buffer systems in pharmaceutical industry.

(*c*) Stability of emulsions.

(*d*) Stork's law.

(*e*) Polymorphism. (4×3=12 marks)

OCTOBER - 1990

016

SECOND B.Pharm. DEGREE EXAMINATION, OCTOBER 1990

Paper IV — PHYSICAL PHARMACY

Time : Three hours. Maximum : 100 marks.

Question No. 5 is compulsory and

answer any FIVE other questions.

1. (a) Define the following terms and explain : (i) Accuracy, (ii) Precision, (iii) Error, (iv) Mean deviation and (v) Relative mean deviation.

(b) Add a note on the application of statistical methods of data analysis. (12+4)

2. (a) State the gas laws and the concept of kinetic theory of gases.

(b) Deduce the kinetic equation of gases.

(c) Explain the terms surface and interfacial tensions and any one method of determination of surface tension. (4+4+8)

3. (a) Discuss the phenomenon of metal complexation and its importance in pharmaceutical formulation and biological application.

(b) Explain the term 'inclusion compounds' and factors affecting drug stability, solubility and bioavailability. (8+8)

4. (*a*) Differentiate between colloidal and suspensoid preparations.

(*b*) Mention methods of stabilization/protection of such preparations with examples from pharmaceutical systems. (8+8)

5. (*a*) What is meant by diffusion ?

(*b*) Describe diffusion in biological system giving examples.

(*c*) Discuss the phenomenon of distribution of solids between immiscible liquids.

(*d*) Describe the phenomenon of adsorption and solid adsorption and its role in pharmaceutical systems. (4× 5 = 20)

6. (*a*) State and explain the 1st law of thermodynamics.

(*b*) What do you mean by 'free energy' and 'entropy' and their practical applications ? (8+8)

7. (*a*) What is order of reaction ? How is order of reaction determined ?

(*b*) What are the factors affecting the order of reaction and rate of reaction ?

(*c*) What is shelf-value ? How is shelf-value of a drug or drug formulation is determined ?

(*d*) How is accelerated studies carried out ? (6+4+4+2)

8. Write short notes on any *four* :

(*a*) pH and buffers in pharmaceutical systems.

(*b*) Isotonicity and its importance in pharmacy.

(*c*) Particle size, shape and packing of powders.

(*d*) Theory of emulsification.

(*e*) Optical activity. (4 × 4 = 16)

———

APRIL - 1991

041

SECOND B.PHARM. DEGREE EXAMINATION, APRIL 1991.

Paper IV — PHYSICAL PHARMACY

Time : Three hours. Maximum : 100 marks.

Question No. 8 is compulsory and answer any FIVE other questions.

1. (a) State the phase rule and define the terms used in the statement.

(b) Discuss the phase diagram of water.

(c) Give Van der Waal's equation and state the significance of the constants in it. (4 + 8 + 4)

2. (a) Classify suspending agents.

(b) Discuss the factors to be considered in the preparation of stable suspensions.

(c) What are Gels ? (3 + 10 + 3)

3. (a) Explain the terms — "Surface Tension" and "Interfacial Tension".

(b) Describe a suitable method for determining surface tension.

(c) State the importance of surface tension in pharmacy. (4 + 6 + 6)

4. (a) Explain (i) Dipole moment (ii) Dielectric constant (iii) Mass spectrometry.

(b) How does a study of dipole moment help in elucidating the structure of molecules. (12 + 4)

5. (a) How do you differentiate between a chelate and a complex ?

(b) Describe a suitable method for the determination of the stoichiometry of a complex.

(c) State the applications of complexation in pharmacy. (4 + 8 + 4)

6. (a) Explain the terms 'normal' distribution and 'log-normal' distribution in connection with powders.

(b) Define (i) Porosity (ii) Bulk density (iii) True density.

(c) Describe the method employed for measuring particle volume using coulter counter. (5 + 3 + 8)

7. (a) Differentiate between Freundlich and Langmier Adsorption isotherms.

(b) Discuss the electrical properties of interfaces. (6+10)

8. Write short notes on any FOUR of the following :

(a) Clausius-Clapeyron Equation.

(b) Order of Reactions.

(c) Rheological properties of Emulsions.

(d) Controlled Drug therapy.

(e) Solubilization. (4 × 5 = 20)

APRIL - 1993

[RS 539]

SECOND B.Pharm. DEGREE EXAMINATION.

(Old Regulations)

Paper IV — PHYSICAL PHARMACY

Time : Three hours Maximum : 100 marks

Question No. 8 is compulsory and answer any FIVE other questions.

1. Write short notes on any FOUR of the following : (4 x 5 = 20)

   (a) Determinate errors.

   (b) Phase rule.

   (c) Ultra violet and visible spectrophotometry.

   (d) Metal complexes.

   (e) Optical properties of colloids.

2. State and explain Second Law of Thermodynamics. What is meant by free energy? Mention its functions and applications. (6 + 5 + 5 = 16)

3. Explain the process of Drug dissolution and Bio absorption. (16)

4. Define an emulsion. What are their pharmaceutical applications? Explain the factors responsible for the stability of an emulsion. Explain the rheological properties of emulsion. (2 + 2 + 6 + 6 = 16)

5. Explain the significance of particle shape and surface area in pharmacy. Explain any one method for determining surface area. (16)

6. Explain the following : (6 + 6 + 4 = 16)

   (a) Electric double layer.

   (b) Zeta potential.

   (b) Effect of electrolyte on suspended particles.

7. How accelarated stability studies are carried out? (16)

8. Explain briefly : (4 x 4 = 16)

   (a) Dielectric constant and induced polarisation.

   (b) Fluorescence and Phosphorescence.

   (c) Optical rotatory dispersion.

   (d) Permanent Dipole moment of polar molecules.

APRIL - 1993

[R S 544]

SECOND B.Pharm. DEGREE EXAMINATION.

(New Regulations)

Paper IV — PHYSICAL PHARMACY

Time : Three hours. Maximum : 90 marks.

Two and a half hours
for Sections A and B Sections A and B : 60 marks.

Answer Sections A and B in separate answer books.

Answer Section C in the answer sheet provided.

SECTION A — (2 × 15 = 30 marks)

Answer any TWO questions.

1. Explain the first order degradation of drugs and derive to calculate half life. Briefly mention its pharmaceutical significance.

2. Explain briefly the different types of metal-ion complexes with suitable examples. Explain how complexation is studied by pH titration method.

3. What are colloids ? Explain the electrical properties of colloids and its relevance on the stability of emulsions.

4. What is hydrolysis ? What are the factors influencing hydrolysis of a drug ? How hydrolysis of a drug can be prevented in a formulation ?

SECTION B — (6 × 5 = 30 marks)

Answer any SIX questions.

5. What are different methods available for determining particle size ? Explain briefly any one method.

6. Write short notes on dialysis.

7. Explain the terms creaming and cracking with respect to emulsions.

8. Differentiate between floculated and defloculated suspensions.

9. Explain the factors influencing the solubility of gases in liquids.

10. Explain the terms : Surface tension, Interfacial tension and surface free energy.

11. Sensitisation and protective colloidal action.

12. Write a short note on phase-rule.

13. Explain Multiple dose versus sustained release medication.

———

NOVEMBER - 1993

[P R 161]

SECOND B.Pharm. DEGREE EXAMINATION.

(New Regulations)

Paper IV — PHYSICAL PHARMACY

Time : Three hours Maximum : 90 marks

Two and a half hours for Sections A and B Sections A and B : 60 marks

Answer Sections A and B in separate answer books.

Answer Section C in the answer sheet provided.

SECTION A — (2 x 15 = 30 marks)

Answer any TWO questions.

1. Classify colloidal systems. How do you purify colloidal solutions? What are the pharmaceutical applications of colloids? Add a note on the Gold number of colloids.

2. Explain the different theories of emulsification. Describe the instability conditions of emulsions and suggest suitable remedies. Write a note on preservation emulstions.

3. State and explain the distribution law of solutes between two immiscible solvents. What is the effect of molecular association in one of the phases on the distribution coefficient?

4. What are surface active agents? Explain their application in Pharmacy. Write a note on HLB classification.

SECTION B — (6 x 5 = 30 marks)

Answer any SIX questions.

5. Explain enzyme catalysis with examples.

6. Differentiate between filtration and ultra-filtration.

7. What are the factors influencing the routes of drug administration?

8. Explain cosolvancy with examples.

9. What is protein binding of drugs? Explain with examples.

10. Describe spreading coefficient.

11. State and explain briefly phase-rule.

12. What is specific surface of particles? How is it determined?

13. Explain Bio-equivalency with examples.

———————

NOVEMBER - 1994

[ND 578]

SECOND B.Pharm. DEGREE EXAMINATION.

(New Regulations)

Paper IV — PHYSICAL PHARMACY

Time : Three hours — Maximum : 90 marks

Two and a half hours for Sections A and B — Sections A and B : 60 marks

Answer Sections A and B in separate answer books.

Answer Section C in the answer sheet provided.

SECTION A — (2 × 15 = 30 marks)

Answer any TWO questions.

1. Explain "rate" and "order" of a chemical reaction. Discuss the methods of determination of order. (8 + 7 = 15)

2. Describe the steps involved in and the factors affecting the percutaneous absorption of drugs. (8 + 7 = 15)

3. Describe sedimentation method of particle size analysis. Explain the significance of particle size analysis in pharmacy. (8 + 7 = 15)

4. What is phase rule? Define the various terms involved. Give the application of phase rule in pharmacy. (3 + 7 + 5 = 15)

[ND 578]

SECTION B — (6 × 5 = 30 marks)

Answer any SIX questions.

5. Explain the phenomenon of micellar solubilization.

6. Explain the terms 'true' density and 'bulk' density.

7. Give a brief note on percutaneous absorption.

8. Explain the importance of drug dissolution on bio-absorption.

9. State and explain First law of thermodynamics.

10. Distinguish between 'creaming' and 'cracking' of emulsion.

11. Explain filtration and ultra-filtration.

12. Explain zeta potential and its pharmaceutical application.

13. Discuss in brief 'caking' and its control with reference to suspensions

———————

APRIL - 1995

[SB 680]

Second B.Pharm. Degree Examination

(New Regulations)

Paper IV - PHYSICAL PHARMACY

Time : Three hours — Maximum : 90 marks.

Two and a half hours for section A and B — Sections A and B : 60 Marks

Answer Section A and B in Separate answer books
Answer Section C in the answer sheet provided.

SECTION – A (2×15 = 30)

Answer any TWO questions

1. a) How do you predict the solubility behaviour of a solute in a solvent?
   b) What are the methods employed for enhancing solubility?
2. a) Classify the different types of colloidal systems with examples.
   b) Discuss in brief the optical properties of colloidal systems.
3. a) How do you determine particle size by Andersen apparatus?
   b) What are the rources of photochemical radiation?
4. Discuss in brief the theory and mechanism of emulsification.

SECTION - B (6×5 = 30)

Answer any SIX of the following.

5. How do you determine surface tension by DUNOUY ring method?
6. Explain the significance of GIBBS adsorption equation and formation of soluble monolayers at interface.
7. Explain the arhenius equation and influence of temperature on reaction rate.
8. Define order of a reaction. Derive a mathematical expression for a first order reaction.
9. Give the methods of cone and plate viscometer over cup and bob viscometer.
10. Explain the importance of Thixotropy in formulations.
11. Write the differences between complexation and formation of organic molecular complexes.
12. What are the pharmaceutical applications of catalysts?
13. What are gels. Classify them. Explain the phenomenon of synergesis and swelling of gels.

———

APRIL - 1995

(SB 580 - A)

Second B. Pharm Degree Examination

(Revised Regulation)

Paper IV - PHYSICAL PHARMACEUTICS

Time : Three hours — Maximum : 90 marks

Two and a half hours for Section A and B — Sec. A & B : 60 marks

Answer Sections A and B in saparate answer books.

Answer Section C in the answer sheet provided.

SECTION - A (2×15=30)

Answer any Two questions.

1. a) Discuss the methods used for increasing the solubility of a solute in a solvent ?
   b) Define isotonicity. What are the effects likely to be produced by administering paratonic solutions ? (7+8)

2. a) Write in brief about the kinetic properties of of colloids
   b) Compare the lyophilic and lyophobic colloidol systems. (7+8)

3. a) How do you determine particle volume by coulter counter apparatus
   b) Classify complexes with examples. (7+8)

4. Discuss in brief the principles of formulation of suspension dosage form. (15)

SECTION - B (6 X 5 = 30)

Answer any SIX questions

5. Express surface tension interms of pressure difference across a curve interface.

6. Explain the significance of GIBBS adsorption equation and formation of soluble monolayers at interface.

7. How do you determine the order of a reaction by substitution and half life methods ?

8. How do you determine the half life of a product decomposing according to zero order reaction ?

9. Explain the theory underlying the mechanism of catalysts.

10. How do you distinguish a chelate and a complex ?

11. Enumerate the applications of complexes in pharmacy.

12. Write the significance of THIXOTROPY in pharmaceutical suspension dosage forms.

13. What are gels. Classify them. Explain the phenomenon of synergesis and swelling of gels.

———

APRIL - 1996

[AK 712] Subject Code : 4169

Second B. Pharm Degree Examination

(New Regulations)

Paper IV - PHYSICAL PHARMACY

Time : Three hours Maximum : 90 Marks

Two and a half an hour Sec. A and B : 60 Marks

for Section A and B

Answer Sections A and B in separate answer books.

Answer Section C in the answer sheet provided.

SECTION - A (2×15 = 30)

Answer any Two questions

1. Explain two methods to determine Ligand-acceptor ration in complexes

2. Explain two methods to determine surface area of powders.

3. Explain the methods for preparation of colloids. Discuss their optical and kinetic properties.

4. Classify emulsions. Discuss their stability problems.

SECTION - B (6×5 = 30)

Answer any Six questions

5. Give the applications of Micromeritics.

6. Discuss the stabilisation of medicinal agents.

7. Discuss the principle of infra red spectroscopy.

8. What is triple point ? Discuss its significance.

9. Diecuss the second law of Thermo dynamics

10. Discuss dissolution and factors affecting dissolution.

11. Explain the determination of porosity of powders.

12. Factors affecting rate of reaction. Discuss.

13. Discuss the floculated suspensions.

NOVEMBER - 1995

[MB 712]

Second B. Pharm Degree Examination

(New Regulations)

Paper IV - PHYSICAL PHARMACY

Time : Three hours — Maximum : 90 marks
Two and a half hours for Sec. A and B — Sec. A and B : 60 marks

Answer sections A and B in separate answer books.
Answer section C in the answer sheet provided.

SECTION—A (2X15=30)

Answer any Two questions

1. Explain the methods performing Accelerated stability testing of formulations.

2. Explain two methods to determine particle size of powders.

3. Give the various principles for design of controlled drug delivery systems.

4. Explain the various adsorption isotherms (both graphical & mathematical) adsorption at solid interfaces.

SECTION—B (6X5=30)

Answer any Six questions

5. Give the relation between protein binding & duration of drug action.

6. Give detail on optical Rotary dispersion

7. Explain the liquid crystalline state.

8. Explain micellar solubilisation & its application

9. Explain the Third Law of Thermodynamics.

10. Explain the electrical properties at interfaces.

11. Explain the micro emulsion system.

12. Explain the methods about purification of colloids.

13. Explain the factors affecting dissolution. How is rate of dissolution estimated ?

———

NOVEMBER - 1995

[MB 715]

Second B. Pharm Degree Examination

(Revised Regulations)

Paper IV - PHYSICAL PHARMACEUTICS

Time : Three hours | Max : 90 marks

Two and a half hour for Sec. A and B | Sec. A and B : 60 marks

Answer Sections A and B in separate answer books

Answer Section C in the answer sheet provided

SECTION - A (2×15=30)

Answer any Two questions

1. Describe the non-newtonian systems.
2. Discuss the derived properties of powders.
3. Discuss the role of particle size, zeta potential and rheology in the formulation of suspensions.
4. Discuss the theories of emulsification.

SECTION - B (6X5=30)

Answer any Six questions

5. What is the type of flow exhibited by a floculated suspension-explain your answer.
6. Explain sensitization and protective action of colloids
7. Discuss creaming of emulsions.
8. Describe the first order kinetics.
9. Discuss the 'capillary rise' of liquids.
10. Explain the significance of thixotropy in formulations.
11. Discuss the factors affecting the solubility of drugs.
12. Discuss on drug complexes.
13. What is tripple point. Discuss its significance.

APRIL - 1996

[AK 715] Subject Code : 4174

Second B. Pharm Degree Examination

(Revise I Regulation)

Paper IV - PHYSICAL PHARMACEUTICS

Time : Three hours. Max. : 90 marks.

Two and a half hours

for Section A and B Sec. A and B. : 60 marks.

Answer Sections A and B in separate answer books.

Answer Section C in the answer sheet provided.

SECTION—A (2X15 = 30)

Answer any TWO questions.

1. Describe the properties and types of solutions. Define Henry's Law and Roult's Law. Describe the principles of distillation of Binary mixtures.

2. Describe various types of colloidal systems. Explain the optical and kinetic properties of colloids.

3. Explain the interfacial properties of suspended particles and describe the formulation of a suspension.

4. Describe the methods for determining particle size.

SECTION—B (6X5 = 30)

Answer any SIX questions.

5. How do you enhance the solubility of a drug ?

6. What are multiple emulsions and micro-emulsions ?

7. Explain different types of densities of materials used in pharmacy.

8. Explain in detail the Non-Newtonean systems.

9. Define photochemical reactions. How do you protect pharmoceuticals against oxidation ?

10. Explain preservation of emulsions.

11. Define complexation. Classify different types of complexes.

12. Explain Negative Thixotrophy and significance of Thixotrophy in formulations.

13. Classify surfactants with suitable examples.

OCTOBER - 1997

[MS 709] **Sub. Code : 4169**

SECOND B.Pharm. DEGREE EXAMINATION.

(New Regulations)

Paper IV — PHYSICAL PHARMACY

Time : Three hours — Maximum : 90 marks

Two and a half hours for Section A and Section B. — Sections A and B : 60 marks; Section C : 30 marks

Answer Sections A and B in separate answer books.

Answer Section C in the answer sheet provided.

SECTION A — (2 × 15 = 30 marks)

Answer any TWO questions.

They carry equal marks.

1. Classify semisolid bases with suitable examples and give an account of the Rheologic properties of semisolids.

2. Explain the interfacial properties of suspended particles and describe the formulation of a suspension.

3. State and explain Stokes law and explain how it can be used to find the diameter of a particle.

4. (a) State and explain the zero order and first order kinetics.

(b) Give an account of Arrhenius plot.

SECTION B — (6 × 5 = 30 marks)

Answer any SIX questions.

They carry equal marks.

5. Give an account of the Coulter counter.

6. Explain the various densities of materials used in Pharmacy.

7. Explain stability of emulsions.

8. Give a note on Micellar solubilisation.

9. Account for the role of Krafft point and Cloud points.

10. Explain the importance of Zeta potential in suspension permutation.

11. Classify surfactants with one example each.

12. Complexation and drug action in brief.

13. Infrared spectroscopy in brief.

———————

OCTOBER - 1997

[MS 711] **Sub. Code : 4174**

SECOND B.Pharm. DEGREE EXAMINATION.

(Revised Regulation)

Paper IV — PHYSICAL PHARMACEUTICS

Time : Three hours Maximum : 90 marks

Two and a half hours for Section A and Section B. Sections A and B : 60 marks

Answer Sections A and B in separate answer books.

Answer Section C in the answer sheet provided.

SECTION A — (2 × 15 = 30 marks)

Answer any TWO questions.

1. Describe various types of colloidal systems. Explain the electric and kinetic properties of colloids.

2. Define an Emulsion. What are different types of emulsions? Explain the theories of emulsification.

3. Classify semisolid bases with suitable examples and give an account of the Rheologic properties of semisolids.

4. Define a surfactant. Classify the surfactants with suitable examples and give a brief account of the HLB scale and its role.

[MS 711]

SECTION B — (6 × 5 = 30 marks)

Answer any SIX questions.

5. Explain in brief the solubilisation to enhance the solubility of a drug.

6. What are flocculated and deflocculated suspensions? Explain with examples.

7. Give a brief account of the principle involved in the working of a cup and Bob viscometer.

8. Explain the utility of the thixotropic property of semisolids in formulators.

9. Explain the role of complexation in drug action.

10. Give an account of the basic laws of photochemistry.

11. Give an account of Fisher's subsieve sizer.

12. Give a brief account of Accelerated stability Analysis.

13. Give a note on steady state diffusion.

———————

[SV 711] **Sub. Code : 4174**

SECOND B.Pharm. DEGREE EXAMINATION.

(Revised Regulations)

Paper IV — PHYSICAL PHARMACEUTICS

Time : Three hours — Maximum : 90 marks

Two and a half hours — Sec. A & Sec. B : 60 marks

for Sec. A and Sec. B — Section C : 30 marks

Answer Sections A and B in separate answer books.

Answer Section C in the answer sheet provided.

SECTION A — (2 × 15 = 30 marks)

Answer any TWO questions.

1. Define physical stability of a suspension. Discuss the principles involved in the formulation of a physically stable suspension.

2. Compare the properties of different types of colloids. Discuss the electrical properties of colloids.

3. Give the classification of complexes. Add a note on protein binding of drugs.

4. Describe in detail the derived properties of powders. Add a note on the flow properties of powders.

SECTION B — (6 × 5 = 30 marks)

Answer any SIX questions.

5. Describe the Non-Newtonian systems with suitable examples.

6. Discuss the stabilisation of medical agents.

7. Explain the Second Law of Thermodynamics.

8. Describe the properties of gels and their applications.

9. How do you determine the order of a reaction?

10. Explain the working of Cup and Bob Viscometer.

11. How do you predict the shelf-life of drugs?

12. Classify surfactants with suitable examples. Write a short note on their applications.

13. Describe the basic laws of photochemistry.

OCTOBER - 1998

[SM 711] **Sub. Code : 4174**

SECOND B.Pharm. DEGREE EXAMINATION.

(Revised Regulations)

Paper IV — PHYSICAL PHARMACEUTICS

Time : Three hours — Maximum : 90 marks

Two and a half hours — Sec. A & Sec. B : 60 marks

for Sec. A and Sec. B — Section C : 30 marks

Answer Sections A and B in separate answer books.

Answer Section C in the separate sheet provided.

SECTION A — (2 × 15 = 30 marks)

Answer any TWO questions.

1. Define physical stability of a Suspension. Discuss the principles involved in the formulation of a physically stable suspension.

2. Explain any one method of determining the surface area of a powder sample. Briefly write on the derived properties of powders.

3. Define and classify surfactants.

Explain the various pharmaceutical application of surfactants according to HLB values with suitable examples.

4. Explain the important factors causing instability of pharmaceutical preparation. Discuss Arrhenius equation and accelerated stability study.

SECTION B — (6 × 5 = 30 marks)

Answer any SIX questions.

5. Briefly explain the diffusion principles in biological systems.

6. Explain the role of solubilisation technique in enhancing the absorption of drugs.

7. Explain the rates and order of reactions.

8. Discuss about the principle involved in the adsorption of solid particles at the liquid inter phase.

9. Explain the role of complexation on the action of drugs.

10. Give an account of important photo chemical reactions in pharmacy. Explain how they can be overcome.

11. Explain the various theories of emulsification.

12. Explain the principle, and working of a single point viscometer.

13. Discuss the application of thixotrophy in the formulation of depot action of medication.

———

[SG 708] **Sub. Code : 4183**

SECOND B.Pharm. DEGREE EXAMINATION.

(Revised Regulations)

Paper III — PHYSICAL PHARMACEUTICS

Time : Three hours — Maximum : 90 marks

Two and a half hours for Sec. A and Sec. B — Sec. A and Sec. B : 60 marks; Section C : 30 marks

Answer Sections A and B in separate answer books.

Answer Section C in the answer sheet provided.

SECTION A — (2 × 15 = 30 marks)

Answer any TWO questions.

1. Explain different factors affecting solubility. How do you determine the solubility of a new drug? (10 + 5)

2. What is critical micellar concentration and its significance in pharmacy? Describe any one method for determining the surface tension. (10 + 5)

3. What is complexation and brief about different types of complexes? What is the influence of complexation on drug action? (10 + 5)

4. Write about different colloidal systems. Discuss the optical and electrical properties of colloids. (5 + 10)

SECTION B — (6 × 5 = 30 marks)

Answer any SIX questions.

5. Define first law of thermodynamics. Brief about heat capacity.

6. What is order of a reaction? Brief about Accelerated Stability analysis.

7. Discuss the laws of photochemistry.

8. Discuss the instability of pharmaceutical emulsions.

9. Write about the flow properties of powders.

10. Discuss Thixotropy and its importance in formulation.

11. What is the influence of temperature on Reaction Rate?

12. Explain any two methods of adjusting tonicity.

13. Write notes on Ostwald viscometer.

———————

[KA 708] **Sub. Code : 4183**

SECOND B. Pharm. DEGREE EXAMINATION.

(Revised Regulations)

Paper III — PHYSICAL PHARMACEUTICS

Time : Three hours — Maximum : 90 marks

Two and a half hours for Sec. A & Sec. B. — Sec. A & Sec. B : 60 marks, Section C : 30 marks

Answer Sections A & B in separate answer books.

Answer Section C in the answer sheet provided.

SECTION A — (2 × 15 = 30 marks)

Answer any TWO questions.

1. Define emulsion discuss theories of emulsification. Explain the factors responsible for instability of an emulsion.

2. Explain the terms surface tension, interfacial tension, surface free energy and spreading co–efficient. Describe a method to measure surface tension.

3. Explain the accelerated stability studies with its limitation.

4. Explain the non–Newtonian types of flow in Rheology with suitable examples.

SECTION B — (6 × 5 = 30 marks)

Answer any SIX questions.

5. Define colloids. Classify different types of colloids. Explain the different properties of colloids.

6. Explain the role of solubilisation techniques in the enhanced absorption of drugs.

7. Explain the role of zeta potential and particle size in the formulation of suspensions.

8. What are surfactants? Classify them. Explain the pharmaceutical application of surfactants.

9. Briefly explain the working of a single point viscometer.

10. Explain the advantages of drug complexation.

11. Write the principle involved in the estimation of particle volume. What are its advantages and disadvantages?

12. Describe the Andresan pipette method of analysing the particle size. Mention its limitation.

13. Describe the laws of photo–chemistry.

APRIL - 2000

[KB 708] **Sub. Code : 4183**

SECOND B.Pharm. DEGREE EXAMINATION.

(Revised Regulations)

Paper III — PHYSICAL PHARMACEUTICS

Time : Three hours — Maximum : 90 marks

Two and a half hours — Sec. A & Sec. B : 60 marks

for Sec. A and Sec. B — Section C : 30 marks

Answer Sections A and B in separate answer books.

Answer Section C in the answer sheet provided.

SECTION A — ($2 \times 15 = 30$ marks)

Answer any TWO questions.

1. Explain the significance of particle size and size distribution in pharmacy. How do you determine particle size by ANDERSON apparatus?

2. Explain the different theories of emulsification. Describe the instability conditions of emulsion and suggest suitable remedies. Write a note on preservation of emulsions.

3. What do you understand by Enthalpy of a system? Give equation for same. Explain the theory underlying the mechanism of catalysts.

4. Describe the factors affecting the solubility of solids in liquids, liquids in liquids and gas in liquids. How do you predict the solubility behaviour of a solute is a solvent?

SECTION B — (6 × 5 = 30 marks)

Answer any SIX questions.

5. How do you determine the order of a reaction by substitution and half–life methods?

6. How do you distinguish a chelate and complex?

7. What are gels. Classify them. Explain the phenomenon of synergesis and swelling of gels.

8. Write in brief about the kinetic properties of colloids.

9. What is protein binding of drugs? Explain with examples.

10. Explain Zeta Potential and its pharmaceutical application.

11. Give a brief account of the principle involved in the working of cone and plate viscometer.

12. Write the significance of THIXOTROPY in pharmaceutical suspension dosage forms.

13. Write the significance of photochemistry in pharmacy. Mention its applications.

———

OCTOBER - 2000

[KC 708] **Sub. Code : 4183**

SECOND B.Pharm. DEGREE EXAMINATION.

(Revised Regulations)

Paper III — PHYSICAL PHARMACEUTICS

Time : Three hours Maximum : 90 marks

Two and a half hours for Sec. A and Sec. B — Sec. A & Sec. B : 60 marks; Section C : 30 marks

Answer Sections A and B in separate answer books.

Answer Section C in the answer sheet provided.

SECTION A — (2 × 15 = 30 marks)

Answer any TWO questions only.

1. "In the past it was the practice in many pharmaceutical manufacturing companies to evaluate the stability of pharmaceutical preparations by observing them for a year or more. Such a method was time consuming and uneconomical one". Comment and discuss in detail the different improved approaches to stability evaluation. (15)

2. (a) With suitable examples compare and contrast "Donor–Acceptors and Charge–Transfer Complexs". (10)

(b) Write short notes on : "Benesi–Hilde Brand" equation. (5)

3. (a) Define the following terms :

(i) Diffusion

(ii) Osmosis

(iii) Dynamic Dialysis

(iv) Equilibrium Dialysis. $(4 \times 2 = 8)$

(b) Discuss in detail about "Gastro intestinal absorption of Drugs". (7)

4. (a) With reference to the thermodynamics explain the following terms, give suitable examples :

(i) Closed system

(ii) Isolated system

(iii) Open system. $(3 \times 2 = 6)$

(b) Explain the following :

(i) Stokes Law

(ii) Clausius–Clapeyron equation. $(2 \times 4\frac{1}{2} = 9)$

SECTION B — $(6 \times 5 = 30$ marks)

Answer any SIX questions only.

5. Write a note on : Syneresis and imbibition.

6. Write a method for the determination of "Particle size".

7. "Viscosity in temperature coefficient"— Illustrate your answer with suitable examples.

8. Write a note on : "Optical properties of colloids".

9. Explain the following : $(2 \times 2\frac{1}{2} = 5)$

(a) Interfacial Tension

(b) Surface free energy

10. Explain the law of photochemistry and their applications in pharmacy.

11. Write short notes on :

Fick's First Law.

12. What are "Negative Catalysts" and "Auto catalysts"?

13. Describe a method to determine the amount of drug bound to protein.