

Total No. of Questions : 6]

SEAT No. :

P1683

[Total No. of Pages : 2

[4749] - 101

First Year B. Pharmacy (Semester - I)

1.1.1 T : PHARMACEUTICS - I

(2013 Pattern)

[Time : 3 Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) *Answers to the two Sections should be written in separate books.*
- 2) *Neat diagram must be drawn wherever necessary.*
- 3) *Figures to the right indicate full marks.*

SECTION - I

Q1) Attempt any one :

[10]

Write the history of pharmacy profession and industry in India, also write a note on career opportunities after pharmacy graduation.

OR

Define dosage form. Discuss the classification of dosage form and add a note on different routes of drug administration.

Q2) Attempt any Five :

[15]

- a) Write the preservatives used in liquid oral formulations.
- b) Write the scope of pharmaceutical engineering.
- c) What is Pharmacopoeia? Add a note on Indian Pharmacopoeia.
- d) Describe Homoeopathy as an alternate system of medicine.
- e) Write the principles of Ayurveda.
- f) Write the different sources of drug with suitable examples.
- g) What are excipients? Explain the different flavours used in pharmaceuticals.

Q3) Write short notes (any two) :

[10]

- a) Scope of Formulation Development and Hospital pharmacy.
- b) USP.
- c) Principles of Siddha and Unani.
- d) Pharmacy code of ethics.

P.T.O.

SECTION - II

Q4) Attempt any one : **[10]**

What are solutions? Explain various methods to improve the solubility of poor water soluble drugs.

OR

Describe the concept of preformulation and formulation.

Q5) Attempt any five : **[15]**

- a) Which are the major factors affecting the stability of pharmaceutical product.
- b) Discuss formulation of elixir.
- c) What are aromatic waters? How they are preserved? Differentiate between aromatic and concentrated aromatic water.
- d) What are syrups? How invert syrup is prepared and stored.
- e) Explain CGMP as a tool for quality assurance.
- f) Discuss the formulation and evaluation of oral rehydration powder.
- g) Enlist various IPQC and quality control tests for solutions.

Q6) Write short notes (any two) : **[2 × 5 = 10]**

- a) Types of water used in pharmaceutical solutions.
- b) Discuss formulation and evaluation of tooth powder.
- c) Validation parameter of quality analysis.
- d) Types of enema.



Total No. of Questions : 6]

SEAT No. :

P1684

[Total No. of Pages : 2

[4749] - 102

First Year B. Pharmacy (Semester - I)
MODERN DISPENSING PRACTICES
(2013 Pattern)

Time : 3 Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) *All questions are compulsory.*
- 2) *Figures to the right indicate full marks.*

SECTION - I

Q1) Answer any one : **[10]**

- a) Explain various parts of prescription with suitable example.
- b) Elaborate on good compounding and dispensing practice.

Q2) Answer any five : **[15]**

- a) Define posology; give formulas for dose calculation of child.
- b) Give pharmacological storage condition for drug product.
- c) Write note on stability of medicine.
- d) Explain documentation of prescription filling.
- e) Write a note on PMR.
- f) Give in detail documentation of purchase and stock record.
- g) Give the formulas for dose calculation of child.

Q3) Answer any two : **[10]**

- a) Explain in brief pricing of prescription.
- b) Write a note on drug profile.
- c) Give the importance of pictogram with suitable example.
- d) Explain proof spirit; calculate proof strength for 40% v/v alcohol.

P.T.O.

SECTION - II

Q4) Answer any one : **[10]**

- a) Discuss with examples various types of chemical incompatibilities and methods to remove them.
- b) Explain organization, structure, factors and design of retail pharmacy.

Q5) Answer any five in short : **[15]**

- a) Write a detail note on idiosyncratic drug reactions.
- b) Write patient counseling note for diabetes.
- c) Explain the role of pharmacists in ADR.
- d) Give patient counseling for inhalers.
- e) What would be the dose of child of 5 years; if the adult dose is 500 mg.
- f) Explain the role of pharmacists in family planning.

Q6) Answer any two : **[10]**

- a) Write a note on drug information service.
- b) Explain the steps in patient counseling for hypertension.
- c) Write in detail note on rational drug use.
- d) Write a short note on Drug interactions.



Total No. of Questions : 6]

SEAT No. :

P1685

[Total No. of Pages : 2

[4749] - 103

First Year B. Pharmacy (Semester - I)
PHARMACEUTICAL INORGANIC CHEMISTRY
(2013 Pattern)

Time : 3 Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) *All questions are compulsory.*
- 2) *Answers to the two Sections should be written in separate answer books.*
- 3) *Figures to the right indicate full marks.*

SECTION - I

Q1) Discuss in detail the different sources of impurities in pharmaceuticals. [10]

OR

Discuss in detail the limit test of Lead and sulphate.

Q2) Attempt any five of the following : [15]

- a) Explain the physiological role of calcium and magnesium in body.
- b) Discuss the mechanism of action of antimicrobials as topical agents.
- c) What are protectives and adsorbants? Discuss the preparation, properties and uses of Bismuth sub carbonate.
- d) Enlist the different waters official in IP and explain sterile water for injection.
- e) Explain the principle and reaction involved in limit test for Chloride.
- f) Write the preparation, properties and uses of calcium carbonate.
- g) Explain the physiological role of chloride and bicarbonate in body.

Q3) Write a note on any two of the following : [10]

- a) Official control tests for water.
- b) Qualitative tests for alkali and alkaline earth metals.
- c) Limit test for Arsenic.
- d) Inorganic gases used in pharmacy.

P.T.O.

SECTION - II

Q4) Discuss in detail about physiological acid base balance. **[10]**

OR

What are topical agents? Discuss the mechanism of action of topical agents. Discuss the properties, assay and uses of calamine and zinc oxide.

Q5) Attempt any five of the following : **[15]**

- a) Discuss the absorption, distribution and physiological role of copper in body.
- b) Write the properties, assay and uses of nitrogen.
- c) Write properties, storage and uses of compounds used in cyanide poisoning.
- d) Describe the preparation, properties and uses of hydrogen peroxide.
- e) Discuss the role of Zinc and its salts as essential and trace ion.
- f) Discuss properties, storage and uses of sodium fluoride.
- g) What are expectorants? Discuss the mechanism of action of expectorants.

Q6) Write a note on any two of the following : **[10]**

- a) Methods to remove hardness of water.
- b) Radioopaque contrast media.
- c) Properties, storage and uses of magnesium hydroxide.
- d) Electrolyte combination therapy.



Total No. of Questions : 6]

SEAT No. :

P1686

[Total No. of Pages : 4

[4749] - 104

First Year B. Pharmacy (Semester - I)

1.1.4 : PHARMACEUTICAL ORGANIC CHEMISTRY - I

(2013 Pattern)

Time : 3 Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) *Answers to the two Sections should be written on the separate answer books.*
- 2) *Figures to the right indicate full marks.*
- 3) *All questions are compulsory.*

SECTION - I

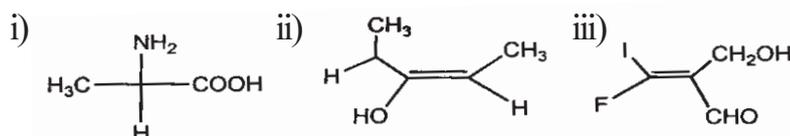
Q1) What are elimination reactions? Explain mechanism, stereochemistry of E_1 and E_2 reactions. Compare E_1 and E_2 mechanism. **[10]**

OR

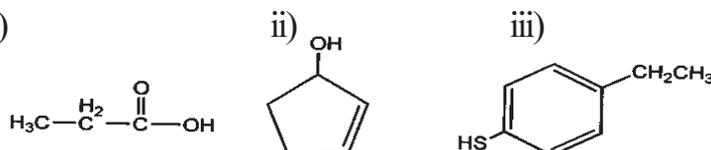
What is aromatic electrophilic substitution reaction? Write down the mechanism of Halogenation and nitration of benzene. What is the importance of concentrated sulphuric acid in nitration?

Q2) Answer the following (any five) : **[15]**

a) Assign R/S or E/Z configuration to following.



b) Write IUPAC names for following structures.



c) Write any three reactions of alkanes.

d) Define following terms with suitable examples.

- i) Carbocation ii) Carbanion iii) Electrophile

P.T.O.

- e) Discuss Markovnikoff rule with example.
- f) Explain tautomerism with example.
- g) Draw resonating structures of any two from following.
 - i) Aniline
 - ii) Nitrobenzene
 - iii) Benzoic acid

Q3) Solve any two : [10]

- a) Classify organic compounds on the basis of elemental composition (at least five classes with suitable examples).
- b) Define hybridization. Mention different types of hybridization? Explain sp^2 hybridization.
- c) Explain the addition-elimination and elimination-addition mechanisms of nucleophilic aromatic substitution.
- d) Draw structures of following compounds from IUPAC names.
 - i) 1, 1 - dichloromethane.
 - ii) 3 - chloro - 2 - methylpentan - 2 - one.
 - iii) 2 - butenal.
 - iv) Methyl ethanoate.
 - v) N, N-dimethyl ethanamine.

SECTION - II

- Q4) a) What is isomerism? Explain any four types of isomerism with examples.**
- b) Classify various types of chemical reactions with suitable examples.

[10]

OR

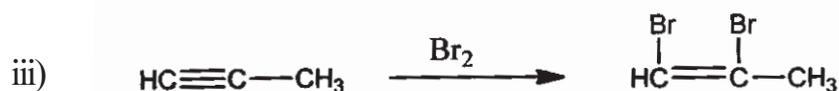
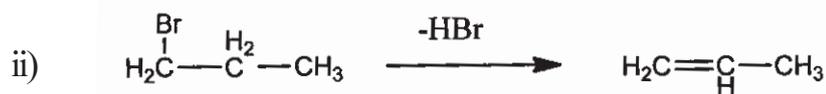
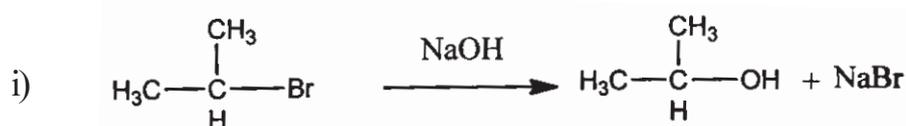
Explain the directing effects of following functional groups towards electrophilic substitutions on benzene:

- a) $-OH$
- b) $-CH_3$
- c) $-COOH$
- d) $-NO_2$

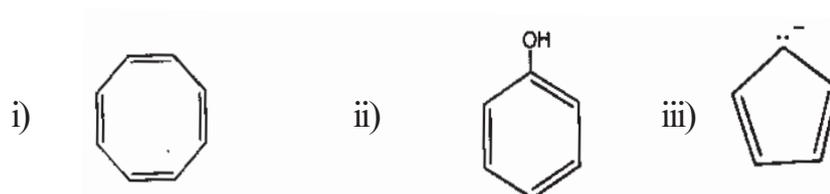
Q5) Solve any five :

[15]

- a) Arrange following in order of increasing acidity with explanation.
- Acetic acid
 - Trichloroacetic acid
 - Chloroacetic acid
- b) Explain Saytzeff rule for 1,2 elimination reaction?
- c) Write a note on ozonolysis.
- d) Tertiary carbocations are more stable than secondary carbocations explain.
- e) Identify the type of chemical reaction (Addition, Substitution etc.) in following :



- f) Explain hyper conjugation and inductive effect with example.
- g) Apply Hukel's rule of aromaticity and differentiate following compounds into aromatic and non-aromatic (anti-aromatic) compound.

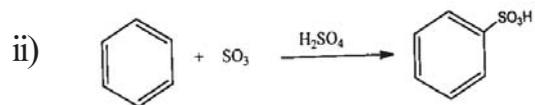
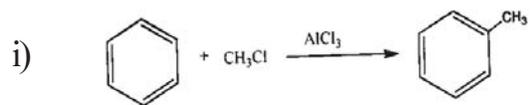


Q6) Solve any two :

[10]

- a) Inter and Intra molecular forces of attraction.
- b) What are alkynes? Write their any two methods of preparation and two reactions.

c) Write down the stepwise mechanism for following reactions.



d) Explain Inductive effect, Mesomeric effect, Electromeric effect and resonance with examples.



Total No. of Questions : 6]

SEAT No. :

P1687

[Total No. of Pages : 2

[4749] - 105

First Year B. Pharmacy (Semester - I)

1.1.5 : HUMAN ANATOMY AND PHYSIOLOGY - I

(2013 Pattern)

Time : 3 Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) *All questions are compulsory.*
- 2) *Answers to the two Sections should be written in separate answer books.*
- 3) *Neat labeled diagrams must be drawn wherever necessary.*
- 4) *Figures to the right indicate full marks.*

SECTION - I

Q1) What are the different types of muscular tissues? Write their functions and properties. Discuss the anatomy and physiology of skeletal muscles. [10]

OR

Enlist the clotting factors. Describe in detail the mechanisms that contributes to hemostasis and hemostatic control mechanism.

Q2) Answer the following (any five) : [15]

- a) Describe the structure and function of platelets.
- b) Define the term inflammation and hemorrhage.
- c) Describe the structure and function of mitochondria.
- d) Describe the structure and function of RBC.
- e) What are the functions of plasma membrane?
- f) Explain aquired/adaptive immunity.
- g) Discuss the arrangement of proteins in the plasma membrane.

Q3) Write short note on (any two) : [10]

- a) Protein synthesis.
- b) Active transport across plasma membrane.
- c) Epithelial tissue.
- d) ABO and Rh blood type.

SECTION - II

Q4) Explain the structure of heart with neat-labeled diagram. Discuss the cardiac cycle. **[10]**

OR

Enlist the organs of digestive system. Describe the structure of stomach. Explain the mechanical and chemical digestion in stomach.

Q5) Answer the following (any five) : **[15]**

- a) Explain the structure and functions of Lymph node.
- b) Explain the composition and functions of saliva.
- c) Define health. Add note on health promotion.
- d) Enlist the elements of conduction system of heart. Add note on AV nodal delay.
- e) Write note on SL valves.
- f) Define the terms peptic ulcer, gastritis and dysentery.
- g) Explain the concept of balanced diet.

Q6) Write short note on (any two) : **[10]**

- a) Maintenance and regulation of blood pressure.
- b) Liver.
- c) Electro-cardiogram (ECG).
- d) Spleen.



Total No. of Questions : 6]

SEAT No. :

P1688

[Total No. of Pages : 2

[4749] - 106

First Year B. Pharmacy (Semester - I)

1.16 : COMMUNICATION & SOFT SKILL DEVELOPMENT

(2013 Pattern)

Time : 3 Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) *All questions are compulsory.*
- 2) *Answers to the two Sections should be written in separate answer books.*
- 3) *Neat labeled diagrams must be drawn wherever necessary.*
- 4) *Figures to the right indicate full marks.*

SECTION - I

Q1) Answer any one : [10]

- a) What are interpersonal and intrapersonal skills? Explain various interpersonal skills with their importance.
- b) Define communication. Enlist types of communication. Describe barriers of communication and effective treatment.

Q2) Solve the following (any five) : [15]

- a) Explain the objective and need for communication.
- b) Explain structuring a message and effective ways to improve the same.
- c) Explain the process of developing effective message.
- d) Write a note on summary and abstract of a formal report.
- e) Explain salient features of technical communication.
- f) Explain any three types of business letters.
- g) A pharmacy college wants to make enquiry for purchase of books for its library, Write business letter regarding the same.

Q3) Write short note on (any two) : [10]

- a) Business report and its structure.
- b) Electronic mail.
- c) Objective style and literary composition.
- d) Why it is essential to maintain variety in sentences and paragraphs in written communication?

P.T.O.

SECTION - II

Q4) Give detail account on use of modern technology in communication. [10]

OR

Explain in detail about soft skills - an integral part of communication.

Q5) Solve the following (any five): [15]

- a) Contents of memo.
- b) What are instructions?
- c) Describe email etiquetter.
- d) Format of 'leave letter'.
- e) Explain effective profiling.
- f) Rough chart v/s final report.

Q6) Write short note (any two): [10]

- a) Personnel interview and group discussion.
- b) Role of phonetics in effective communication.
- c) Write a complaint letter for unavailability of laboratory chemicals and also forward the order letter for the same.



Total No. of Questions : 6]

SEAT No. :

P1689

[Total No. of Pages : 2

[4749] - 201

First Year B. Pharmacy (Semester - II)

1.2.1 : PHARMACEUTICS - II

(2013 Pattern)

Time : 3 Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) *Answers to the two sections should be written in separate answer books.*
- 2) *Neat diagrams must be drawn wherever necessary.*
- 3) *Figures to the right side indicate full marks.*

SECTION - I

Q1) Attempt any one question out of two : [10]

- a) Explain the principle construction, working, applications, advantages and disadvantages of plate and frame filter press.
- b) Explain the principle construction, working, applications advantages and disadvantages of fluidized energy mill.

Q2) Attempt any five questions : [15]

- a) Explain significance of particle size separation.
- b) Define Bioavailability, bioequivalence and first pass effect.
- c) Define Filter aids and explain ideal characteristics of filter aids.
- d) Explain the mechanisms of size reduction with examples.
- e) Summarize the factors affecting rate of filtration.
- f) Discuss the role of packaging in pharmaceutical products.
- g) Discuss different types of packaging materials.

Q3) Write note on any two : [10]

- a) Plant layout designing.
- b) Unit dose packaging.
- c) Colloid Mill.
- d) Impellor.

P.T.O.

SECTION - II

Q4) Attempt any one question out of two : [10]

- a) State the factors affecting mixing. Explain mechanism and equipments used in liquid mixing.
- b) Explain importance of GMP and explain the basic requirements for CGMP Current Good Manufacturing Practices.

Q5) Attempt any five questions : [15]

- a) Write the importance of GMP.
- b) Discuss the significance of size reduction in pharmacy.
- c) Explain concept of powder gradation.
- d) Define and differentiate between filtration and clarification.
- e) Discuss importance of Particle size measurement.
- f) Explain the mechanism of powder mixing.
- g) What are baffles? Give its significance.

Q6) Write note on any Two : [10]

- a) Evaluation of glass as packaging material.
- b) Factors affecting size reduction.
- c) Techniques of Particle size measurements.
- d) Absorption.



Total No. of Questions : 6]

SEAT No. :

P1690

[Total No. of Pages : 2

[4749] - 202

First Year B. Pharmacy (Semester - II)

DOSAGE FORM DESIGN

(2013 Pattern)

[Time : 3 Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) *All questions are compulsory.*
- 2) *Answers to the two sections should be written in separate answer books.*
- 3) *Figures to the right indicate full marks.*

SECTION - I

Q1) Give different types of suppositories discuss in brief evaluation of suppositories marks. **[10]**

OR

Explain theories of emulsions, and its formulation aspects marks.

Q2) Solve any five from the following : **[15]**

- a) Concept of target drug delivery system.
- b) Explain the concept of modified release dosage forms.
- c) Explain the process of solubilization of solute in solvent.
- d) Note on Dry suspensions for reconstitution.
- e) Explain HLB and RHLB.
- f) Note on suspensions containing poorly wettable solids.
- g) Explain quality control aspects of radiopharmaceutical dosage forms.

Q3) Write short note on (Any Two) : **[10]**

- a) Give various ways of expression of solubility.
- b) Brief note on NDDS.
- c) Discuss methods of producing radionuclides.
- d) Elaborate formulation of microemulsion.

P.T.O.

SECTION - II

Q4) What are suspensions? Classify them and explain its applications in drug delivery systems. **[10]**

OR

What are Radiopharmaceuticals? Write note on therapeutic applications of Radiopharmaceuticals.

Q5) Solve any five from the following : **[15]**

- a) Differentiate between paste and cream.
- b) Comment on suspending agents.
- c) Define pastes. What are the types of pastes.
- d) Diagnostic applications of radiopharmaceuticals.
- e) What are various evaluation tests for ointments.
- f) What are jellies? Write its applications.
- g) Evaluation tests for suppositories.

Q6) Write short note on (Any Two) : **[10]**

- a) Explain formulation of dry powder suspension.
- b) Evaluation of suspension.
- c) Displacement value.
- d) Cocoa butter as a base.



Total No. of Questions : 6]

SEAT No. :

P1691

[Total No. of Pages : 2

[4749] - 203

First Year B. Pharmacy (Semester - II)
PHARMACEUTICAL ORGANIC CHEMISTRY - II
(2013 Pattern)

Time : 3 Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) *Answers to the two sections should be written on the separate answer books.*
- 2) *Figures to the right indicate full marks.*
- 3) *All questions are compulsory.*

SECTION - I

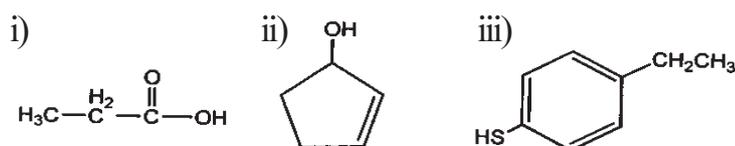
Q1) What are SN¹ and SN² reactions? Explain mechanism and factors affecting SN¹ reactions. **[10]**

OR

What are nucleophilic addition reactions? Explain in brief addition of Grignard reagent, alcohol to aldehydes.

Q2) Answer the following. (Any five) : **[15]**

- a) Write any two methods of preparation of carboxylic acids.
- b) Write the IUPAC names of following.



- c) How will you differentiate between primary, secondary, and tertiary amines by chemical test.
- d) Give any two reactions of benzene sulfonic acid.
- e) Why Chloroacetic acid is stronger than acetic acid.
- f) Explain any two reactions of alkyl cyanides.
- g) Compare basicity between cyclohexylamine and aniline.

P.T.O.

Q3) Answer the following (Any two) : **[10]**

- a) Explain Hoffmann's degradation of amides.
- b) Write synthetic uses of ethylacetoacetate.
- c) Write note on Knoevenagel condensation.
- d) Explain acidity of phenols.

SECTION - II

Q4) What are amines? Explain separation methods of amines from the primary, secondary and tertiary amines mixture. **[10]**

OR

What are aromatic sulfonic acids? Explain acidity of benzene sulfonic acid and write laboratory method of preparation of benzene sulfonic acid.

Q5) Answer the following (Any five) : **[15]**

- a) Write any two methods of preparation of alkyl halides.
- b) Explain why boiling point of alcohols are much higher than those of corresponding alkanes
- c) How will you distinguish between phenols and ethyl alcohol?
- d) Write any two reactions of acid chloride.
- e) Draw structures from IUPAC names of following compounds. (Any three)
 - i) 3-Ethyl-4-methyl pentanoic acid.
 - ii) 2-Propene-1-ol.
 - iii) 4-Pentanamide.
 - iv) 4-Methyl-2-pentanone.
- f) Explain Kolbe - Schmidt reaction of phenols.
- g) Write distinguishing test of primary, secondary, tertiary alcohols.

Q6) Answer the following (Any Two) : **[10]**

- a) Explain Dieckmann condensation.
- b) Compare and contrast between substitution and Elimination.
- c) Explain Oppenauer oxidation.
- d) Write any two methods of preparation of aldehydes.



Total No. of Questions : 6]

SEAT No. :

P1692

[Total No. of Pages : 2

[4749] - 204

First Year B. Pharmacy (Semester - II)

1.2.4 : HUMAN ANATOMY AND PHYSIOLOGY - II

(2013 Pattern)

Time : 3 Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) *All questions are compulsory.*
- 2) *Answers to the two sections should be written in separate answer books.*
- 3) *Neat labeled diagrams must be drawn wherever necessary.*
- 4) *Figures to the right indicate full marks.*

SECTION - I

Q1) Explain the anatomy of spinal cord. Write in detail about reflex arc. **[10]**

OR

Define respiration. Describe the actions of muscles involved in breathing. Add a note on transport of gases.

Q2) Answer the following (Any five) : **[15]**

- a) Draw neat labeled diagram of internal ear.
- b) Explain the thermoregulation in brief.
- c) Write a note on ventricles of brain.
- d) Enlist cranial nerves with their function.
- e) Describe the structure of olfactory receptors.
- f) Explain the meninges of the CNS.
- g) Define and give clinical significance of different respiratory volumes.

Q3) Write short note on (Any two) : **[10]**

- a) Structure of neuron.
- b) Physiology of vision.
- c) Structure and functions of skin.
- d) Cerebrum.

P.T.O.

SECTION - II

Q4) Explain the physiological role of hormones of anterior pituitary gland. [10]

OR

Explain in detail various phases of Menstrual Cycle and hormones involved in it.

Q5) Answer the following (Any five) : [15]

- a) Write location and functions of kidney.
- b) Explain structure of sperm with a neat labeled diagram.
- c) Write a note on Hypothalamic hormones.
- d) Draw a neat labeled diagram of Nephron.
- e) Enlist name and function of types of Anterior Pituitary Cells.
- f) Write function of Seminal Vesicle, Prostate and Cowper's gland.
- g) Write a note on the juxtaglomerular apparatus (JGA).

Q6) Write short note on (Any two) : [10]

- a) Spermatogenesis.
- b) Calcium Homeostasis.
- c) Physiology of micturition.
- d) Renin angiotensin aldosterone system.



Total No. of Questions : 6]

SEAT No. :

P1694

[4749] - 206

[Total No. of Pages : 2

F.Y. B. Pharmacy (Semester - II)
PHARMACEUTICAL ANALYSIS - I
(2013 Pattern)

Time : 3 Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) *All questions are compulsory.*
- 2) *Answers to the two sections should be written in separate answer books.*
- 3) *Figures to the right indicate full marks.*

SECTION - I

Q1) Explain theoretical consideration, limitations and solvents in non-aqueous titration. **[10]**

OR

Explain in detail various neutralisation curves of acid base titrations with examples.

Q2) Attempt any five of the following : **[15]**

- a) Differentiate between normality and molarity.
- b) Define primary standard and give its properties.
- c) Explain the terms standard deviation and regression.
- d) Define buffer. Explain the types of buffers.
- e) Explain leveling and differentiating effect.
- f) Give neutralisation curve of strong acid & strong base with example.

Q3) Write a note on any two of the following : **[10]**

- a) Acid base indicators.
- b) Minimization of errors in analysis.
- c) Measures of central tendency.
- d) Limitations of Arrhenius theory.

P.T.O.

SECTION - II

Q4) State and explain various type of EDTA titration. **[10]**

OR

Discuss the unit operations in Gravimetric analysis.

Q5) Attempt any five of the following : **[15]**

- a) Discuss on Metallochromic indicators.
- b) Explain chelation and coordination number.
- c) What is the need for masking and demasking agents?
- d) How will you standardize 0.05 disodium edetate solution.
- e) How redox indicator changes colour near the equivalence point.
- f) Differentiate between qualitative & quantitative analysis.
- g) Explain how ferroin acts as redox indicator.

Q6) Write a note on any two of the following : **[10]**

- a) Ligand & sequestering agent.
- b) Co - precipitation.
- c) Argentometric titration curve.
- d) K Fajans method.



Total No. of Questions : 6]

SEAT No. :

P1695

[4749] - 301

[Total No. of Pages : 2

S.Y. B.Pharmacy (Semester - III)

2.3.1 : PHYSICAL PHARMACEUTICS - I

(2013 Pattern)

Time : 3 Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) *All questions are compulsory.*
- 2) *Answers to the two sections should be written in separate books.*
- 3) *Figures to the right indicate full marks.*
- 4) *Neat diagrams must be drawn wherever necessary.*

SECTION - I

Q1) Define polymorphism. What are different shapes of polymorphs? Add a note on pharmaceutical applications of polymorphism. **[10]**

OR

Define aerosols. Explain the principle involved in aerosols. Add a note on two phase system of aerosols.

Q2) Attempt any five of the following : **[15]**

- a) Explain Clausius's process in liquefaction of gases.
- b) What is Gibbs's phase? Give its application in pharmacy.
- c) Explain deviation from gas theory.
- d) Describe one component system with suitable example.
- e) What is crystallization? What crystal parameters are generally applicable while studying crystals?
- f) Explain : Critical gas constants.
- g) Write a note on : three phase system of aerosols.

Q3) Write short note on : (any two) **[10]**

- a) Linde's process
- b) Glass transition temperature
- c) Vander Waal equation for real gases
- d) X - ray diffraction method of crystal analysis

P.T.O.

SECTION - II

Q4) Explain Nernst distribution law and discuss the factors affecting it. [10]

OR

State the Raoult's law of lowering of vapour pressure. Explain deviation from Raoult's law. Add a note on Ebullioscopic method.

Q5) Answer the following : (any five) [15]

- a) What is solubility parameter? Give its significance.
- b) Differentiate between fractional distillation & steam distillation.
- c) Define the terms activity, activity coefficient & osmotic coefficient.
- d) State Kohlrausch's law & its applications.
- e) Write the applications of distribution phenomenon.
- f) Comment on problems involving molecular weight determination w.r.t. colligative properties.
- g) Explain solvent solute interaction.

Q6) Write short notes on (any two) [10]

- a) BCS classification.
- b) First law of thermodynamics.
- c) Arrhenius theory of electrolytes.
- d) Lowering of vapour pressure.



Total No. of Questions : 6]

SEAT No. :

P1696

[4749] - 302

[Total No. of Pages : 2

S.Y.B.Pharmacy (Semester - III)

PHARMACEUTICAL MICROBIOLOGY & IMMUNOLOGY

(2013 Pattern)

Time : 3 Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) *All questions are compulsory.*
- 2) *Answers to the two sections should be written in separate books.*
- 3) *Figures to the right indicate full marks.*

SECTION - I

Q1) What are viruses? How they are different from typical living cells? How does the multiplication of human viruses take place? How are human viruses cultivated? **[10]**

OR

Write the different techniques used for preservation of bacterial culture & describe in detail the growth curve in bacteria.

Q2) Answer the following (any five) : **[15]**

- a) Explain “whittaker’s five kingdom concept”
- b) Draw the structure of bacteria.
- c) Write medical importance if “penicillium”
- d) Comment “nutrient agar is the common medium in the laboratory”.
- e) How will you detect presence of salmonella in nonsterile pharmaceutical preparations?
- f) Explain any one method to determine the viable microbial count from pharmaceutical preparation.
- g) Write a function of pili, flagella & capsule.

Q3) Write a short note on (any two) : **[10]**

- a) Historical development of microbiology.
- b) Types of culture media.
- c) Prebiotics & Probiotics.
- d) MLT (microbial limit test)

P.T.O.

SECTION - II

Q4) Define antigen & antibody. Explain in detail different antigen antibody reactions & give their significance. **[10]**

OR

Explain in detail following points

- a) Microbial virulence
- b) Exotoxin & Endotoxin
- c) Mechanism of HMI & CMI

Q5) Answer the following (any five) **[15]**

- a) Comment on “moist heat sterilization is more superior than dry heat”
- b) Write ideal properties of disinfectants.
- c) Differentiate between active & passive immunity.
- d) Differentiate between live (attenuated) and killed vaccine.
- e) Explain principle of antigen antibody reaction invitro.
- f) Draw basic structure of immunoglobulin.
- g) Why active immunization therapy is not recommended to immunodeficient person.

Q6) Write a short note on (any two) : **[10]**

- a) Methods of sterilization.
- b) RW test.
- c) Chemical classification of disinfectant.
- d) RIA (Radio Immuno Assay).



Total No. of Questions : 6]

SEAT No. :

P1697

[4749] - 303

[Total No. of Pages : 2

S.Y. B.Pharmacy (Semester - III)
PHARMACEUTICAL BIOCHEMISTRY
(2013 Pattern) (Theory)

Time : 3 Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) *All questions are compulsory.*
- 2) *Figures to the right side indicate full marks.*
- 3) *Answer to the two sections should be written in separate answer books.*
- 4) *Neat diagrams must be drawn wherever necessary.*

SECTION - I

Q1) Attempt any one of the following :

- a) Define enzyme inhibitor and explain reversible and irreversible inhibition of enzyme. **[10]**
- b) Define and classify lipids with suitable examples. Give their functions in detail. **[10]**

Q2) Attempt any five of the following :

[15]

- a) Write a note on golgi apparatus.
- b) Discuss general properties of protein.
- c) Explain functions and biological role of starch.
- d) Write a note on co-enzymes & co-factors.
- e) Explain secondary structure of DNA.
- f) Draw neat labelled diagram of Eukaryotic cell.
- g) Write a note on end group analysis in short.

Q3) Attempt any two of the following :

[10]

- a) Colour reactions of amino acids.
- b) Factors affecting enzymatic activity.
- c) Describe cell organelles with their roles.
- d) Write a note on nucleic acids.

P.T.O.

SECTION - II

Q4) Attempt any one of the following :

- a) Define lipids & explain in details Beta oxidation of fatty acids. [10]
- b) Define & classify vitamins explain in details biochemical functions of vit A & vit. B₂. [10]

Q5) Write a short note on any five of the following :

[15]

- a) Vit. B6
- b) Folic Acid
- c) Oxidative phosphorylation
- d) Transcription
- e) Define nucleic acid & it's biochemical function
- f) Oxidative deamination
- g) Ketone bodies

Q6) Attempt any two of the following:

[10]

- a) Biosynthesis of pyrimidines
- b) Write in detail about structure & biochemical functions of Vit.C.
- c) TCA cycle
- d) Metabolism of triglycerides



Total No. of Questions : 6]

SEAT No. :

P1698

[4749] - 304

[Total No. of Pages : 3

S.Y.B.Pharmacy (Semester - III)
PHARMACEUTICAL ORGANIC CHEMISTRY - III
(2013 Pattern)

Time : 3 Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) *All questions are compulsory.*
- 2) *Answer to the two sections should be written in separate books.*
- 3) *Neat diagrams must be drawn wherever necessary.*
- 4) *Figures to the right indicate full marks.*

SECTION - I

Q1) Define amino acids. Classify it in details and give method of synthesis & reaction of amino acids. [10]

OR

Define racemic modification. Enlist the different methods used for resolution of racemic mixture. And explain in details each method.

Q2) Answer the following (any five) [15]

- a) Give all possible isomers of 2,3,-dichloro - butane.
- b) Define amino acid and add a note on peptide bond.
- c) Add a note on Gabriel phthalamide synthesis.
- d) Define conformational isomerism and add a note on newmann projection formula.
- e) Why chair conformation of cyclohexane is more stable than boat conformation explain.
- f) Draw the structure of Methionine. Cysteine and Tryptophan.
- g) Define configuration, conformation. Racemic mixture. Give example of each.

Q3) Write short notes on any two [10]

- a) Conformations of cyclohexane.
- b) Methods of synthesis of amino acids.
- c) Conformational isomerism of mono alkyl cyclohexanes.

P.T.O.

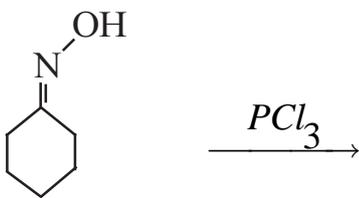
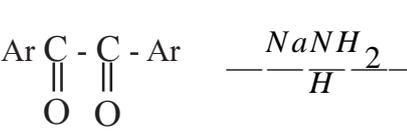
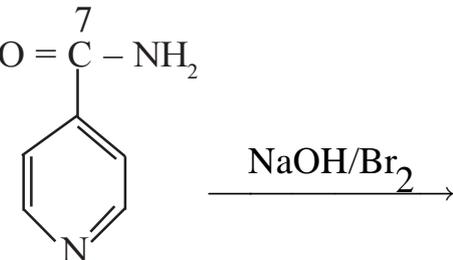
- d) Draw the fischer projection of following :
- Meso 2,3- dibromobutane
 - 2 - Chlorobutane
 - 2R, 3S-2- Chlorobutanol
 - Meso -2,3 tartaric acid
 - D-Glyceraldehyde

SECTION - II

Q4) Define molecular rearrangement reactions. Add a note on sigmatropic rearrangements with two examples. [10]

OR

Predict the product

- a) 
C1CCCCC1=N-O >> PCl3
- b) 
COc1ccccc1OC >> AlCl3
- c) 
C1CCCCC1=O >> HN3/H+
- d) 
ArC(=O)C(=O)Ar >> NaNH2, H
- e) 
NC(=O)c1ccncc1 >> NaOH/Br2

Q5) Answer the following (any five)

[15]

- a) Give mechanism involved in Schmidt rearrangement.
- b) How will you convert Pthalamide into anthranilic acid?
- c) Give synthesis and reactions of Phenanthrene.
- d) Explain Haworth synthesis of anthracene in detail.
- e) Give brief account on Wagner-Merewein rearrangement.
- f) How Curtis rearrangement help to synthesise azide? Explain with suitable example.
- g) Give the ring expansion reactions of Favoroskii rearrangement.

Q6) Write short notes on (any two)

[10]

- a) Lossen rearrangement.
- b) Hoffmann rearrangement
- c) Pinacol-pinacolone rearrangement.
- d) Cope rearrangement.



Total No. of Questions : 6]

SEAT No. :

P1699

[4749] - 305

[Total No. of Pages : 2

S.Y.B.Pharmacy (Semester - III)

PHARMACOLOGY - I

(2013 Pattern)

Time : 3 Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) *All questions are compulsory.*
- 2) *Answers to the two sections should be written in separate books.*
- 3) *Figures to the right indicate full marks.*

SECTION - I

Q1) Explain in detail process of drug absorption and factors affecting drug absorption. **[10]**

OR

Explain various sources and active ingredients of drug

Q2) Answer the following (any five) **[15]**

- a) Give advantages and disadvantages of parenteral route.
- b) Write down process of drug transportation across cell membrane.
- c) Explain clinical significance of half life of drug.
- d) Write down factors affecting drug metabolism.
- e) Explain first pass metabolism.
- f) Explain how tissue storage affect drug distribution.
- g) Write down factors affecting drug excretion.

Q3) Solve any two : **[10]**

- a) Explain in detail bioavailability & bioequivalence.
- b) Define drug distribution. Describe role of plasma proteins in drug distribution.
- c) Explain in detail phases of drug metabolism.
- d) Write in detail process of development of new drug.

P.T.O.

SECTION - II

Q4) Explain synthesis, storage, release, metabolism and pharmacological actions of serotonin. **[10]**

OR

Discuss in detail factors modifying drug action.

Q5) Answer the following (any five) **[15]**

- a) Define & classify drug interactions with examples.
- b) Classify receptors with examples.
- c) What do you mean by dose response curve? Give its importance.
- d) Explain pharmacological actions of histamine.
- e) Explain molecular structure & signal transduction mechanism of ion channel linked receptor.
- f) What is mean by drug synergism & antagonism? Justify with examples.
- g) Define drug toxicity & give its types.

Q6) Write short notes on (any two) **[10]**

- a) H₁ - receptor antagonists.
- b) Individualization of drug therapy.
- c) Drug therapy in pregnancy.
- d) Reporting adverse drug reactions.



Total No. of Questions : 6]

SEAT No. :

P1700

[4749] - 306

[Total No. of Pages : 2

S.Y.B.Pharm. (Semester - III)

PHARMACOGNOSY AND PHYTOCHEMISTRY - I (Theory)

(2013 Pattern)

Time : 3 Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) *Answers to the two sections should be written in separate books.*
- 2) *All questions are compulsory.*
- 3) *Figures to the right indicate full marks.*
- 4) *Neat diagram must be drawn wherever necessary.*

SECTION - I

Q1) Classify tannins and describe the properties, chemical tests and general method of extraction of tannins. **[10]**

OR

Give an account on biological source, extraction, properties and uses of starch with an example.

Q2) Answer ANY FIVE questions. **[15]**

- a) Differentiate between primary and secondary metabolites with example.
- b) Significance of swelling index.
- c) Classify carbohydrates with example.
- d) Write a note on shark liver oil and cod liver oil.
- e) Write the biological source, properties and uses of papain.
- f) Explain method of preparation of cotton.
- g) Define glycosides and enlist their properties.

Q3) Answer ANY TWO questions. **[10]**

- a) Method for determination of water soluble ash and acid insoluble ash.
- b) Comment on pharmacognostic account of kalmegh.
- c) Pharmacognostic account of Amla.
- d) Process for determination of fat / fixed oil.

P.T.O.

SECTION - II

Q4) Explain process of extraction of wool fat and Bees wax in details. Comment on their industrial applications. **[10]**

OR

Explain process for manufacturing cotton, wool, jute and silk. Differentiate between animal and vegetable fibers.

Q5) Answer ANY FIVE questions. **[15]**

- a) Describe various applications of secondary metabolites.
- b) Importance of extractive value.
- c) Explain process for extraction of okra mucilage.
- d) Explain isolation of carotenoids.
- e) Explain process for separation of streptokinase.
- f) Explain method of preparation of wool.
- g) Comment on occurrence and nomenclature of glycosides.

Q6) Answer ANY TWO questions. **[10]**

- a) Explain process for extraction of agar & pectin.
- b) Write a note on Neem oil.
- c) Write a note on Kokum butter and cocoa butter.
- d) Write pharmacognostic account of gentian



Total No. of Questions : 6]

SEAT No. :

P1701

[4749] - 401

[Total No. of Pages : 2

S.Y.B.Pharmacy (Semester - IV)
PHYSICAL PHARMACEUTICS - II
(2013 Pattern)

Time : 3 Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) *All questions are compulsory.*
- 2) *Answers to the two sections should be written in separate answer books.*
- 3) *Neat diagrams must be drawn wherever necessary.*
- 4) *Figures to the right indicate full marks.*

SECTION - I

- Q1)** a) Define and explain 'order of reaction'. Discuss different methods used for determining the order of reaction. **[7]**
- b) Calculate reaction rate and shelf life of the product that decomposes by first order. The half life of drug is 65 days. **[3]**

OR

Define surface and interfacial tension. Enlist methods to determine surface and interfacial tension. With a neat and labelled diagram explain working of duNouy tensiometer.

- Q2)** Attempt any five of the following. **[15]**

- a) What do you understand by critical micelle concentration? Explain its significance.
- b) Define the term 'stability' of a pharmaceutical. How is it quantified? Write the equation for the same.
- c) State and explain freundlich adsorption isotherm.
- d) Write the equation for spreading coefficient suggest any two methods to improve the spreading of a medicament.
- e) A solution of drug contained 1200 units / ml when prepared. After 60 days it was analyzed and found to have 400 units/ml. Assuming the decomposition is first order; calculate half life, shelf life and rate of reaction.
- f) Explain HLB scale with its utility in pharmaceutical formulations.
- g) Describe the influence of temperature on the rate of reaction.

Q3) Answer the following questions (any 2) **[10]**

- a) Justify the following statements:
 - i) Tweens are used as emulsifiers for preparing o/w emulsions.
 - ii) Water rises immediately up in the capillary tube when placed in a beaker of water.
- b) Write short note on: Accelerated stability testing.
- c) Explain : Drop count and drop weight method to determine surface tension of liquids.
- d) Discuss pharmaceutical and medicinal applications of surfactants.

SECTION - II

Q4) Enlist and explain various methods for particle size determination. Give the significance of micromeritic studies in pharmacy. **[10]**

OR

Elaborate on electrical properties of colloids and its role in stability of colloids.

Q5) Answer the following (any five) **[15]**

- a) Briefly explain about protective colloids.
- b) Write about Hofmeister lyotropic series.
- c) What are dilatant systems?
- d) Write about equivalent spherical diameters.
- e) Write a brief note on viscoelasticity.
- f) State Newton's law of flow.
- g) Define true density, granule density and bulk density of powders.

Q6) Write a short notes (any two) **[10]**

- a) Falling ball viscometer.
- b) Determination of true & granule density of powders.
- c) Thixotropy.
- d) Kinetic properties of colloids



Total No. of Questions : 6]

SEAT No. :

P1702

[4749] - 402

[Total No. of Pages : 2

**S. Y. B. Pharmacy (Semester - IV)
Pathophysiology and Clinical Biochemistry
(2013 Pattern)**

Time : 3 Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) *All questions are compulsory.*
- 2) *Answers to the two sections should be written in separate answer books.*
- 3) *Figures to the right indicate full marks.*

SECTION - I

Q1) Define hypertension. Explain in detail pathophysiology of hypertension. [10]

OR

Define COPD and explain in detail pathophysiology of COPD.

Q2) Solve any five of the following : [15]

- a) Define and classify Anemia
- b) Discuss the etiology of ulcer's
- c) Define leukemia and cirrhosis
- d) Enlist the etiology of coronary artery disease
- e) Write the complication of gall stone
- f) Define and enlist the types of hepatitis
- g) Write the pathophysiology of diarrhoea.

Q3) Write a note on following (any two) [10]

- a) Pneumonia
- b) Inflammatory bowel disorder
- c) Varicose vein
- d) Pancreatitis

P.T.O.

SECTION - II

Q4) Discuss in detail pathophysiology of epilepsy. **[10]**

OR

Discuss in detail renal failure.

Q5) Solve any five of the following : **[15]**

- a) Define and enlist the types of depression.
- b) Write etiology of urinary calculi.
- c) Write epidemiology of malaria.
- d) Write the causative agent of syphilis and gonorrhoea.
- e) Enlist the clinical manifestations of diabetes mellitus.
- f) Explain in brief malignancy.
- g) define
 - i) Hyperthyroidism
 - ii) Dysmenorrhoea
 - iii) Infertility

Q6) Write note on following (any two) **[10]**

- a) Parkinsons disease.
- b) Urinary track infections.
- c) AIDS.
- d) Myasthenia gravis.



Total No. of Questions : 6]

SEAT No. :

P1703

[Total No. of Pages : 2

[4749]-403

Second Year B. Pharmacy (Semester - IV)

PHARMACEUTICAL ORGANIC CHEMISTRY - IV

(2013 Pattern)

Time : 3 Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) All questions are compulsory.
- 2) Answers of the two sections should be written in separate books.
- 3) Draw neat diagram wherever necessary.
- 4) Digits written at right side indicates marks of that question.

SECTION - I

Q1) What is Paal-Knorr synthesis and Skraup quinoline synthesis? Write reaction and mechanism of both. **[8]**

OR

Define heterocyclic chemistry. Write any three synthetic methods and any three chemical reactions of pyridine or indole.

Q2) Attempt the following (any 5) : **[15]**

- a) Why pyrrole undergo ESR only at 2 or 5-position only? Explain with reaction and resonating structures.
- b) Give retrosynthesis of ibuprofen.
- c) Write electrophilic substitution reactions of pyrrole.
- d) Draw structure of imidazole, 1,3-oxazole and isoquinoline with numbering.
- e) Mention one name and use of the drug containing indole, pyridine and furan.
- f) Why pyridine is stronger base than pyrrole? Explain with reaction and resonating structures.
- g) Define retrosynthesis. Write rules of disconnection.

P.T.O.

Q3) Attempt the following (any 3) : [12]

- a) Write short note on Hantzsch pyridine synthesis.
- b) Write any four synthetic methods of quinoline.
- c) Why Pyridine undergo electrophilic substitution at β -position only? Explain with reaction and resonating structures.
- d) Write retrosynthesis of ciprofloxacin.
- e) Write any four chemical reactions of imidazole.

SECTION - II

Q4) Establish open chain and cyclic structure of D(-) fructose : [8]

OR

Describe solid supported synthesis and split and mix synthesis in drug discovery.

Q5) Attempt the following (any 5) : [15]

- a) Define nanochemistry. Describe in short any two Pharmaceutical applications of nanochemistry.
- b) Define and classify carbohydrates with examples.
- c) Write a short note on mutarotation.
- d) Write any three differentiating points between conventional synthesis and microwave assisted synthesis.
- e) What is Combinatorial Chemistry. Explain deconvolution method.
- f) Give any three chemical reactions of glucose.
- g) Mention any six importance of carbohydrates.

Q6) Attempt the following (any 3) : [12]

- a) Constitution of glucose.
- b) Write any two microwave assisted synthetic reactions.
- c) Describe Kiliani-Fischer synthesis and Ruff degradation.
- d) Write any four differentiating points between glucose and fructose.
- e) Chemical reactions of D-fructose.



Total No. of Questions : 6]

SEAT No. :

P1704

[Total No. of Pages : 2

[4749]-404

Second Year B. Pharmacy (Semester - IV)
PHARMACEUTICAL ANALYSIS - II
(2013 Pattern)

Time : 3 Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) All questions are compulsory.*
- 2) Answers to the two sections should be written in separate answer books.*
- 3) Figures to the right indicate full marks.*

SECTION - I

Q1) Explain in detail the principle involved in polarographic technique and explain its instrumentation. **[10]**

OR

Explain Instrumentation, principle and applications of high frequency titration.

Q2) Attempt **any five** of the following : **[15]**

- a) Define and classify the electroanalytical methods.
- b) Explain the terms molecular and equivalent conductance.
- c) Discuss the factors affecting limiting current.
- d) Discuss on measurement of potential.
- e) Explain the construction and working of Calomel electrode.
- f) Explain applications of conductometry.
- g) Explain linear scan polarography.

P.T.O.

Q3) Write a note on **any two** of the following : **[10]**

- a) Potentiometric titration.
- b) Normal Hydrogen Electrode.
- c) Applications of polarography.
- d) Biamperometric titrations.

SECTION - II

Q4) Write about principle and theory of coulometric techniques. Discuss in detail end point determination of coulometric analysis. **[10]**

OR

Answer the following :

- a) Determination of water by Karl Fisher method. **[5]**
- b) Spectropolarimeter. **[5]**

Q5) Attempt **any five** of the following : **[15]**

- a) Explain the term Circular dichroism.
- b) Add a note on Coulometric cell.
- c) Explain the types of plane polarize light.
- d) Discuss about Optical activity.
- e) Write the applications of coulometric analysis.
- f) Explain Specific and Molar refraction.
- g) Give an account on Cotton effect.

Q6) Write a note on **any two** of the following : **[10]**

- a) Kjeldahl's method.
- b) ORD and CD curve
- c) Silver coulometer.
- d) Construction and working of Abbe refractometer.



Total No. of Questions : 6]

SEAT No. :

P1705

[Total No. of Pages : 2

[4749]-405

S.Y. B. Pharm.

PHARMACOGNOSY & PHYTOCHEMISTRY - II

(2013 Pattern) (Semester - IV)

Time : 3 Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) *All questions are compulsory.*
- 2) *Figures to the right indicate full marks.*
- 3) *Draw well labelled diagram wherever necessary.*

SECTION - I

Q1) What are pseudoalkaloids & protoalkaloids? Describe pharmacognosy of ergot. **[10]**

OR

Define & classify Resins. Describe pharmacognosy of Cannabis.

Q2) Solve any five of the following: **[5 × 3 = 15]**

- a) Describe cultivation & collection of opium.
- b) Write uses of Guggul.
- c) Draw a diagram of T. S. of Vinca leaf.
- d) Write Biological Source, Chemical Constituents & uses of Kalmi Dalchini.
- e) Write chemical constituents of Ginseng along with their structure.
- f) Describe substituents of Snake-root.

P.T.O.

Q3) Write note on any Two: **[2 × 5 = 10]**

- a) Purin alkaloids.
- b) Extraction of essential oils.
- c) Taxus.
- d) Difference in Podophylum Hexandrum & Podophylum peltatum.

SECTION - II

Q4) Describe chemistry of alkaloids. Write Biogenesis for Isoquinoline alkaloids. **[10]**

OR

Define Terpenoids. Write detail pharmacognosy of Lavender.

Q5) Solve **any five** of the following : **[5 × 3 = 15]**

- a) Write qualitative chemical tests for alkaloids.
- b) Write classification of Terpenoids.
- c) Describe Isoprene rule.
- d) Write Biological source, Chemical constituents & uses of glyco-alkaloids.
- e) Describe cultivation collection of opium.
- f) Draw T. S. of Withania root.
- g) Write chemical test for Purine alkaloids.

Q6) Write notes on any two : **[2 × 5 = 10]**

- a) Difference between Cinchona bark & Kurchi bark.
- b) Coriander.
- c) Sandalwood.
- d) Deadly night shade.



Total No. of Questions : 6]

SEAT No. :

P1706

[Total No. of Pages : 2

[4749]-406

S.Y. B. Pharmacy

PHARMACEUTICAL ENGINEERING

(2013 Pattern) (Semester - IV) (Theory)

Time : 3 Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) *All questions are compulsory.*
- 2) *Answers to the two sections should be written in separate books.*
- 3) *Neat diagrams must be drawn wherever necessary.*
- 4) *Figures to the right indicate full marks.*

SECTION - I

Q1) Explain the theory of drying and discuss the construction and working of fluidised bed dryer. **[10]**

OR

What are the various modes of heat transfer? Discuss shell and tube heat exchanger in detail.

Q2) Solve any 5: **[15]**

- a) Explain molecular diffusion in gases.
- b) Discuss capacity and economy of Multiple Effect Evaporator.
- c) Discuss advantages and working of agitated tank crystallizer.
- d) Explain working of orifice meter.
- e) What is HETP?
- f) Discuss factors affecting rate of evaporation.
- g) Explain working of inclined monometer.

Q3) Write notes on any 2: **[10]**

- a) Spray dryer.
- b) Bernoulli's theorem.
- c) Variable area flow meter.
- d) Factors affecting corrosion.

P.T.O.

SECTION - II

Q4) Explain Meir's theory of supersaturation along with its limitations and discuss theories of crystal growth. **[10]**

OR

What is rectification? Explain various types & working of fractionating columns.

Q5) Solve any 5 : **[15]**

- a) Explain working of drum dryer.
- b) Explain Kirchoff's law.
- c) How does centrifugal entrainment separator work?
- d) Discuss secondary nucleation in crystallization process.
- e) Explain Reynold's number.
- f) Explain packing in distillation column.
- g) Give working of inverted bucket steam trap.

Q6) Write notes on any 2 : **[10]**

- a) Swenson Walker Crystallizer.
- b) Freeze Dryer.
- c) Molecular distillation.
- d) Climbing film evaporators.

