

Total No. of Questions : 6]

SEAT No. :

P1519

[Total No. of Pages : 2

[4949]-1001

F.Y. B.Pharmacy

PHARMACEUTICS - I

(2013 Pattern) (Semester - I)

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 diagram must be drawn wherever necessary.*
- 4) *Figures to the right indicate full marks.*

SECTION - I

Q1) Attempt any one.

[10]

Define Excipients, how excipients are classified? Add a note on preservatives and colors used in pharmaceuticals.

OR

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

Q2) Attempt any five:

[15]

- a) What is Pharmacopoeia? Add a note on European Pharmacopoeia.
- b) Explain the different flavours used in pharmaceuticals.
- c) Give the classification of dosage forms.
- d) Describe Unani and Siddha as an alternate system of medicine.
- e) Write the scope of pharmaceutical engineering.
- f) Write the different sources of drug with suitable examples.
- g) Enlist the different routes of drug administration.

Q3) Write short notes (any two):

[10]

- a) Principle of ayurveda.
- b) Pharmacy code of ethics.
- c) Scope of formulation development.
- d) Indian Pharmacopoeia.

P.T.O.

SECTION - II

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

Describe goal and importance of preformulation. Discuss solubility studies in preformulation.

OR

Define excipient. Explain in detail classification of excipients with example.

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

- a) Explain any two methods to enhance solubility of poorly water soluble drugs.
- b) Discuss the formulation and evaluation of oral rehydration powder.
- c) Define preformulation and explain bulk density and angle of repose.
- d) Justify the statement “preformulation is key step in pharmaceutical product development.
- e) What is pka? Explain its role in preformulation.
- f) What guidelines under the GMP to be followed by the pharmaceutical industry?
- g) Give an account of polymorphism as important bulk characterization tool.

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

- a) Sources of quality variation.
- b) Concept of preformulation.
- c) Explain in detail factors affecting rate of solution.
- d) Validation parameter of quality analysis.



Total No. of Questions : 6]

SEAT No. :

P1520

[Total No. of Pages : 2

[4949]-1002

F.Y. B.Pharmacy.

MODERN DISPENSING PRACTICES

(2013 Pattern) (Semester - I)

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) Answer any one. **[10]**

- a) Discuss various parts of prescription with suitable examples.
- b) Explain in detail 'Good compounding and dispensing practices'.

Q2) Answer any five in short. **[15]**

- a) Explain pricing of prescription.
- b) Explain selection of containers for dispensing.
- c) Explain in brief compounding of medicines with examples.
- d) In what proportion should 10% w/w providone Iodine ointment be mixed with white petroleum jelly to produce 50 gm of 6% providone Iodine ointment.
- e) How will you prepare 500 ml 30% alcohol from 80% alcohol.
- f) In what proportions 5% and 15% zinc oxide ointments will be mixed to prepare 50 gm of 8% ointment.
- g) What do you mean by isotonic solutions? How it is adjusted.

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

- a) Stability of medicines.
- b) Drug profile.
- c) Responding to prescription.
- d) Dispensing Errors.

P.T.O.

SECTION - II

Q4) Answer any one: [10]

- a) Discuss with examples various types of physical incompatibilities and methods to remove them.
- b) Define posology and explain the factors affecting dose calculation.

Q5) Answer any five in short. [15]

- a) Write a detail note on idiosyncratic drug reactions.
- b) Write patient counseling note for tuberculosis.
- c) Explain the role of pharmacists in HIV/AIDS.
- d) Give patient counseling for cosmetics products.
- e) What would be the dose of child of 3 and 12 years; if the adult dose is 200 mg.
- f) Write a note on drug information service.
- g) Explain the role of pharmacists in family planning.

Q6) Answer any two: [10]

- a) Explain organization structure and design of retail pharmacy.
- b) Explain the steps in patient counseling and write a note on patient counseling for diabetes.
- c) Write in detail note on rational drug use.
- d) Discuss with example; therapeutic incompatibilities in prescription drugs.



Total No. of Questions : 6]

SEAT No. :

P1521

[Total No. of Pages : 2

[4949]-1003

F.Y. B.Pharmacy

PHARMACEUTICAL INORGANIC CHEMISTRY

(2013 Pattern) (Semester - I)

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) What is Monograph? Discuss in detail the different contents of official Monograph. **[10]**

OR

What are limit tests? Discuss in detail the limit test for Lead IP, BP.

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

- a) Write the principle and reaction involved in limit test for sulphate.
- b) Give an account on tests for purity.
- c) Enlist the official sodium chloride formulations used in electrolyte replacement therapy.
- d) Explain the physiological role of potassium in body.
- e) Discuss the properties, uses and assay of carbon dioxide.
- f) Write the reactions involved in limit test for Arsenic.
- g) What are protectives and adsorbants? Discuss the preparation, properties and uses of Bismuth subcarbonate.

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

- a) Saline cathartics
- b) Official tests for water
- c) Limit test for Arsenic
- d) Electrolyte combination therapy

P.T.O.

SECTION - II

Q4) What are topical agents? Discuss the mechanism of action of topical agents. Discuss the properties, assay and uses of calamine and zinc oxide. [10]

OR

What are ideal requirements of antacids? Describe the preparation, properties and uses of aluminium containing antacids.

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

- a) Discuss the absorption, distribution and physiological role of iron in body.
- b) Explain about sodium nitrite as antidote.
- c) Describe the principle and reaction involved in assay of hydrogen peroxide.
- d) Discuss properties, uses and assay of oxygen.
- e) Discuss properties, storage and uses of sodium fluoride.
- f) What are antidepressants? Write the properties, storage and uses of Lithium carbonate.
- g) Discuss the mechanism of action of antimicrobials as topical agents.

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

- a) Official compounds of Iron.
- b) Radioopaque contrast media.
- c) Expectorants.
- d) Electrolyte replacement therapy.



Total No. of Questions : 6]

SEAT No. :

P1522

[Total No. of Pages : 3

[4949]-1004

F.Y. B.Pharmacy.

PHARMACEUTICAL ORGANIC CHEMISTRY - I

(2013 Pattern) (Semester - I)

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 the mechanism involved in Friedel Craft's reaction and Nitration in Benzene. [10]

OR

What are Elimination reactions? Discuss E_1 , E_2 Elimination Reactions with Mechanism.

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

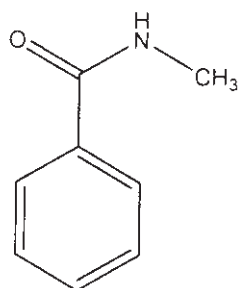
- a) Draw the structure of following compound
 - i) 2,4-Hexadione
 - ii) Propanoic Anhydride
 - iii) 4-methyl Pentanal
- b) Define & Illustrate Tautomerism.
- c) Give reason: *Meso* Compounds do not show Optical Activity.
- d) Give reason: *Cis* & *Trans* isomers differ in their melting & boiling points.
- e) Give reason: Electron donating groups are Ortho/Para directors in electrophilic aromatic Substitution reaction.
- f) Draw as many Resonance Structures as you can for Aniline and Phenol.
- g) What is Inductive Effect? Explain with suitable examples.

P.T.O.

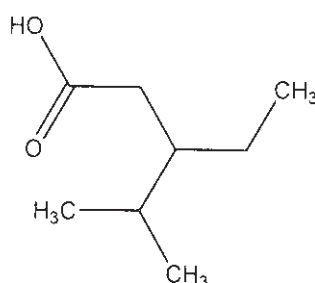
Q3) Answer the following any two:

[10]

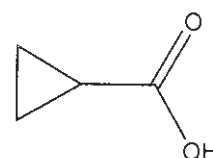
- Write a note on Optical Isomerism. Explain it with suitable example.
- Explain Halogenation Reaction involved in Alkenes & Alkynes.
- Write a note on Saytzafts and Hoffmann elimination.
- What are names of following compounds in the IUPAC system? (any five)



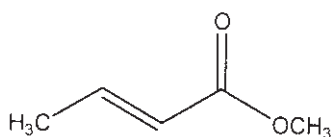
i)



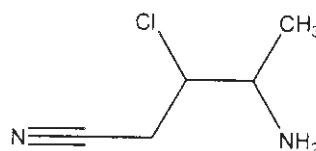
ii)



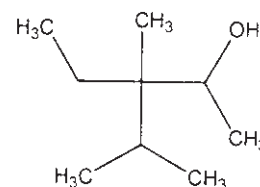
iii)



iv)



v)



vi)

SECTION - II

Q4) Give any three methods of preparation and two chemical reactions of alkanes and Alkenes.

[10]

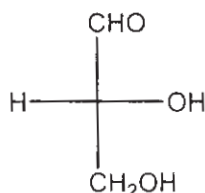
OR

Explain the mechanism involved in Halogenation and Sulphonation of Toluene.

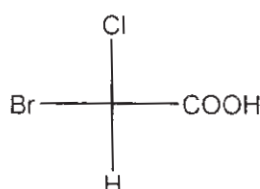
Q5) Solve any five:

[15]

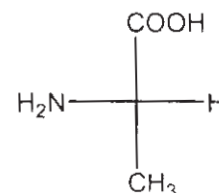
- Establish R & S configurations



i)



ii)



iii)

- Explain Markonikov & Antimarkonikov rule with suitable examples.
- What is difference between nucleophilicity and basicity?

- d) Methyl group in Toluene is ortho / para directing. Explain.
- e) Define and illustrate hyper conjugation.
- f) Explain Enantiomerism with suitable example.
- g) Compare the stability of primary, secondary and tertiary carbonium ion.

Q6) Write short notes on any two:

[10]

- a) Ozonolysis.
- b) Diels-Alder reaction.
- c) General methods of preparation and reactions of Alkynes.
- d) Mechanism of nucleophilic aromatic substitution reaction.



Total No. of Questions : 6]

SEAT No. :

P1523

[Total No. of Pages : 2

[4949]-1005

F.Y. B.Pharmacy

HUMAN ANATOMY & PHYSIOLOGY - I

(2013 Pattern) (Semester - I)

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) What is digestion? Explain various parts of digestive system with special reference to role of accessory glands in digestion. **[10]**

OR

Write composition, formation and functions of Lymph. Explain various disorders of lymphatic system. **[10]**

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

- a) Explain platelet plug formation.
- b) Explain structure and function of liver.
- c) Draw a neat labelled diagram of cell.
- d) Write structure & functions of epithelial tissue.
- e) Enlist & elaborate disorders of cardiovascular system any three.
- f) Define 'Health' as per WHO. Add a note on Health promotion.
- g) Write composition and functions of blood.

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

- a) Write note on blood group system.
- b) Explain ECG.
- c) Write a note on family planning.
- d) What is chemical digestion of food?

P.T.O.

SECTION - II

Q4) Draw a neat labelled diagram of conduction system of heart and explain the same in detail. **[10]**

OR

Explain structure and functions of nucleus and write a note on protein synthesis. **[10]**

Q5) Answer any FIVE: **[15]**

- a) Define blood pressure and explain factors affecting it.
- b) Write a note on lymphatic duct and lymphatic trunk.
- c) Write composition and functions of gastric juice.
- d) Describe the blood circulation to head and neck region.
- e) Define the terms:
 - i) Hepatitis
 - ii) Arterio sclerosis
 - iii) Peptic ulcer
- f) Explain the internal structure of heart.
- g) Explain the structure of skeletal muscle.

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

- a) Write a note on cardiac cycle.
- b) Explain structure and functions of small intestine.
- c) Write note on spleen.
- d) Explain hormonal regulation of Blood pressure.



Total No. of Questions : 6]

SEAT No. :

P1524

[Total No. of Pages : 2

[4949]-1006

F.Y. B.Pharmacy.

COMMUNICATION AND SOFT SKILL DEVELOPMENT

(2013 Pattern) (Semester - I)

Time : 3 Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) *Section I and Section II carries equal marks.*
- 2) *Figures to the right indicate full marks.*

SECTION - I

Q1) What is communication? Give the David Barlo model of communication? Explain objectives and barriers of communication. **[10]**

OR

Focus on types of communication. Explain formal-informal and upward-downward communication.

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

- a) Give parts and structure of business letter.
- b) Give the basics in phonetics.
- c) Speaking as a technical communication.
- d) How will you prepare minutes of meeting.
- e) ABC of in technical communication.
- f) Give ten thumb rules for good listening.
- g) Write the pronunciation guidelines related to consonants.

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

- a) Speech process.
- b) Listening and note taking.
- c) Developing the effective messages.
- d) Structure and principles of paragraph writing.

P.T.O.

SECTION - II

Q4) What is globalization of business? Give detail account on the important role of modern technology in the global work culture. **[10]**

OR

Focus on Internet, Tele-communication, Tele-conferencing and Video conferencing as modern tolls in global business.

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

- a) Enumerate various types of report.
- b) Describe various elements of e-mail in corporate world.
- c) Why office drafting is important?
- d) Write a follow up mail about your education loan to your SBI manager.
- e) How phonetics and accents are important to enrich your soft skills.
- f) Write a enquiry letter to your passed out senior about examination preparation.
- g) Give the essentials of Resume.

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

- a) Mastering in group discussion.
- b) Write an application in response of the job as 'quality control officer' in Mumbai based pharmaceutical industry.
- c) Give written complaint to your Principal about inconvenient library hours.
- d) Body language-posture, gesture and facial expressions.



Total No. of Questions : 6]

SEAT No. :

P1665

[Total No. of Pages : 2

[4949]-2001
First Year B.Pharm.
PHARMACEUTICS - II
(2013 Pattern) (Semester - II)

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) Discuss the mechanism of size reduction? Explain the principle, construction, working and applications of fluid energy mill.
- b) Explain the types of packaging materials? Discuss the role of packaging in pharmaceutical products.

Q2) Attempt any five questions **[15]**

- a) Write a note on blister packaging.
- b) Discuss the importance of filter aids.
- c) Write a note on closures.
- d) Write the mechanisms of filtration.
- e) Write a note on glass as a packaging material.
- f) Discuss in detail colloid mill.
- g) Illustrate working with a neat and labeled diagram of rotary drum filter.

Q3) Write note on any Two **[10]**

- a) Describe the importance of particle size analysis.
- b) Explain the rotex screen.
- c) Explain the modes of motion in size separation.
- d) Classify filters and Explain the leaf filter.

SECTION - II

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

- a) Describe steps in layout planning of liquid manufacturing and packaging area.
- b) Explain the mechanism for mixing of liquids. Discuss the mixing tank.

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

- a) Explain the any three types of mixer.
- b) Explain the in vivo distribution of drug.
- c) Define mixing and state importance of mixing.
- d) Explain the oral route of drug administration.
- e) illustrate absorption and bioavailability of drug and Enlist the mechanism of drug absorption.
- f) Differentiate quality control and quality assurance.
- g) Discuss the types of plant layout design.

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

- a) Explain the principle, construction working and applications of planetary mixer.
- b) Write a note on dose response curve.
- c) Summarize the concept of quality assurance.
- d) Explain the mechanism of mixing of solids.



Total No. of Questions : 6]

SEAT No. :

P1525

[Total No. of Pages : 2

[4949]-2002

F.Y. B.Pharmacy

DOSAGE FORM DESIGN

(2013 Pattern) (Semester - II)

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) Brief note on emulsion with its definition, classification and examples and various symptoms of instability in Emulsions. **[10]**

OR

Elaborate powders with its classification and short note on method of preparation of effervescent granules.

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

- a) Discuss Dry suspensions for reconstitution.
- b) Elaborate concept of modified release dosage forms.
- c) Note on process of solubilization of solute in solvent.
- d) Explain targeted drug delivery system.
- e) Discuss HLB and RHLB.
- f) What are suspensions containing poorly wettable solids?
- g) Short note on Quality control of radiopharmaceutical dosage forms.

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

- a) Elaborate methods of mixing in powders.
- b) Note on self-emulsifying drug delivery system.
- c) Define Stoke's law, with its significance and instability of suspension.
- d) Explain displacement value with its significance.

P.T.O.

SECTION - II

Q4) Explain drug solubility with different solubility enhancement approaches. **[10]**

OR

Define suspension with its ideal properties. Explain physical stability of suspension.

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

- a) Explain various Diagnostic applications of radiopharmaceuticals.
- b) Brief note on suspending agents.
- c) Explain Pastes with different types.
- d) Give difference between paste and cream.
- e) Evaluation tests for ointments.
- f) Short note on jellies with its applications.
- g) Explain different evaluation tests for suppositories.

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

- a) Ointment bases
- b) Additives in suspension
- c) Types of suspension
- d) Evaluation of creams



Total No. of Questions : 6]

SEAT No. :

P1526

[Total No. of Pages : 2

[4949]-2003

F.Y. B.Pharmacy.

1.1.4 : PHARMACEUTICAL ORGANIC CHEMISTRY - II
(2013 Pattern) (Semester - II)

Time : 3 Hours]

[Max. Marks : 70

Instructions to the candidates:

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

SECTION - I

Q1) Explain the reactivity of carbonyl group towards nucleophilic addition reactions. Write any four methods of preparation and any four reactions of carbonyl compounds. **[10]**

OR

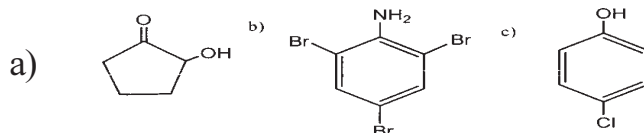
Give Reaction, Mechanism & Applications of Perkin reaction & Mannich reaction.

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

a) Draw structures from IUPAC names of following:

- i) 2-methoxy propane
- ii) 2-chloropentanal
- iii) 2-pentanol

b) Write IUPAC names for following structures



- c) Give any two reactions of sulphonic acids.
- d) Give any two methods of preparations sulphonic acids.
- e) How will you separate primary, secondary and tertiary alcohols by a suitable chemical test.
- f) Comment on Williamson's ether synthesis.
- g) What are enamines? How are they prepared?

P.T.O.

Q3) Solve any two: [10]

- Give any two methods of preparation and two reactions of phenols.
- Write the reactions of Grignards reagent and Hydride ions with aldehydes or ketones.
- Explain Aldol condensation.
- Write preparations and use of acetals and oximes.

SECTION - II

Q4) What are amines, give any three methods of preparation and any three reactions of amines. Discuss action of nitrous acid on primary, secondary and tertiary amines. [10]

OR

Compare SN1 and SN2 Mechanisms.

Q5) Solve any five: [15]

- Give any two methods of synthesis of carboxylic acids.
- How to distinguish Nitriles from isonitriles?
- Give any two Chemical Reactions of Anhydrides.
- Explain in short S_Ni reaction.
- Explain in short Michael addition.
- What are diazonium salts, how they prepared.
- Ethyl amine is more basic than Ammonia. Give reason

Q6) Solve any two: [10]

- Reaction of Cyanides and isocyanides.
- Short Note on Elimination verses substitution.
- Short Note on Dieckman condensation.
- Explain use of acetoacetic ester and malonic ester in organic synthesis.



Total No. of Questions : 5]

SEAT No. :

P1527

[Total No. of Pages : 2

[4949]-2004

F.Y. B.Pharmacy.

HUMAN ANATOMY & PHYSIOLOGY - II

(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 answer books.*
- 3) *Neat labeled diagrams must be drawn wherever necessary.*
- 4) *Figures to the right indicate full marks.*

SECTION - I

Q1) Describe in detail anatomy of cerebrum & add a note on functional areas of cerebrum. **[10]**

OR

Enlist different organs involved in respiration. Explain the mechanism of breathing & exchange of gases at lung & tissue level.

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

- a) Explain structure & functions of lungs.
- b) Draw a neat labeled diagram of skin.
- c) Explain various ventricles of the brain.
- d) Discuss the composition & functions of c.s.f.
- e) Enlist the cranial nerves with their functions.
- f) Define following terms:
 - i) Anatomical dead space
 - ii) Tidal volume
 - iii) Inspiratory reserve volume
- g) Explain the meninges of the CNS.

P.T.O.

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

- a) Structure of Neuron.
- b) Physiology of vision.
- c) Reflex arc.
- d) Ear as sense organ.

SECTION - II

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

OR

Explain in detail physiology of urine formation.

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

- a) Write location and functions of kidney.
- b) Explain structure of sperm with a neat labelled diagram.
- c) Define the term Acromegaly and Cushing's Syndrome.
- d) Write a note on Vasopressin.
- e) Draw a neat labelled diagram of Ovary showing the developmental stages of an ovarian follicle.
- f) Write a note on renal corpuscle.
- g) Write function of Seminal Vesicle, Prostate and Cowper's gland.

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

- a) Adrenal Glands
- b) Spermatogenesis
- c) Renin angiotensin aldosterone system
- d) Menstrual Cycle



Total No. of Questions : 6]

SEAT No. :

P1528

[Total No. of Pages : 2

[4949]-2005

F.Y. B. Pharmacy

PHARMACOGNOSY

(2013 Pattern) (Semester - II)

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) Attempt any one : [10]

Describe structure of DNA along with Replication and Transcription.

OR

Elaborate in detail general morphology and microscopy of bark.

Q2) Attempt any Five : [15]

- a) Enlist three laws of Mendelian genetics.
- b) Enlist under disciplinary subjects of biology.
- c) Provide Excretory products of plant origin.
- d) Describe in brief primary and secondary growth in plant.
- e) Provide in brief classification of fruits.
- f) Explain in brief Saprophytic nutrition.
- g) Describe functions of proteins.

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

- a) Plant cell division.
- b) Genetic code.
- c) Relevance of biology to pharmaceutical sciences.
- d) subterranean organs

P.T.O.

SECTION - II

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

- a) Describe in detail significance, site and pathways involved in photosynthesis.

OR

- b) Explain in detail Development status, scope and significance of pharmacognosy.

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

- a) Enlist various methods of classification of crude drugs.
b) Explain in brief natural method of classification.
c) Explain in brief Dynamics of ecosystem.
d) Explain in brief Food chain and Energy Flow.
e) Explain in brief speciation.
f) Describe in brief Hybridization.
g) Provide History of Pharmacognosy.

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

- a) Chemosynthesis.
b) Phytoremediation
c) Mutation.
d) Significance of Western Ghat Biodiversity.



Total No. of Questions : 6]

SEAT No. :

P1529

[Total No. of Pages : 2

[4949]-2006

F.Y. B. Pharmacy

PHARMACEUTICAL ANALYSIS - I

(2013 Pattern) (Semester - II)

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 side indicate full marks.

SECTION - I

Q1) Explain buffer in details. Derive equation used to calculate the pH of buffer.[10]

OR

What are types of error? Explain ways to minimize it. Add note on accuracy & precision.

Q2) Attempt any five of following : [15]

- a) Define with example correlation, coefficient & coefficient of determination.
- b) Discuss equivalent weight with respect to different types of titration.
- c) Discuss buffer index.
- d) Discuss theories of acid base.
- e) What are 1^o & 2^o standard substances.
- f) Justify pH of water is seven.
- g) Define significant figure & standard deviation.

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

- a) Titration curve for weak acid vs strong base.
- b) Types of nonaqueous solvent.
- c) Test of significance.
- d) Titration curve for complexometry titration.

P.T.O.

SECTION - II

Q4) Explain different method of titration in precipitation titration. **[10]**

OR

Discuss iodimetry and iodometry titration with detail example.

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

- a) Explain preparation & standardisation of potassium permagnet.
- b) What is pMindicator.
- c) Discuss ligand & its types.
- d) Explain titanous chloride titration.
- e) Discuss principle & standardization of 0.1 N silver nitrate.
- f) What are solvent used in washing of precipitate.
- g) Define chelon, sequestering agent.

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

- a) Factors affecting complex & stability constant.
- b) Factor affecting precipitate solubility.
- c) Coprecipitation and post precipitation.
- d) Titration curve for redox titration.



Total No. of Questions : 6]

SEAT No. :

P1530

[Total No. of Pages : 2

[4949]-3001

S.Y. B. Pharmacy

PHYSICAL PHARMACEUTICS - I

(2013 Pattern) (Semester - III)

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) What are different methods used for liquefaction of gases? With neat and labelled diagram describe principle involved in aerosols. **[10]**

OR

Describe in detail two component systems with suitable example.

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

- a) Define polymorphism. Give different applications of polymorphism with examples.
- b) Explain Linde's Process.
- c) What is crystallization? Explain crystal forms and crystal habits.
- d) Give pharmaceutical applications of phase rule.
- e) Explain Compressibility factor and its importance.
- f) Write in short about detection techniques for polymorphs.
- g) Explain the terms involved in Gibbs Phase rule.

Q3) Write short notes on (Any 2) : **[10]**

- a) Critical gas constants.
- b) Methods of crystal analysis
- c) One component system.
- d) Glass transition temperature.

P.T.O.

SECTION - II

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

OR

What do you mean by colligative properties? Explain Freezing point depression as a colligative property. Mention various methods used to determine freezing point depression

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

- a) Give solubility expression as per USP.
- b) What do you mean by enthalpy and entropy?
- c) Give a note on conductometric titrations.
- d) Explain about solvent-solute interaction.
- e) Differentiate between real solution and ideal solution.
- f) Write the various methods used to determine lowering of vapour pressure.
- g) Define partition coefficient. Give its application in Pharmacy.

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

- a) Solubility of gases in liquids.
- b) Arrhenius theory of electrolytes.
- c) Efficiency of heat engine.
- d) Elevation of boiling point.



Total No. of Questions : 6]

SEAT No. :

P1531

[Total No. of Pages : 2

[4949]-3002

S.Y. B. Pharmacy

PHARMACEUTICAL MICROBIOLOGY & IMMUNOLOGY

(2013 Pattern) (Semester - III)

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) Draw and describe in brief typical structure of Bacteria and give the function of each part. **[10]**

OR

Define Culture media and explain different types of media.

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

- a) Write a function of Pili, Flagella and Capsule.
- b) Write Medical importance of Yeast & Moulds
- c) How will you detect presence of Pseudomonas in nonsterile pharmaceutical preparations?
- d) Differentiate between Gram +ve and Gram–ve bacterial cell.
- e) Justify Agar is used as solidifying agent.
- f) Write the contribution of Robert Koch.
- g) Explain the significance of Log phase and Lag phase in bacterial growth curve.

P.T.O.

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

- a) Preservation of Microbial culture.
- b) Prebiotic and Probiotics.
- c) Multiplication of Human Virus
- d) Viable Count Method.

SECTION - II

Q4) Define Antigen and Antibody. Describe five different classes of Immunoglobulin. [10]

OR

Define Vaccine. Write the method of preparation and Quality control of bacterial vaccine.

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

- a) Write a principle and characteristics of antigen antibody reactions.
- b) Differentiate between Active and Passive Immunity.
- c) What do you mean by Microbial Virulence?
- d) Why Phenol Coefficient test is invalid for bacteriostatic agent?
- e) Write note on Pasteurization.
- f) Comment “Moist heat sterilization is more superior to dry heat sterilizaion”?
- g) Differentiate between endotoxin and exotoxin.

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

- a) Phenol Coefficient test.
- b) Moist Heat sterilization.
- c) HMI and CMI
- d) Antigen and Antibody reaction.



Total No. of Questions : 6]

SEAT No. :

P1532

[Total No. of Pages : 2

[4949]-3003

S.Y. B. Pharmacy

PHARMACEUTICAL BIOCHEMISTRY

(2013 Pattern) (Semester - III) (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 answer books.*
- 3) Neat diagrams must be drawn wherever necessary.*
- 4) Figures to the right indicate full marks.*

SECTION - I

Q1) Attempt any one of the following : **[10]**

- a) Define Proteins. Explain in detail structure of Protein.
- b) Define and classify Amino acids. Explain in detail Edman degradation method.

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

- a) Biochemical functions of Lipids.
- b) Explain functions and biological role of Fructose.
- c) Explain Primary structure of protein.
- d) Explain functions and biological role of Starch.
- e) Write a note on collagen.
- f) Write a note on IgG.
- g) Write a note on coenzymes and cofactors.

P.T.O.

Q3) Attempt any two of the following : **[10]**

- a) Explain in detail Transcription.
- b) Define and classify Fatty acid.
- c) Distinguish between Eukaryotic and Prokaryotic cell.
- d) Genetic code of Eukaryotic cell.

SECTION - II

Q4) Attempt any one of the following : **[10]**

- a) Define metabolism and enlist diff. Pathway of carbohydrate metabolism and explain in detail pentose phosphate pathway.
- b) What are Purines and pyrimidines? Explain biosynthesis of Purines.

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

- a) Write a note on ketone bodies.
- b) Biochemical function of Vit.D.
- c) Biochemical function of Vit.C.
- d) Write a note on Non-oxidative deamination of amino acids.
- e) Leading Strand Synthesis.
- f) Properties of Fat Soluble Vitamins.
- g) Explain in brief Translation.

Q6) Attempt any two of the following : **[10]**

- a) Metabolism of triglycerides.
- b) Glycogenolysis.
- c) Biosynthesis of glycine.
- d) Write in detail about Structure and Biochemical Functions of Vit B₁.



Total No. of Questions : 6]

SEAT No. :

P1533

[Total No. of Pages : 3

[4949]-3004

S.Y. B. Pharmacy

PHARMACEUTICAL ORGANIC CHEMISTRY - III

(2013 Pattern) (Semester - III) (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) What is conformational isomer and explain in detail about conformational isomer of n-butane with energy diagram. **[10]**

OR

Define racemic modification. Enlist different methods used for resolution of racemic mixture and explain in detail each method. **[10]**

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

- a) Explain cyclohexane is more stable in chair conformation than boat form.
- b) Define configuration, conformation, racemic mixture. Give example of each.
- c) What are diastereomers? Explain with suitable example.
- d) Define enantiomerism. Give its pharmaceutical significance.
- e) What is Dihedral angle in stereoisomer.
- f) Trans 1,2 dimethyl cyclohexane is more stable than Cis isomer. Give reason.
- g) What is Isoelectric point? Explain its significance.

P.T.O.

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

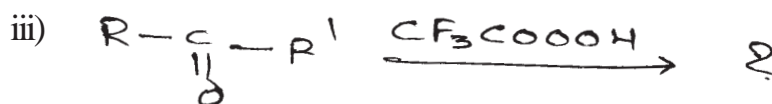
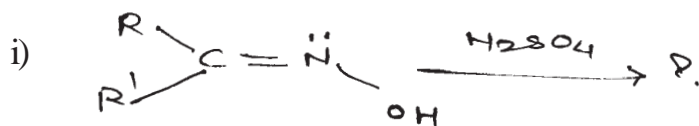
- Conformation of cyclohexane
- Significance of stereochemistry in biological activity.
- Conformational isomerism of decalin.
- Geometrical and optical isomerism.

SECTION - II

Q4) Define molecular rearrangement reaction. Classify it in detail and add a note on Hofmann rearrangement and pinacol pinacolone rearrangement. [10]

OR

Predict the product and explain mechanism involved. [10]



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

- Explain electrophilic aromatic substitution in naphthalene.
- Add a note on Fries rearrangement.
- How Curtius rearrangement help to synthesise azide? Explain with suitable example.

Total No. of Questions : 6]

SEAT No. :

P1534

[Total No. of Pages : 2

[4949]-3005

S.Y. B. Pharmacy

PHARMACOLOGY - I

(2013 Pattern) (Semester - III)

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.*

SECTION - I

Q1) Define bioavailability. Explain in detail factors affecting bioavailability. [10]

OR

Explain in detail transportation of drug across cell membrane and factors affecting drug transportation. [10]

Q2) Answer the following (Any five) :

- a) Explain the term half life and bioequivalence. [3]
- b) Write about the process of new drug development. [3]
- c) Write about factors affecting excretion of drug. [3]
- d) Write in detail sources and active ingredient of drugs. [3]
- e) Write about essential drug concept. [3]
- f) Explain the term volume of distribution. [3]
- g) Explain First pass metabolism. [3]

P.T.O.

Q3) Solve any two :

- a) Explain in detail process of drug distribution and factors affecting drug distribution. [5]
- b) Explain in detail various routes of administration with their advantages and disadvantages. [5]
- c) Explain in detail drug biotransformation. Enlist various reactions involved in biotransformation of drugs. [5]
- d) Write in details about Therapeutic drug monitoring. [5]

SECTION - II

Q4) Explain in detail synthesis, storage, release & pharmacological actions of serotonin. [10]

OR

Explain molecular structure & signal transduction mechanism of G-protein coupled receptor. [10]

Q5) Answer the following (any five) :

- a) Define : agonist, antagonist & inverse agonist. [3]
- b) Discuss the combined effects of drug. [3]
- c) Classify receptors with examples. [3]
- d) Explain molecular structure & signal transduction mechanism of ion channel linked receptors. [3]
- e) Explain mechanisms of drug actions. [3]
- f) Classify antihistaminics with examples. [3]
- g) Define adverse drug reactions & discuss its types. [3]

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

- a) Pharmacokinetic drug interactions.
- b) Individualization of drug therapy.
- c) Drug therapy in pediatric patients.
- d) Dose-response curve.



Total No. of Questions : 6]

SEAT No. :

P1535

[Total No. of Pages : 2

[4949]-3006

S.Y. B. Pharmacy

PHARMACOGNOSY & PHYTOCHEMISTRY - I

(2013 Pattern) (Semester - III)

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) Classify Glycosides and describe the properties, chemical tests & general method of extraction of glycoside. **[10]**

OR

Explain role of secondary metabolites in plant. Differentiate between primary and secondary metabolites. **[10]**

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

- a) Differentiate between Alexandrian and Indian Senna.
- b) Write significance of foaming index.
- c) Classify carbohydrates with example.
- d) Write a note on ginseng & rhubarb.
- e) Write biological source, properties & uses of bromelin.
- f) Define tannins & write their properties.
- g) Explain method of preparation of silk.

P.T.O.

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

- a) Differentiate between animal & vegetable fiber.
- b) Comment on pharmacognostic account of citrus peels.
- c) Write pharmacognostic account of Gambier.
- d) Write process for determination of fat/fixed oil.

SECTION - II

Q4) Explain the process of extraction of Kokum butter and Cocoa butter. Comment on their industrial applications. **[10]**

OR

Give an account of biological source, extraction, properties & uses of starch with an example. **[10]**

Q5) Answer any five questions : **[15]**

- a) Describe applications of thaumatin.
- b) Importance of ash value.
- c) Write a note on isabgol.
- d) Explain isolation of carotenoids.
- e) Explain any three chemical tests for tannin.
- f) Write method of preparation of Jute.
- g) Comment on significance of Amla.

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

- a) Explain process for extraction of okra mucilage & chitosan.
- b) Write a note on anthraquinone glycoside.
- c) Write a note on Wool fat & bees wax.
- d) Write pharmacognostic account of visnaga.



Total No. of Questions : 6]

SEAT No. :

P1536

[Total No. of Pages : 2

[4949]-4001

S.Y. B. Pharmacy

PHYSICAL PHARMACEUTICS - II

(2013 Pattern) (Semester - IV)

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) Elaborate on accelerated stability studies and explain methods to determine shelf life of a pharmaceutical formulation. **[10]**

OR

- a) Enlist and explain various methods to measure surface tension. **[6]**
- b) Write a note on spreading coefficient. **[4]**

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

- a) Define order of reaction. Briefly explain pseudo-first order reaction.
- b) What are micelles?
- c) Define thixotropy and give its significance in formulations.
- d) Classify surfactants with examples. Define Critical Micelle Concentration.
- e) Explain Newtons law of flow.
- f) Enlist properties of physisorption/physical adsorption.
- g) Explain molecularity of reaction with examples.

P.T.O.

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

- a) Langmuir and Freundlich's adsorption isotherms.
- b) Degradation pathways of pharmaceuticals.
- c) Viscometers.
- d) Methods to determine order of reaction.

SECTION - II

Q4) State the different methods used for the determination of particle size of powders and discuss in detail the Andreason Pipette method. **[10]**

OR

Discuss the stability of colloids including the following : **[10]**

- a) Schulze-Hardy rule
- b) Hofmeister series
- c) Co-acervation

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

- a) What is zeta potential? Give its importance in the field of pharmacy?
- b) What is meant by 'equivalent spherical diameter'? Why is it important to represent particle size in this term.
- c) Define : Angle of repose, Porosity and Granule density.
- d) Give pharmaceutical applications of colloids.
- e) What is the principle of coulter counter?
- f) Explain the concept of Donnan-membrane equilibrium with its role in pharmacy.
- g) What do you understand by the following terms :
 - i) Brownian motion.
 - ii) Gold number.

Q6) Write short notes on any two of the following : **[10]**

- a) Protective colloids.
- b) Derived properties of powders.
- c) Kinetic properties of colloids.
- d) Factors affecting flow of powders.



Total No. of Questions : 6]

SEAT No. :

P1537

[Total No. of Pages : 2

[4949]-4002

S.Y. B. Pharmacy

PATHOPHYSIOLOGY AND CLINICAL BIOCHEMISTRY

(2013 Pattern) (Semester - IV)

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) Discuss in detail pathophysiology of Cardiac shock.

[10]

OR

Define and classify Ulcer. Explain in detail the pathophysiology of Peptic Ulcer.

Q2) Solve any five of the following :

[15]

- a) Write etiology of coronary artery disease.
- b) Define and enlist types of COPD.
- c) Define Diarrhea and constipation.
- d) Write the complications of Heart failure.
- e) Write pathophysiology of Arrhythmia.
- f) Define and enlist the types of Hepatitis.
- g) Write the clinical manifestations of fatty liver.

P.T.O.

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

- a) Deep vein thrombosis.
- b) Inflammatory Bowel disease.
- c) Cell injury and inflammation.
- d) Cardiac arrhythmia.

SECTION - II

Q4) Define Diabetes and explain in detail pathophysiology of diabetes. **[10]**

OR

Write a detail note on renal failure.

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

- a) Define
 - i) Etiology
 - ii) Gout
 - iii) Parkinsons Disease
- b) Write pathophysiology of Urinary calculi.
- c) Write etiology of Infertility.
- d) Write epidemiology of Tuberculosis.
- e) Write causative agent for Leprosy and AIDS.
- f) Discuss the clinical manifestations of Schizophrenia.
- g) Write a diagnosis and brief plan of treatment for Malaria.

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

- a) Depression.
- b) Rheumatoid arthritis.
- c) Hyperthyroidism.
- d) Nephritis.



Total No. of Questions : 6]

SEAT No. :

P1538

[Total No. of Pages : 2

[4949] - 4003

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 to the two sections should be written in separate books.
- 3) Figures to the right indicate full marks.

SECTION - I

Q1) Give a detail account of guidelines of retrosynthesis and disconnection involving C-X and C-C bonds. **[10]**

OR

Draw the structure and give numbering of following heterocycles with one example of drug belonging to each:

- a) Thiophene
- b) Pyrazole
- c) Benzthiazole
- d) Benzofuran
- e) Isoxazole

Q2) Answer in short (ANY FIVE) **[15]**

- a) Give any three methods of synthesis of furan.
- b) Give reason: Pyridine is much stronger base than pyrrole.
- c) Draw resonance structures of pyrrole.
- d) Give any three methods of synthesis of pyrrole.
- e) Draw the following structures with numbering.
 - i) 4-amino thiazole
 - ii) 2-nitro pyrimidine
 - iii) 7-methoxy cinnoline
- f) Give any three reactions of imidazole.
- g) Give any one method of preparation of quinoline.

P.T.O.

Q3) Write a short note on (ANY TWO) [10]

- a) Electrophilic substitution reactions of pyrrole
- b) Electrophilic substitution reactions of indole
- c) Retrosynthetic route of Ciprofloxacin
- d) Methods of synthesis of imidazole

SECTION - II

Q4) What is combinatorial synthesis? Comment on multiple parallel synthesis in Combinatorial chemistry. Give details of Tea Bag method. [10]

OR

- a) Write in brief about Killiani - Fischer Synthesis and Ruff Degradation.[5]
- b) What are carbohydrates? Discuss briefly the open and cyclic structure of glucose. [5]

Q5) Solve any five of the following [15]

- a) Explain mutarotation of glucose.
- b) What are polysaccharides? Discuss in brief about starch.
- c) How will you distinguish between glucose and sucrose?
- d) Explain any two reactions of Arabinose.
- e) Write short note on Solid supported synthesis of peptides.
- f) Explain the basic principle behind Microwave synthesis.
- g) Applications of combinatorial synthesis.

Q6) Write short note on any two of the following. [10]

- a) Nanochemistry.
- b) Differentiation between Glucose and Fructose with the help of chemical reactions.
- c) Deconvolution method in combinatorial chemistry.
- d) Establishment of structures of Glucose.



Total No. of Questions : 6]

SEAT No. :

P1539

[Total No. of Pages : 2

[4949] - 4004

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) Write principle of polarography. Discuss in detail dropping mercury electrode. Write in brief about ilkovic equation. **[10]**

OR

Explain in detail different types of conductometric titration curves. Comment on calibration of conductometer.

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

- a) Classify different electrodes used in potentiometry.
- b) Explain mechanisms of mass transfer in electroanalytical techniques.
- c) Define and give formula for specific and equivalent conductance.
- d) What is cell constant? Write its importance.
- e) Write in brief about end point detection in potentiometry.
- f) Explain need of hydration of glass electrode.
- g) Write role of supporting electrolyte and maxima suppressors in polarography.

P.T.O.

Q3) Write notes on any two of the following. **[10]**

- a) Pulse Polarography
- b) High frequency titrations
- c) Ion selective electrodes
- d) Applications of Conductometry

SECTION - II

Q4) Write principle of Amperometry. Discuss in detail about Amperometric titration. **[10]**

OR

- a) Discuss about theory of Polarimetry. **[5]**
- b) Give an account on Amperometric titrations curve. **[5]**

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

- a) Write a note on rotating platinum electrode.
- b) Explain about coulometric cell.
- c) Application of polarimetry.
- d) Discuss about Karl fisher apparatus.
- e) Explain refractive index.
- f) Advantages and disadvantage of coulometric analysis.
- g) Explain Cotton effect.

Q6) Write a note on (any two) **[2 × 5 = 10]**

- a) Detection of end point by coulometric analysis.
- b) Oxygen combustion flask technique.
- c) Kjeldahl method.
- d) Abbe's Refractometer.



Total No. of Questions : 6]

SEAT No. :

P1540

[Total No. of Pages : 2

[4949] - 4005

Second Year. B.Pharmacy (Semester - IV)

PHARMACOGNOSY AND PHYTOCHEMISTRY - II

(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.
- 3) Draw well labelled diagram wherever necessary.

SECTION - I

Q1) Define Alkaloids. Give their chemical classification. Write biosynthesis for Tropane alkaloids. [10]

OR

Define terpenoids. Classify them. Add a note on Eculle & Enflurage method.

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

- a) Discuss on nomenclature of alkaloids.
- b) Write about properties of resins.
- c) Discuss Isoprene rule.
- d) Draw well labelled diagram of T.S. of Crow-fig.
- e) Write cultivation collection of Marihuana.
- f) Write Vitali - Morin test and its significance.
- g) Draw chemical structures for Ergot alkaloids.

Q3) Write note on (Any TWO) [2 × 5 = 10]

- a) Comparative statement on Datura metal & Datura Stramonium.
- b) Indian Bdellium gum.
- c) Microscopy of coriender.
- d) Life cycle of Ergot.

P.T.O.

SECTION - II

Q4) What are Resins? Give its chemical classification. Write pharmacognosy of May Apple. [10]

OR

Write detail pharmacognosy of quinoline alkaloids. Add its biogenetic pathway.

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

- a) Write chemical structure of Taxol.
- b) Write uses of Safron.
- c) Discuss on chemical constituents of Ergot.
- d) Explain about Rauwolfia substituents.
- e) Write Murexide test and its significance.
- f) Describe hydrodistillation method of volatile oil extraction.
- g) Draw a labelled diagram of T.S. of Clove.

Q6) Write notes on (any TWO) [2 × 5 = 10]

- a) Cannabis.
- b) Peruvian cocoa & Bolivian cocoa comparison
- c) Opium.
- d) Purin alkaloids.



Total No. of Questions : 6]

SEAT No. :

P1541

[Total No. of Pages : 2

[4949] - 4006

Second.Year. B.Pharmacy (Semester - IV) Theory

PHARMACEUTICAL ENGINEERING

(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) Discuss Meir's theory of supersaturation and its limitation and explain the process of nucleation. **[10]**

OR

What is Conduction? Explain Fourier's law and steady state heat transfer.

Q2) Solve any five **[15]**

- a) Explain Stefan Boltzmann law.
- b) Explain working of tray dryer.
- c) Discuss factors affecting rate of evaporation.
- d) Explain molecular diffusion in gases.
- e) How does centrifugal entrainment separator work?
- f) Explain packings in distillation columns.
- g) Explain Capillarity and diffusion theory of drying.

Q3) Write notes on any two

[10]

- a) Pan evaporator
- b) Variable area flowmeter
- c) Bernoulli's theorem
- d) Flash dryer

SECTION - II

Q4) What is Corrosion? Enlist various types and explain various methods to combat corrosion. **[10]**

OR

Give classification of evaporators and discuss in detail construction and working of falling tube evaporator along with its applications.

Q5) Solve any five

[15]

- a) Discuss advantages and working of agitated tank crystallizer.
- b) Explain Reynold's number.
- c) Explain working of Pitot tube.
- d) Explain working of Simple manometer.
- e) Explain steps in Freeze drying process.
- f) What is HETP?
- g) Explain working of Shell & Tube heat exchanger.

Q6) Write notes on any two

[10]

- a) Distillation of immiscible liquids.
- b) Wiped film evaporator.
- c) Construction and working of Spray dryer.
- d) Fractionating columns.



Total No. of Questions : 6]

SEAT No. :

P1542

[Total No. of Pages : 3

[4949] - 5001

T.Y. B.Pharmacy (Semester - V)

INDUSTRIAL PHARMACY - 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) What is Pelletization? Describe in details steps involved in extrusion Spheronization. **[10]**

OR

What is need of granulation? Explain mechanism of wet granulation and various steps involved in manufacture of tablets by wet granulation.

Q2) Solve any five **[15]**

- a) What do you mean by lubricant efficiency? Name any two lubricants.
- b) What are advantages and need of mouth dissolving tablets?
- c) What are co-processed excipients? Mention any two examples.
- d) Describe uniformity of weight test for uncoated tablets as per IP 2010.
- e) Describe the procedure for disintegration of effervescent tablets as per IP 2010.

P.T.O.

- f) How do you differentiate between capping and lamination of tablet? Mention remedies for them.
- g) Give examples of Super disintegrating agents normally used in mouth dissolving tablets. What is their significance in formulation of mouth dissolving tablets?

Q3) Attempt any two **[10]**

- a) Describe tablet friability apparatus and procedure to measure friability as per IP 2010.
- b) Describe biopharmaceutical principles of dosage form design.
- c) Explain in detail compression cycle.
- d) Describe Heckel plot and Kawakita equation with their significance.

SECTION - II

Q4) Answer the following (Any One) **[10]**

- a) Explain the need for tablet coating. Differentiate between Sugar and Film coating. Explain the process of Sugar coating in detail.
- b) Explain Standard coating pan with its modification in detail.

Q5) Answer in brief (Any five) **[15]**

- a) What are Type A and Type B gelatin?
- b) Differentiate between Soft gelatin capsule and Hard gelatin capsule.
- c) Explain various materials used in Film coating of tablets.
- d) Discuss the problems involved in filling hard gelatin capsule.
- e) What do you mean by 'Bloom Strength'. How is it determined?
- f) What are the properties of enteric coating materials? Enlist various enteric coating polymers.
- g) Explain different types of spraying systems used for tablet coating.

Q6) Answer the following (Any two)

[10]

- a) Explain rotary die process for manufacturing of soft gelatin capsule.
- b) Explain Fluidized bed system in tablet coating.
- c) Discuss various inprocess quality control and Quality control tests for capsules as per I.P.
- d) Write a note on Accelacota and Dria coater system.



Total No. of Questions : 6]

SEAT No. :

P1543

[Total No. of Pages : 3

[4949] - 5002

T.Y. B.Pharmacy (Semester - V)

PHARMACEUTICAL ANALYSIS - III

(2013 Pattern) (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 answer books.*
- 3) *Figures to the right indicate full marks.*

SECTION - I

Q1) Explain in detail about instrumentation of single beam UV-Visible spectrophotometer. **[10]**

OR

State and derive the expression for the relationship between Beer's and Lambert's law. **[10]**

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

- a) Write a note on monochromator.
- b) Explain the advantages of instrumental methods of analysis.
- c) Explain the following term
 - i) Chromophores
 - ii) Hyperchromic effect
 - iii) Bathochromic shift

P.T.O.

- d) Discuss about preparing samples for analysis.
- e) Explain atomic spectroscopy and molecular spectroscopy.
- f) Explain emission and excitation spectra.
- g) Explain the term reflection and refraction.

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

- a) Types of transitions involved in organic molecule
- b) Photomultiplier tube
- c) Derivative spectroscopy
- d) Premixed and laminar burner

SECTION - II

Q4) Write in detail about instrumentation of Atomic Absorption Spectrophotometer. **[10]**

OR

Discuss in detail about principle and theory of fluorimetric analysis. **[10]**

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

- a) Explain about cell and sampling device in UV Visible spectrophotometry.
- b) Explain preparing samples for analysis.
- c) Discuss about quenching of fluorescence.
- d) Write the factors affecting fluorescence and phosphorescence.
- e) Write source of flame photometry.
- f) Give the applications of Atomic Emission Spectroscopy.
- g) Write advantages of spectroscopy.

Q6) Write a note on **any two** of the following

[10]

- a) Instrumentation of Spectrofluorimeter.
- b) Principle and theory of Nephelometer.
- c) Deviation from Beer's law.
- d) Applications of flame photometry.



Total No. of Questions : 6]

SEAT No. :

P1544

[Total No. of Pages : 3

[4949] - 5003

Third Year. B.Pharmacy (Semester - V)

MEDICINAL CHEMISTRY - 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 diagrams must be drawn wherever necessary.*
- 4) *Correct structure/s must be drawn wherever necessary.*
- 5) *Figures to the right indicate full marks.*

SECTION - I

Q1) Give complete account on Antihypertensive agents. With SAR, MOA and uses. **[10]**

OR

Explain in detail Ganglionic blocker and Neuro-muscular blockers.

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

- a) Add a note on Digitalis toxicity.
- b) Explain in detail biosynthesis and release of Norepinephrine.
- c) Add a note on Ferguson principle.
- d) Give SAR of Atropine.
- e) Add a note on hydrogen bonding.
- f) Give SAR of thiazide diuretics.
- g) Explain the role of intracellular cyclic nucleotide.

P.T.O.

Q3) Write short notes on any two **[10]**

- a) Anti-anginal Drugs
- b) Calcium channel blockers
- c) Stereochemical aspects of drug action
- d) Explain Ing's rule of five.

SECTION - II

Q4) Classify sympathomimetic drugs. Give the chemical features of each class and explain SAR of it. **[10]**

OR

Give synthesis of following.

- | | |
|----------------|---------------|
| a) Atenolol | b) Prazocin |
| c) Dicyclomine | d) Furosemide |

Q5) Answer the following (Any Five) **[15]**

- a) Give structures of Bretylium, Procainamide, Nifedipine.
- b) Explain role of Actin-Myosin system in myocardial contraction.
- c) Explain role of MAO inhibitors.
- d) Give structures of selective β_2 adrenergic antagonist.
- e) Give IUPAC name and synthesis of Methyldopa.
- f) Give structure and uses of Curare alkaloids.
- g) Give structures of any three Angiotensin Converting Enzyme inhibitors.

Q6) Write short note on any two

[10]

- a) Anticoagulants
- b) Anti-hyperlipidemic drugs
- c) Bioisosterism
- d) Diuretics



Total No. of Questions : 6]

SEAT No. :

P1545

[Total No. of Pages : 3

[4949] - 5004

Third Year. B.Pharmacy (Semester - V)

PHARMACOLOGY - 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) Define anticholinesterases. Classify anticholinesterase agents with suitable example. Explain the organophosphate poisoning and outline the drug treatment for it. **[10]**

OR

Define sympatholytic agents. Classify alpha (α) blocker with suitable example. Explain the pharmacological effects and therapeutic uses of alpha (α) blocker in detail.

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

- a) Explain biosynthesis of acetylcholine.
- b) Enlist the therapeutic uses of salbutamol and Ephedrine.
- c) Why adrenaline is used in an anaphylactic shock?
- d) Enlists adverse effects of atropine.

- e) List three difference between neostigmine and physostigmine.
- f) Give the adrenergic receptor subtypes with their location.
- g) Define the following terms (any three)
 - i) Mydriatic
 - ii) Pheochromocytoma
 - iii) Miotics
 - iv) Glaucoma

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

- a) Therapeutic uses of atropine.
- b) Difference between Sympathetic and Parasympathetic nervous system.
- c) Non-depolarising blockers.
- d) Pharmacotherapy of glaucoma.

SECTION - II

Q4) Describe biosynthesis, pharmacological actions, adverse effects and therapeutic uses of estrogen. [10]

OR

Describe biosynthesis, storage and release of Insulin. Add a note on Insulin preparation.

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

- a) Give mode of action of thyroid hormone.
- b) Therapeutic effects of Corticosteroid antagonist.
- c) Classify antithyroid drugs with example.
- d) What are Tocolytics? Explain in brief.

- e) Classify Oral hypoglycemic agents with example.
- f) Enlist the functions of hormone.
- g) Define Oxytocic agent and mechanism of action of oxytocin.

Q6) Write a notes on (Any two)

[10]

- a) Androgens
- b) Parathyroid hormone
- c) Progestins
- d) Therapeutic effects of glucocorticoids.



Total No. of Questions : 6]

SEAT No. :

P1546

[Total No. of Pages : 3

[4949] - 5005

Third Year. B.Pharmacy (Semester - V)

**ANALYTICAL PHARMACOGNOSY AND EXTRACTION
TECHNOLOGY
(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) *Neat diagrams must be drawn wherever necessary.*
- 4) *Figures to the right indicate full marks.*

SECTION - I

Q1) Attempt any one of the following [10]

- a) Explain the Principle, Instrumentation and Applications of Supercritical Fluid Extraction system.
- b) Explain the process of Continuous solvent extraction method with its applications.

Q2) Attempt ANY FIVE of the following. [15]

- a) Give the chemical tests for Reserpine and Curcumine.
- b) Explain the isolation procedure of Eugenol.
- c) Describe different types of Paper chromatography methods.
- d) Define extraction and explain the process of Mass transfer.
- e) Add an note on methods used in preparation of thin layers in TLC.
- f) Explain the extraction method of Rose oil.
- g) Explain the procedure of sampling of crude drugs.

P.T.O.

Q3) Attempt any Two.

[10]

- a) Explain the Maceration and Decoction process.
- b) Explain the principle and advantages of HPTLC method.
- c) Explain the procedure for determination of Tannin content as per WHO guidelines.
- d) Define Adulteration and explain its types with suitable examples.

SECTION - II

Q4) Attempt any One of the following.

[10]

- a) Describe in detail
 - i) Methods of determining Moisture content in crude drugs
 - ii) Different types of Ash value with their significance.
- b) Describe in detail the Thin layer chromatographic procedure and explain its advantages over Paper chromatography.

Q5) Attempt any Five of the following.

[15]

- a) Give the extraction procedure of Diosgenin.
- b) Explain the extraction of peppermint oil by Steam distillation method
- c) Explain the percolation and infusion process.
- d) Give the chemical tests of sennosides and andrographolides.
- e) Give the principle and applications of Microwave assisted extraction technique.

- f) Define the following terms as per WHO guidelines
- i) Active Pharmaceutical Ingredient
 - ii) Analytical work sheet
 - iii) Control sample
- g) Give the general chemical tests for detection of alkaloids.

Q6) Attempt any Two

[10]

- a) Add and exhaustive note on “Quality Manual”.
- b) Explain the principle and applications of Counter current extraction method.
- c) Explain the Fractional Distillation and Sublimation techniques.
- d) Explain the Principle and applications of HPLC method.



Total No. of Questions : 6]

SEAT No. :

P4582

[Total No. of Pages :2

[4949]-5006

Third Year B. Pharmacy (Semester - V)

**PHARMACEUTICAL BUSINESS MANAGEMENT & DISASTER
MANAGEMENT
(2013 Pattern)**

Time : 3 Hours]

[Maximum Marks : 70

Instructions to the candidates:

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

SECTION - I

Q1) What is organizing? Give structure, principles, decentralization an delegation. **[10]**

OR

Define Decision making. Explain the process, types with importance of decision making.

Q2) Answer any Five (Each three marks):

[15]

- a) Give an objectives and principals of purchasing.
- b) Describe various types of planning.
- c) What is management audit?
- d) Define objective. Give importance of objective
- e) Write short note on Inventory control.
- f) State about various channels of distribution
- g) Line & staff organization

Q3) Write note on any two (Each Five Marks):

[10]

- a) Fayal's contribution in modern management
- b) Material management
- c) Break even analysis
- d) Budgetary & non budgetary control

P.T.O.

SECTION - II

Q4) Drug discovery & development process is Important for pharma industries.
Justify the sentence. **[10]**

OR

Give in detail about the product life cycle of a pharmaceutical product.

Q5) Answer any five (Each three marks): **[15]**

- a) What is Maslow's theory?
- b) Factors affecting on price.
- c) Give role of medical representative.
- d) Give the importance of marketing research.
- e) What are various methods of advertising?
- f) Describe in brief various types of disaster.
- g) Give brief account of interview technique.

Q6) Answer any two (Each five marks): **[10]**

- a) Write note on Geological and mountain area disasters.
- b) Disaster Preparedness plan.
- c) Sales promotion.
- d) Theory X & Y.



Total No. of Questions : 6]

SEAT No. :

P1547

[Total No. of Pages : 3

[4949] - 5007

T.Y. B.Pharmacy

ACTIVE PHARMACEUTICAL INGREDIENT TECHNOLOGY

(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.*

SECTION - I

Q1) Attempt any one question.

[10]

Define nitration. Discuss various nitrating agents. Describe the manufacture of any one Active Pharmaceutical ingredient by nitration process.

OR

What is amination by reduction? Discuss various methods of preparation of amines. Describe the manufacture of any one Active pharmaceutical ingredient by reductive amination process.

Q2) Attempt any five

[15]

- a) Define Active pharmaceutical ingredient, Bulk drug and Fine chemical with example of each.
- b) Differentiate between unit operation and unit process.
- c) Explain any two methods for characterization of polymorphs.
- d) Mention the methods for resolution of racemates. Explain any one method in detail.

P.T.O.

- e) Define oxidation. Enlist various oxidising agents.
- f) Define the term hydrolysis. Write a note on alkali hydrolysis.
- g) Enlist significance of chirality in API industry.

Q3) Attempt any two **[10]**

- a) Discuss continuous process and batch process and their advantages over each other.
- b) Explain the importance of polymorphism in API.
- c) Mention various approaches for assymmetric synthesis. Explain assymmetric synthesis of Propranolol.
- d) Outline the GMP guidelines for API (QTa) with respect to following points.
 - i) Building and Facilities
 - ii) Documentation and Records.

SECTION - II

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

Enlist and discuss suitable strategies for selection of the most appropriate route for scale - up of API.

OR

What is a Material safety data sheet? Give a brief account on the contents of a MSDS.

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

- a) Give a brief account of characteristics of ideal reagent for preparation of API.
- b) Discuss type of health hazards in API manufacturing.
- c) Enlist the green approaches used in API preparation and discuss any one.

- d) Explain the primary physical characteristics of solvents for scale - up of API.
- e) Give a brief account of analytical tools that are employed as IPCs in API manufacturing.
- f) Discuss effect of any two process variables in API manufacturing.
- g) Draw the flow chart for manufacturing of Atenolol.

Q6) Write short notes on (Any two)

[10]

- a) Reactors in API manufacturing
- b) Manufacturing procedure with flow charts for Ranitidine.
- c) Suitable techniques for API purification and isolation.
- d) Personal protection in API manufacturing.



Total No. of Questions : 6]

SEAT No. :

P1548

[Total No. of Pages : 2

[4949] - 6001

T.Y. B.Pharmacy (Semester - VI)

INDUSTRIAL PHARMACY - 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 principle and factors influencing development of a stable antacid suspension of combined Aluminium hydroxide paste and Magnesium hydroxide gel. **[10]**

OR

Explain stability of suspensions and describe in detail role of particle size, density and viscosity in development of a stable suspension.

Q2) Answer the following (Any 5) **[15]**

- a) Describe the molecular basis of surface tension affecting manufacturing of emulsion.
- b) With the help of its neat labeled diagram, describe the role of ultrasonifiers in manufacturing of disperse systems.
- c) Enlist the quality control parameters of emulsions. Describe any one in detail.
- d) Explain the concept of phase inversion temperature.
- e) Describe briefly the structured vehicle concept.
- f) What is wetting? How wettability of solids is measured? What is role of wetting in manufacturing of emulsions?
- g) Describe layout for manufacturing of Disperse system as per Schedule M.

P.T.O.

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

- a) Identification test for type of Emulsion
- b) Multiple emulsion
- c) Packaging and labeling of Suspension
- d) Acid neutralizing capacity (As per USP)

SECTION - II

Q4) Describe various routes a drug substance may take to penetrate the skin.[10]

OR

Describe the *in vitro* and *in vivo* methods for studying drug diffusion through skin.

Q5) Answer the following (Any 5) [15]

- a) How is the spreadability of dermatological preparations evaluated?
- b) “One point viscometers are useless to study rheology of dermatologicals”- explain.
- c) “Mixed emulsifier systems for dermatologicals give better results than single emulsifier systems”- explain.
- d) How low energy emulsification may be useful in saving energy during manufacturing of dermatologicals?
- e) Write in brief about ‘emulsified ointment bases’.
- f) Discuss different types of antioxidants used in dermatologicals.
- g) How the safety and efficacy testing of dermatologicals is done?

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

- a) Penetration enhancers
- b) Properties of gels
- c) Viscosity evaluation of dermatologicals
- d) Equipments in manufacturing of semisolids



Total No. of Questions : 6]

SEAT No. :

P1549

[Total No. of Pages : 2

[4949] - 6002

T.Y. B.Pharmacy (Semester - VI)
PHARMACEUTICAL ANALYSIS - IV
(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 the principle of TLC. Discuss the different types of stationary phase used in this technique. Write the applications of TLC. **[10]**

OR

Discuss the principle, instrumentation and developments of Electrophoresis.

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

- a) Write principle of HPTLC.
- b) Explain "Capacity factor".
- c) Discuss the types of chromatographic paper.
- d) Write about column packing techniques.
- e) Discuss the merits and demerits of HPTLC.
- f) How the efficiency of column can be increased?
- g) Discuss the pharmaceutical applications of paper chromatography.

P.T.O.

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

- a) Applications of HPTLC.
- b) Partition paper Chromatography.
- c) Applications of DSC.
- d) Rate and plate theory of chromatography.

SECTION - II

Q4) Discuss the technique of Isothermal Titration Calorimeter. [10]

OR

Discuss any five parameters of analytical method validation as per ICH guidelines.

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

- a) Explain the term User Requirement Specification with suitable examples.
- b) How is radius calculated in X-ray diffraction?
- c) What is static TGA and Dynamic TGA?
- d) What are instrumental factors affecting TGA results?
- e) What are the factors affecting DTA results?
- f) Using appropriate example, explain the effect of gaseous environment on TGA results.
- g) Draw schematic diagram of DTA apparatus.

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

- a) Operational Qualification.
- b) System suitability parameters as per USP.
- c) Interaction of nuclear radiation with matter.
- d) Instrumentation for X-ray Diffraction.



Total No. of Questions : 6]

SEAT No. :

P1550

[Total No. of Pages : 2

[4949] - 6003

T.Y. B.Pharmacy (Semester - VI)

MEDICINAL CHEMISTRY - 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) *Draw diagrams wherever necessary.*
- 4) *Figures to the right indicate full marks.*

SECTION - I

Q1) Classify oral hypoglycemic agents with examples. Discuss first and second generation sulfonylurea derivatives as oral hypoglycemic agents. Draw scheme of synthesis of Metformin. **[10]**

OR

Classify anticonvulsant drugs based on ureide structure with examples. Discuss general chemistry, MOA of Barbiturates and Hydantoins. Draw scheme of synthesis of Phenytoin. **[10]**

Q2) Solve any **FIVE** of the following: **[15]**

- a) Discuss inhalational General Anesthetics highlighting their advantages and disadvantages.
- b) Draw scheme of synthesis of Diazepam.
- c) What are analeptic agents? Discuss Purines (Xanthines) as analeptics.
- d) Discuss SAR of local anesthetics.
- e) Discuss 2-phenylethylamine derivatives as hallucinogens.
- f) Discuss SAR of Benzodiazepines as sedative, hypnotic agents.
- g) Draw scheme of synthesis of sodium valproate.

P.T.O.

Q3) Solve any **TWO** of the following: [10]

- a) Write a note on 'Anti-migraine agents'.
- b) Discuss intravenous general anesthetic agents.
- c) Discuss the SAR of Barbiturates.
- d) Classify local anesthetics with examples. Draw scheme of synthesis of Procaine.

SECTION - II

Q4) Elaborate various phase - I & phase - II drug metabolism reactions with suitable examples. [10]

OR

What are antidepressants? Discuss general chemistry, SAR of tricyclic antidepressants. Draw scheme of synthesis of Amitriptyline. [10]

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

- a) Classify antipsychotics with examples.
- b) Draw scheme of synthesis of Haloperidol.
- c) Draw structure and give MOA of Amantadine.
- d) Discuss selective serotonin reuptake inhibitors as antidepressants.
- e) Give the metabolic fate of Diazepam and metformin.
- f) What are anxiolytics? Discuss any two agents in detail.
- g) Discuss any two butyrophenone derivatives as antipsychotics.

Q6) Solve any **TWO** of the following: [10]

- a) What are diagnostic agents? Discuss iodine containing compounds as diagnostic agents.
- b) Give SAR of phenothiazines with suitable examples.
- c) Classify antiparkinsonian drugs with examples.
- d) Write a note on 'Antialzheimer's drugs'.



Total No. of Questions : 6]

SEAT No. :

P1551

[Total No. of Pages : 2

[4949] - 6004

T.Y. B.Pharmacy (Semester - VI)

PHARMACOLOGY - III

(2013 Pattern)

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) *Draw well labeled diagrams wherever necessary.*

SECTION - I

Q1) Explain the mechanism of action, the pharmacological actions adverse effects and therapeutic uses of Diazepam. **[10]**

OR

Classify antidepressants. Discuss mechanism of action, pharmacological actions, adverse effects and therapeutic uses of fluoxetine. **[10]**

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

- a) What do you mean by redistribution of barbiturates?
- b) Classify antiepileptic drugs and explain mechanism of action of phenytoin.
- c) What are the signs, symptoms and treatment of barbiturate poisoning?
- d) Write a brief note on a typical antidepressants.
- e) Explain pharmacological actions and metabolism of alcohol.
- f) Classify antiparkinson's drugs. Explain mechanism of action and adverse effects of levodopa.
- g) Explain surface anesthesia. Write mechanism of action of procaine.

P.T.O.

- Q3)** Attempt any two: **[10]**
- a) Classification of seizure and drug employed in its management.
 - b) Write a note on pre and post-anesthetic medications.
 - c) Write a note on antipsychotics.
 - d) Write a note on MAO inhibitors.

SECTION - II

- Q4)** Write pharmacological account of emetics and anti-emetics. **[10]**

OR

- Classify NSAIDS and write pharmacological details of Aspirin. **[10]**

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

- a) Classify antitussives.
- b) Write a short note opoid antagonists.
- c) Define and classify laxatives.
- d) Write MOA and adverse effects of Omerazole.
- e) Write pharmacotherapy of gout.
- f) Write a note on Morphine poisoning.
- g) Define and classify opoid analgesics.

- Q6)** Attempt any two: **[10]**

- a) Classify drugs used in bronchial asthma and add a note on β -agonists.
- b) Write pharmacotherapy of diarrhea.
- c) Write pharmacotherapy of Rheumatoid arthritis.
- d) Explain pharmacotherapy of Peptic Ulcer.



Total No. of Questions : 6]

SEAT No. :

P1552

[Total No. of Pages : 2

[4949] - 6005

T.Y. B.Pharmacy (Semester - VI)
NATURAL PRODUCT 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) *Neat diagrams must be drawn wherever necessary.*
- 4) *Figures to the right indicate full marks.*

SECTION - I

Q1) Attempt any one of the following: **[10]**

- a) Explain in detail tracer techniques for elucidation of biosynthetic pathways.
- b) Describe characterization and structural elucidation of terpenoids by chemical methods.

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

- a) Write a note on refractive index.
- b) Give chemical classification and properties of natural colors.
- c) Define natural sweeteners and add a note on Katemfe.
- d) Add a note on beet and indigo.
- e) Explain receptor binding property.
- f) Write a note on rate of reactions.
- g) Write a note on elucidation of biosynthetic pathways by isolated organ tissues and grafts.

P.T.O.

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

- a) Give principle and applications of Gas chromatography.
- b) Describe anticancer drugs from marine source in detail.
- c) Explain principle and application of IR.
- d) Describe Cochineal and madhunashini.

SECTION - II

Q4) Attempt any one of the following: **[10]**

- a) Describe in detail method of TLC along with its advantages and applications.
- b) Describe in detail determination of carbon skeleton by chemical and spectroscopic methods.

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

- a) Write a note on combustion analysis.
- b) Describe molecular rotation differences.
- c) Write a note on candyleaf.
- d) Explain circular dichroism.
- e) Write a note on yasti.
- f) Give applications of mass spectroscopy.
- g) Define nutritive sweeteners and taste modifiers.

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

- a) Write a note on strategies on new drug discovery.
- b) Explain principle and applications of HPLC.
- c) Describe drugs acting on cardiovascular system from marine source.
- d) Explain in detail gudmar as a sweetner.



Total No. of Questions : 6]

SEAT No. :

P1553

[Total No. of Pages : 2

[4949] - 6006

T.Y. B.Pharmacy (Semester - VI) (Theory)
BIOORGANIC CHEMISTRY & DRUG 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 side indicate full marks.*

SECTION - I

Q1) Explain relevance of Cyclooxygenase 1 and 2 in pain and inflammation management with their inhibitors. Explain the cascade of tyrosine kinase enzyme and its relevance in designing their inhibitors with suitable examples. **[10]**

OR

Discuss Molecular Adaptation in detail. Explain various interactions involved in Molecular Recognition.

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

- a) Explain physiological role of MAO.
- b) Explain biochemical role of HMG-CoA reductase and its relevance in designing drugs.
- c) Define Molecular recognition and explain its types.
- d) Discuss DHFR inhibitors.
- e) Write a note on Intercalation.
- f) Explain strand breaking by the drugs.
- g) Explain hydrolytic cleavage of strand breaking.

P.T.O.

Q3) Answer **any two** of the following: [10]

- a) Write a note on structure of GABA_A receptors. Give its physiological role.
- b) Explain PPAR γ receptors. Explain mechanism of action of drugs acting on PPAR γ .
- c) Write a note on estrogen, its receptor and mechanism of their estrogenic action.
- d) Write a note on adrenergic receptors and give their types.

SECTION - II

Q4) Explain in detail drug discovery process. [10]

OR

Write in detail about Ligand-based drug design strategy in drug discovery.

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

- a) Write a note on lead optimization.
- b) Explain history of QSAR.
- c) Explain the concept of soft drugs.
- d) Write a note on molecular docking.
- e) Explain molecular dynamics.
- f) Write a note on descriptors used in QSAR model.
- g) Explain Hansch analysis.

Q6) Answer **any two** of the following: [10]

- a) Write applications of prodrug and give one example.
- b) Explain structure-based drug design.
- c) Discuss discovery of Captopril.
- d) Write a note on 2D and 3D-QSAR.



Total No. of Questions : 6]

SEAT No. :

P2650

[Total No. of Pages : 2

[4949]-6007

Third Year B. Pharmacy (Semester - VI)
PHARMACEUTICAL BIOTECHNOLOGY
(2013 Pattern)

Time : 3 Hours]

[Max. Marks : 70

Instructions to the candidates:-

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

SECTION - I

Q1) Define biotechnology. Write applications on biotechnology to Pharmaceutical industry. Add a note on steps involved in recombinant DNA technology and methods of screening the recombinants. **[10]**

OR

Explain different methods of gene transfer and explain role of following enzymes in rDNA technology: Restriction endonuclease, S1 nuclease, alkaline phosphatase and ligase.

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

- a) Write benefits and method of preparation of cDNA.
- b) What is blotting? Write in brief about Northern blotting.
- c) Explain method for DNA isolation.
- d) Give significance of DNA hybridization
- e) Describe in brief-DNA fingerprinting
- f) Explain principle and applications involved in RFLP.
- g) Arrange the following vectors with increasing order of insert size:pBR 322, YAC, pPIC, pGEX-3X.

Add a note on expression vector.

P.T.O.

Q3) Write short notes on any Two of the following: [10]

- a) Gene synthesis
- b) Cloning vectors
- c) Site directed mutagenesis
- d) Gel electrophoresis

SECTION - II

Q4) Explain benefits, types and technique/s of human gene therapy with examples.[10]

OR

Explain benefits of recombinant DNA product. Write a detailed account on production of rDNA constructs and uses of Somatotropin.

Q5) Answer any five of the following [15]

- a) Give method/s and application/s of germplasm storage.
- b) What is enzyme immobilization? Give its applications
- c) Explain the components of fermentor with their role.
- d) Describe production of interferons by rDNA technology and its applications.
- e) Write benefits of transgenic animals with suitable example/s.
- f) Give role of HAT medium in monoclonal antibody production.
- g) How to control foam during fermentation?

Q6) Write short notes on any two of the following: [10]

- a) Down stream processing
- b) Application of fermentation in manufacturing of vitamin.
- c) Monoclonal antibodies
- d) Germplasm storage.

