

Total No. of Questions : 6]

SEAT No. :

P1426

[5049]-101

[Total No. of Pages : 2

**F.Y. B.Pharmacy
PHARMACEUTICS - I
(2013 Pattern) (Semester - I)**

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:

- a) What are the various branches of Pharmaceutics? Write the scope of pharmaceutical engineering. **[10]**

OR

- b) 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 Indian Pharmacopoeia.
- b) Write the principles of Unani as alternative system of medicine.
- c) Write the classification of dosage forms.
- d) Describe ayurvedic system of medicine.
- e) Enlist the different routes of drug administration.
- f) What are excipients? Explain the different flavours used in pharmaceuticals.
- g) Define drug, write the different sources of drug with suitable examples.

Q3) Write short note (any two):

[10]

- a) Pharmacy code of ethics.
- b) USP.
- c) Preservative used in pharmaceuticals.
- d) Ayurvedic Pharmacopoeia.

P.T.O.

SECTION - II

Q4) Attempt any one:

- a) What are solution? Explain various methods to improve the solubility of poor water soluble drug. [10]

OR

- b) Write in detail account of bulk characterisation in preformulation study. Add a note on importance of pH and pK_a in it.

Q5) Attempt any Five: [15]

- a) Differentiate between syrup and Elixir.
b) Write methods of preparation of Aromatic water.
c) Discuss formulation of thorat paints.
d) Enlist various IPQC and quality control tests for solution.
e) Justify the statement “Preformuation is key step in pharmaceutical product development”.
f) Explain factor affecting the rate of solution.
g) Give the importance of particle size as preformulation parameter.

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

- a) Raw material control of quality variation.
b) Enema.
c) Concept of preformulation.
d) Factor affecting the stability of pharmaceutical product.



Total No. of Questions : 6]

SEAT No. :

P1427

[5049]-102

[Total No. of Pages :2

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

SECTION-I

Q1) Explain in detail any one: **[10]**

- a) Explain different steps in compounding.
- b) Describe in detail prescription.

Q2) Answer in brief. (Solve any Five): **[15]**

- a) Explain pricing of prescription
- b) Give aims and objective of patient medication record
- c) Define compounding and dispensing.
- d) Explain briefly purchase record.
- e) Calculate the amount of 90% and 40% of alcohol to be mixed to get 500 ml of 60% alcohol.
- f) Explain the various formulas for calculation of child dose.
- g) Explain the Pictogram with examples.

Q3) Solve any two from the following: **[10]**

- a) Explain in details good dispensing practices.
- b) Write a note on labeling of dispensed medicines.
- c) Add note on stock Record
- d) Storage and stability of medicine.

P.T.O.

SECTION-II

Q4) Answer any one question from following: **[10]**

- a) Explain in detail Patient counseling.
- b) Explain in detail Therapeutic incompatibility and method to eliminate it.

Q5) Answer in brief.(Solve any five) **[15]**

- a) Explain in detail patient counseling for diabetis.
- b) Write a note on reporting of ADR.
- c) Give any three formulas for dose calculation.
- d) Explain role of pharmacist in family planning.
- e) Discuss on physical incompatibility.
- f) Explain types of drug store.
- g) Explain Legal requirement of establishment of drug store.

Q6) Solve any two form following: **[10]**

- a) Write a note on Chemical incompatibility
- b) Explain in detail Pharmacovigilance.
- c) Explain role of Pharmacist in AIDS awareness.
- d) Write in short concept of self medication.



Total No. of Questions : 6]

SEAT No. :

P1428

[5049]-103

[Total No. of Pages : 3

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) Attempt any one from the following: **[10]**

- a) Define Limit test. Explain in detail limit test of Arsenic and Iron.
- b) Define Antacids. Write ideal properties of Antacids. Explain combination of Antacids in detail with two examples.

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

- a) Write a note History of Indian Pharmacopoeia.
- b) Discuss Preparation, properties and uses of Bismuth compounds.
- c) Define Hardness of water and enlist methods to remove temporary and permanent hardness of water.
- d) Define Monograph. Explain the term Storage condition in Monograph.
- e) Explain in brief Acidifying agents.
- f) Write Preparation, Properties and uses of Sodium Hypochlorite.
- g) Explain in brief Copper as trace ion.

P.T.O.

Q3) Solve any two from the following: **[10]**

- a) Role of Calcium and Bicarbonate in our body.
- b) Explain in brief electrolyte replacement therapy.
- c) Discuss official control test of water.
- d) Write in brief about role of zinc as base ion and give properties and uses of Zinc Sulphate.

SECTION - II

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

- a) Explain in detail electrolytes used in acid base combination therapy.
- b) What are Antimicrobial agents? Explain their mode of action. Write Properties, assay and uses of Potassium Permanganate.

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

- a) Define along with examples
 - i) Anticaries agents
 - ii) Astringents
 - iii) Antidotes
- b) Write storage and labeling conditions for Nitrogen, Nitrous oxide and Oxygen as inorganic gases.

- c) Write short note on properties and uses of sodium thiosulphate.
- d) Write in brief about Sodium Fluoride as Anticaries agent.
- e) Write a note on Zinc as trace ion.
- f) Enlist the contents of individual monographs.
- g) Explain ORS (Oral Rehydration Salt).

Q6) Solve any two from the following:

[10]

- a) Explain Barium Sulphate as Radio opaque Contrast Media.
- b) Write a note on Ammonium Chloride as a expectorant.
- c) Explain Properties and uses of sodium potassium tartarate and magnesium sulphate.
- d) What are topical protective agents? Explain in detail Talc and Zinc oxide as protectives.



Total No. of Questions : 6]

SEAT No. :

P1429

[5049]-104

[Total No. of Pages :4

F.Y.B.Pharmacy

PHARMACEUTICAL ORGANIC CHEMISTRY-I

(2013 Pattern) (Semester-I)

Time : 3 Hours]

[Max. Marks : 70

Instructions to the candidates:

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

SECTION-I

Q1) What are Elimination Reactions? Discuss the mechanism, stereochemistry, kinetics and orientation involved in Elimination Reaction. **[10]**

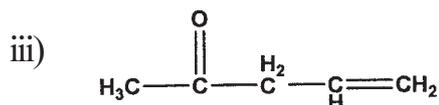
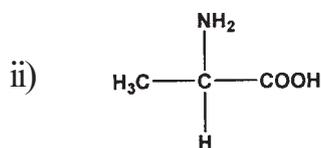
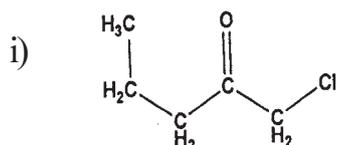
OR

Explain in brief about factors affecting electron availability with suitable examples.

Q2) Solve any five:

[15]

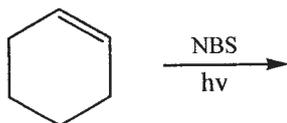
a) Give the IUPAC name of the following compounds



b) Define and illustrate Resonance Effect.

P.T.O.

c) Predict the product and give the mechanism.



d) What is necessary condition for optical isomerism?

e) Draw as many Resonance Structures as you can for following

i) Toluene

ii) Nitro Benzene

f) Explain SP^3 Hybridization of Carbon.

g) 1,2- addition product predominates at a low temperature in electrophilic addition reactions in conjugated dienes. Explain.

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

a) Explain Optical Isomerism of Tartaric Acid

b) Explain Chemical Properties of Alkanes

c) Explain orientation & Reactivity in monosubstituted benzene.

d) Explain Mechanism & Regioselectivity in addition reaction of alkenes with respect to oxymercuration-demercuration.

SECTION-II

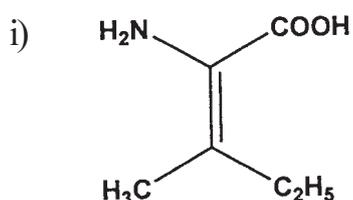
Q4) Explain Reaction & Mechanism of hydrogenation & Halogenation with C-C multiple bond. **[10]**

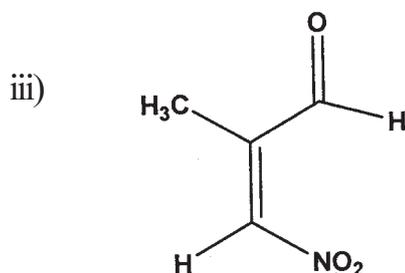
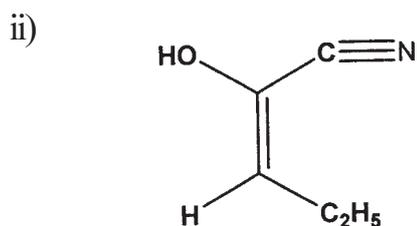
OR

What is Huckel's rule for aromaticity? Explain aromatic electrophilic substitution reaction in benzene with respect to sulphonation and Halogenation.

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

a) Establish E & Z configurations



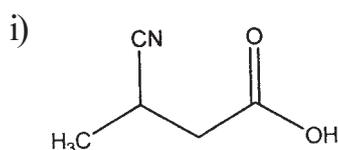


- b) Explain hybridization of atomic orbitals of Oxygen.
- c) Define the following terms and give suitable examples of each:
- Activating group
 - Deactivating group
 - Ortho and para director
- d) Enlist three examples of Electrophiles & Nucleophiles.
- e) Define and illustrate Geometric Isomerism.
- f) Explain Distereoisomerism with suitable example.
- g) Compare the stability of primary, secondary and tertiary Carbanion.

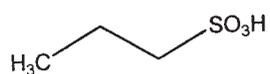
Q6) Answer the following (any Two):

[10]

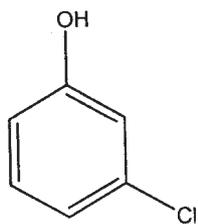
- Write a note on Diels- Alder reaction
- Give General methods of preparation and reactions of Alkenes.
- Explain Mechanism of nucleophilic aromatic substitution reaction.
- What are the names of following compounds in the IUPAC system?
(any five)



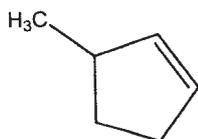
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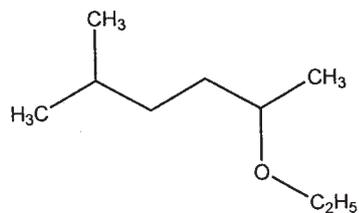
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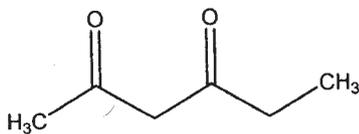
iv)



v)



vi)



Total No. of Questions : 6]

SEAT No. :

P1430

[5049]-105

[Total No. of Pages : 2

F.Y. B. Pharmacy

HUMAN ANATOMY AND PHYSIOLOGY-I

(2013 Pattern) (Semester-I)

Time : 3 Hours]

[Max. Marks : 70

Instructions to the candidates:

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

SECTION-I

Q1) Explain functions of blood and discuss in detail blood clotting mechanism.

[10]

OR

Draw a neat labelled diagram of interior of heart and explain in detail cardiac cycle.

Q2) Answer Any Five:

[15]

- a) Explain structure and functions of lymph node.
- b) Discuss role of pancreas in digestion.
- c) Draw a neat labelled diagram of different types of human tissues.
- d) What do you understand by 'Balanced Diet'? Enlist nutritional deficiency disorders.
- e) Enlist & elaborate any three disorders of digestive system.
- f) Write a note on neurohumoral control of alimentary tract.
- g) Write composition and functions of bile.

Q3) Write notes on Any Two:

[10]

- a) Blood cells.
- b) Small intestine.
- c) RAAS.
- d) Structure and functions of Large intestine.

P.T.O.

SECTION-II

Q4) Explain in detail structure of cell membrane and movement of materials across plasma membrane. **[10]**

OR

Discuss anatomy of skeletal muscle and explain mechanism of muscle contraction.

Q5) Answer Any Five: **[15]**

- a) Write a note on 'haemolytic disease of new born'.
- b) Define:
 - i) Myasthenia gravis.
 - ii) Thrombocytopenia.
 - iii) Angina pectoris.
- c) Differentiate between Mitosis and Meiosis.
- d) What are the types of body fluids?
- e) Explain the cell mediated immunity.
- f) Write a note on 'erythropoiesis'.
- g) Explain method of BP measurement.

Q6) Write notes on Any Two: **[10]**

- a) Homeostasis.
- b) Energy metabolism in muscle tissue.
- c) Allergy.
- d) Protein synthesis.



Total No. of Questions : 6]

SEAT No. :

P1431

[5049]-106

[Total No. of Pages : 2

F.Y.B.Pharm.

COMMUNICATION & SOFT SKILL DEVELOPMENT
(Semester - I) (2013 Pattern)

Time : 3Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) Attempt all questions.*
- 2) Figures to the right indicate full marks.*

SECTION - I

Q1) Answer any one: [10]

- a) State the importance and need for technical communication. Differentiate between technical communication and general writing.
- b) Define communication. Enlist types of communication. Describe barriers of communication and effective treatment.

Q2) Answer any five: [15]

- a) Explain brevity, clarity and appropriateness in communication.
- b) Explain salient features of agenda and minutes of a meeting.
- c) Explain any three types of business letters.
- d) Explain the importance of written business communication.
- e) Differentiate between formal and informal communication.
- f) Explain structuring a message and effective ways to improve the same.
- g) Write a note on electronic mail.

Q3) Answer any two: [10]

- a) Write a short note on body language and gestures.
- b) Explain language as a tool of communication.
- c) A pharmacy college wants to make enquiry for purchase of books for its library. Write business letter regarding the same.
- d) What is a business report? Explain its structure.

P.T.O.

SECTION - II

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

- a) Explain in detail about interview skills and overview of resume.
- b) Give details about scope, significance of Information technology in global business.

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

- a) Explain in brief intra and inter personal skills.
- b) Write a note on teleconferencing and video conferencing.
- c) Give importance of drafting, editing in preparation of final report.
- d) Give significance of accents, intonation and rhythm.
- e) Give a note on empathy.
- f) Write a short note on circular and memo.
- g) Write a note on phonetics and symbols.

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

- a) Write a job application letter for vacancy in production department of a pharmaceutical company.
- b) Write a note on problem solving.
- c) Give importance of group discussion (GD).
- d) Write a note on critical thinking.



Total No. of Questions : 6]

SEAT No. :

[Total No. of Pages :2

P1432

[5049]-201

F.Y.B.Pharm.

PHARMACEUTICS-II

(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) *Neat diagrams must be drawn wherever necessary.*
- 4) *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, adavantages and disadvantages of plate and frame filter press.
- b) Explain unit dose packaging of pharmaceuticals? Explain the role of packaging.

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

- a) Explain the types of packaging materials
- b) Discuss Principle of leaf filter and draw a neat, labeled diagram of leaf filter.
- c) Explain the hydrolytic resistance test for glass.
- d) Write a note on powder gradation.
- e) Write a note on meta filter.
- f) Write a note on the pouch filling machine and discuss semisolid packaging.
- g) Summarize the factors affecting rate of filtration.

P.T.O.

Q3) Write note on any Two: [10]

- a) Elutriation method of size separation
- b) Colloid Mill.
- c) Hammer mill
- d) Plastic as a packaging materials.

SECTION-II

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

- a) Define absorption. Discuss the mechanism and factor affecting drug absorption by oral route.
- b) Explain importance of GMP and explain the basic requirements for CGMP (Current Good Manufacturing Practices).

Q5) Attempt any five questions: [15]

- a) Draw a general layout for pharmaceutical manufacturing plant.
- b) Discuss the flow pattern during mixing.
- c) Write a note on bioavailability and bioequivalence.
- d) Explain the turbine mixer.
- e) Explain the parental route of drug administration.
- f) Discuss the role of quality assurance.
- g) Explain the first pass affect.

Q6) Write note on any Two: [10]

- a) Various impellers in mixing of liquids.
- b) Define vortex. Explain disadvantages of vortex and how to prevent vortex formation?
- c) Various routes of drug administration.
- d) Plasma drug concentration time profile.



Total No. of Questions : 6]

SEAT No. :

P1433

[5049]-202

[Total No. of Pages : 2

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) Classify suppositories with its evaluation. **[10]**

OR

Describe theories of emulsions, and its formulation aspects. **[10]**

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

- a) Short note on microemulsions.
- b) Explain deflocculated and flocculated suspensions.
- c) Elaborate mechanism of dissolution.
- d) Note on formulation of efferevescences granules.
- e) Explain incorporation method.
- f) Explain importance and methods of granulation.
- g) Describe Noyes - Whitney equation.

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

- a) Note on low energy emulsification technique.
- b) Describe Self emulsifying drug delivery system.
- c) Elaborate Evaluation of suspensions.
- d) Short note on Compounding of Suppositories.

P.T.O.

SECTION - II

Q4) Elaborate suspensions with its Classification and explain its applications in drug delivery systems. **[10]**

OR

Short note on Radiopharmaceuticals with its therapeutic applications. **[10]**

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

- a) Discuss various approaches of solubility enhancement.
- b) Note on physical stability of suspension.
- c) Explain importance of displacement value.
- d) Give difference between suppository and pessary.
- e) Elaborate preparation of radiopharmaceuticals.
- f) Explain fusion method for preparation of ointments.
- g) Give detail account on dry suspension.

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

- a) Jellies as dosage forms.
- b) Suspending agents.
- c) Factors affecting stability of suspension.
- d) Suppository bases.



Total No. of Questions :6]

SEAT No. :

[Total No. of Pages :2

P1434

[5049] - 203

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 answer books.*
- 3) *Figures to the right side indicate full marks.*

SECTION - I

Q1) Explain Errors in pharmaceutical analysis in detail. Discuss about accuracy & precision. **[10]**

OR

What are different types of titration curve in acid base? Explain titration curve for weak acid Vs strong base.

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

- a) Classify acid base indicator with suitable example.
- b) Explain Chromophore theory of neutralization indicator.
- c) Explain Buffer index with suitable example.
- d) Define the term Normaliy, mole fraction & quantitative analysis.
- e) Explain leveling effect of nonaqueous solvents with example.
- f) Explain titration of amino acid.
- g) Compare theories of acid base.

P.T.O.

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

- a) Non - aqueous titration solvents.
- b) pH and pOH.
- c) Statistical significance test.
- d) Acid - Base buffers.

SECTION - II

Q4) Give principle of complexometry titration. Explain different types of complexometry titration. **[10]**

OR

Enlist different method of redox titration. Explain in detail permangnometry method.

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

- a) Explain preparation and standardization of 0.05M disodium EDTA.
- b) Explain fajans method with example.
- c) Masking and demasking approach.
- d) Diazotization titration.
- e) Define Chelation, Ligand & sequestering agent.
- f) Discuss volhadrs method.
- g) Explain Metal - EDTA titration curve.

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

- a) Comparison of Iodometry & Iodimetry method.
- b) Redox indicator.
- c) Precipitation in gravimetry analysis.
- d) Precipitate solubility factors: pH, temperature, solubility of product & common ion.



Total No. of Questions : 6]

SEAT No. :

P1435

[5049]-204

[Total No. of Pages : 3

F.Y.B. Pharmacy

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

Time : 3 Hours]

[Max. Marks : 70

Instructions to 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

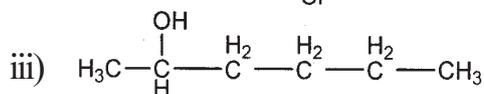
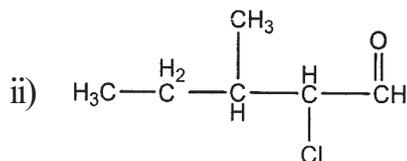
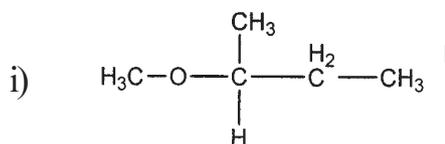
Q1) Aldehydes and Ketones are susceptible for nucleophilic addition reactions explain. Write any two methods of preparation of aldehydes and write a note on aldol condensation. [10]

OR

What are phenols, explain their acidic nature, explain any three methods and three reactions of phenols. [10]

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

- a) Draw structures from IUPAC names of following.
 - i) 2-methoxy propane
 - ii) 4-nitrophenol
 - iii) 2-pentanol
- b) Write IUPAC names for following structures.



P.T.O.

- c) Discuss reactions of alcohols with conc. Sulphuric acid.
- At room temperature
 - At 170°C
 - Dehydration at 140°C
- d) Discuss mechanism of Claisen reaction.
- e) Explain Perkin Reaction.
- f) Explain Cannizaro reaction.
- g) How will you distinguish among primary, secondary and tertiary alcohols.

Q3) Solve any two: [10]

- Give any two methods of preparation and two reactions of Sulphonic Acids.
- Explain Reformatsky reaction.
- Write a note on Knoevenagel condensation.
- Write any two methods of preparations and two reactions of Ethers.

SECTION - II

Q4) Explain the substitution Nucleophilic unimolecular reaction, with mechanism and stereochemistry giving suitable examples. [10]

OR

Write method of preparation of following: [10]

- Acid chlorides
- Anhydrides
- Amides
- Esters

Q5) Solve any Five

[15]

- a) Describe how primary, secondary and tertiary amines can be separated from mixture.
- b) Explain acid catalyzed esterification of carboxylic acids.
- c) Give any two Chemical Reactions of Acid Chloride.
- d) Explain Ammonolysis of esters.
- e) Give any two methods of preparation of amines.
- f) Why esters are less reactive towards nucleophile than aldehydes?
- g) Compare and explain the basicities of ethanalamine and aniline.

Q6) Solve any Two

[10]

- a) Give methods of preparation of Cyanides and isocyanides.
- b) Give methods of preparations & Reactions of dicarboxylic acid.
- c) Short note on Michael addition.
- d) Explain Haloform reaction with suitable example.



Total No. of Questions :6]

SEAT No. :

P1436

[5049]-205

[Total No. of Pages :2

F.Y.B. Pharmacy

HUMAN ANATOMY AND PHYSIOLOGY - II (124)

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

SECTION-I

Q1) Classify nervous system & explain in detail sympathetic & parasympathetic nervous system. **[10]**

OR

Define respiration. Explain in detail the mechanism of breathing & exchange of gases during respiration. **[10]**

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

- a) Describe the structure of trachea.
- b) Draw a neat labeled diagram of interior of eyeball.
- c) Discuss the composition & functions of C.S.F.
- d) Explain the thermoregulation in brief.
- e) Write a note on cranial Nerves.
- f) Define following terms:
 - i) Pneumonics
 - ii) Anatomical dead space
 - iii) Tidal volume
- g) Explain meninges of the CNS.

P.T.O.

Q3) Write short note on (any 2): **[10]**

- a) Reflex arc.
- b) Ear.
- c) Cerebrum.
- d) Lungs.

SECTION-II

Q4) Explain synthesis, storage, release and function of thyroid hormones. **[10]**

OR

Draw neat labelled diagram of Male Reproductive Organ. Enumerate the organs male reproductive system with functions of each organ. **[10]**

Q5) Answer the following (any 5): **[15]**

- a) Write a note on nephron.
- b) Write a note on Semen.
- c) Enlist various hormones secreted by anterior pituitary gland with their functions.
- d) Draw a neat labelled diagram of internal structure of kidney.
- e) write a note on Pancreatic Islets.
- f) Explain Oogenesis.
- g) Explain the term.
 - i) Acute Renal Failure
 - ii) Diuresis

Q6) Write short note on (Any 2): **[10]**

- a) Physiology of breast development & lactation.
- b) Posterior Pituitary Hormones.
- c) Glomerular Filtration.
- d) Hormonal regulation of kidney.

EEE

Total No. of Questions : 6]

SEAT No. :

P1437

[5049]-206

[Total No. of Pages : 2

F.Y. B.Pharmacy
PHARMACOGNOSY
(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 indicate full marks.*
- 4) *All questions are compulsory.*

SECTION - I

Q1) Attempt any One:

- a) Explain in detail History of structure of DNA along with detail information on RNA-Translation. **[10]**

OR

- b) Elaborate in detail general morphology and Microscopy of wood.

Q2) Attempt any Five:

[15]

- a) Enlist various subclasses of economic botany.
- b) Describe in brief primary structure of protein.
- c) Provide secretory products of plant origin.
- d) Provide classification of stomata on the basis of arrangement of subsidiary cells.
- e) Provide types of inflorescences.
- f) Explain in brief Meristematic Tissue.
- g) Explain in brief DNA structure.

Q3) Write short note on any Two of the following:

[10]

- a) Mendelian genetics.
- b) Mitosis.
- c) Structure and Functions of Vascular Tissue system.
- d) Morphology of Leaf.

P.T.O.

SECTION - II

Q4) Attempt any One:

- a) Elaborate a detail account of Definition and classification of crude drugs. **[10]**

OR

- b) Provide in detail significance of western Ghat Biodiversity and factors responsible for rapid degradation of habitats of western Ghats.

Q5) Attempt any Five:

[15]

- a) Explain in brief Cytokinins as a plant growth regulator.
- b) Explain in brief parasitic mode of nutrition.
- c) Explain in brief Artificial method of classification.
- d) Explain various types of ecological succession.
- e) Provide merits of Bentham and Hookers system of classification.
- f) Describe in brief polyploidy breeding.
- g) Provide importance of plant taxonomy.

Q6) Write short note on any Two of following:

[10]

- a) Mode of Nutrition in plant physiology.
- b) Pollution and global warming.
- c) History of Pharmacognosy.
- d) Hybridization.



Total No. of Questions : 6]

SEAT No. :

P1438

[5049]-301

[Total No. of Pages : 2

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 three phase systems of aerosols. **[10]**

OR

Describe in detail two component systems with suitable example. **[10]**

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

- a) Define polymorphism. Give different applications of polymorphism with examples.
- b) Explain: Critical gas constants.
- c) Describe crystal forms and Lattice angle as crystal parameters.
- d) Give pharmaceutical applications of phase rule.
- e) What is compressibility factor? Explain giving its importance.
- f) Discuss deviations from gas theory.
- g) Explain glass transition temperature with example.

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

- a) Vander Waals equation for real gases.
- b) Methods of crystal analysis.
- c) Claude's process for liquefaction of gases.
- d) Terms involved in Gibbs Phase rule.

P.T.O.

SECTION-II

Q4) Discuss solubility of solids in liquids and 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. **[10]**

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

- a) Give applications of distribution phenomenon in Pharmacy.
- b) Differentiate between real and ideal solution.
- c) State Kohlrausch's law and its applications.
- d) What is solubility parameter? Give its significance.
- e) Explain solubility of liquid in liquid.
- f) Give a note on colligative properties of electrolytes.
- g) Define and differentiate between equivalent conductance and specific conductance.

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

- a) Solubility of liquids in liquids.
- b) BCS classification.
- c) Osmotic pressure as a colligative property.
- d) First law of thermodynamics.

✓ ✓ ✓

Total No. of Questions : 6]

SEAT No :

P1439

[5049]-302

[Total No. of Pages : 2

S.Y.B. Pharmacy

PHARMACEUTICAL MICROBIOLOGY AND IMMUNOLOGY
(2013 Pattern) (Semester -III)

Time : 3 Hours]

[Max. Marks : 70

Instructions to the candidates:

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

SECTION - I

Q1) Explain in detail different method used for measurement of bacterial growth.[10]

OR

Explain in detail following points.

- i) structure of HIV.
- ii) Multiplication of human viruses.
- iii) Cultivation of Virus.

Q2) Answer the following (Any Five):

[15]

- a) Explain “whittaker’s five kingdom concept”
- b) Write the classification of bacteria, depending on arrangement of flagella.
- c) Write the contribution of Louis Pasteur.
- d) List the different techniques used for preservation of bacterial culture.
- e) Write morphological characteristic and importance of *saccharomyces cerevisiae*.
- f) How will you detect presence of salmonella in nonsterile pharmaceutical preparations?
- g) Write significance of probiotics and prebiotics.

P.T.O.

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

- a) Culture Media.
- b) Growth Curve of Bacteria.
- c) Scope and Application of Microbiology.
- d) Microbial Limit Test.

SECTION - II

Q4) Define Immunity. Explain different type of immunity with suitable example. Write in brief mechanism of Humoral mediated & cell mediated immunity. **[10]**

OR

Explain in detail following point.

- a) Moist Heat sterilization.
- b) Phenol Coefficient test.
- c) Chemical classification of disinfectants.

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

- a) Write a principle and characteristics of antigen antibody reactions.
- b) Differentiate between Live (attenuated) and Killed vaccine.
- 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 sterilization?”
- g) Differentiate between endotoxin and exotoxin.

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

- a) ELISA Test.
- b) Nonspecific defense mechanism of Host.
- c) Immunoglobulin.
- d) General Production of Bacterial vaccine.

☆ ☆ ☆

Total No. of Questions : 6]

SEAT No. :

P1440

[5049]-303

[Total No. of Pages :2

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 Enzymes, coenzymes. Explain in detail factors affecting Enzyme activity.
- b) Define and classify lipids with suitable examples. Give their functions in detail.

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

- a) Biochemical functions of nucleic acids.
- b) Explain functions and biological role of Glucose.
- c) Explain secondary structure of protein.
- d) Explain functions and biological role of Galactose.
- e) Write a note on Haemoglobin.
- f) Write a note on Keratin.
- g) Write a note on Colour reaction of amino acids.

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

- a) Explain in detail Replication.
- b) Allosteric inhibition.
- c) Explain Mechanism of enzyme Action.
- d) Explain medicinally important of Amino acids.

P.T.O.

SECTION-II

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

- a) Define metabolism and enlist diff. pathway of carbohydrate metabolism and explain in detail glycolysis.
- b) Define metabolism and explain in detail Beta oxidation of fatty acids.

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

- a) Write a note on cholesterol.
- b) Biochemical function of Vit.A.
- c) Biochemical function of Vit.C.
- d) Write a note on Oxidative deamination of amino acids.
- e) Energetics of TCA cycle.
- f) Write a note on ketone bodies.
- g) Explain in brief Transcription.

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

- a) Glycogenesis
- b) Transamination
- c) Gluconeogenesis
- d) Write in detail about Structure and Biochemical Functions of Vit.B₆



PHARMACEUTICAL ORGANIC CHEMISTRY-III
(2013 Pattern) (Semester-III) (Theory)

Time : 3 Hours]

[Max. Marks : 70

Instructions to the candidates:

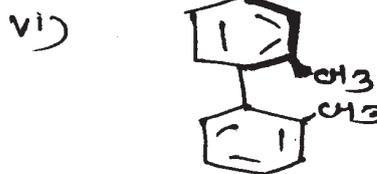
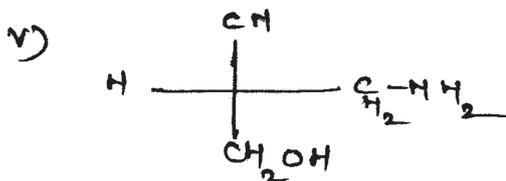
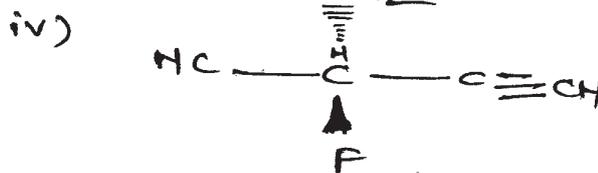
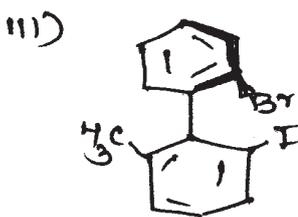
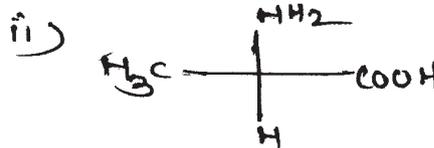
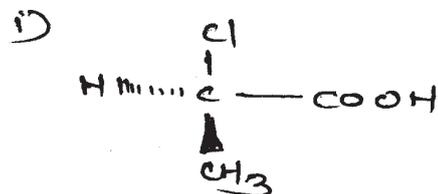
- 1) All questions are compulsory.
- 2) Answer to the two sections should be written in separate books.
- 3) Neat diagrams must be drawn wherever necessary.
- 4) Figures to the right indicates full marks.

SECTION-I

Q1) What is racemic resolution? Explain with suitable examples the various methods used [10]

OR

a) Establish R & S configuration [6]



b) Comment on Diastereomerism [4]

P.T.O.

Q2) Answer the following (Any five):

[15]

- a) Why chair conformation of cyclohexane is more stable than boat conformation.
- b) Explain how peptides are formed from amino acid
- c) Give significance of stereochemistry in biological activity.
- d) What is Iso electric point? Explain its significance
- e) Define configuration, conformation. Give example of each.
- f) Trans 1,2 dimethyl cyclohexane is more stable than its cis isomer. Give reason.
- g) Give the method of synthesis of any two of following amino acid.
 - i) Phenyl alanine by malonic ester synthesis
 - ii) Glycine by Gabriel phthalimide synthesis
 - iii) Alanine from Propionic Acid

Q3) Write short notes on (any Two):

[10]

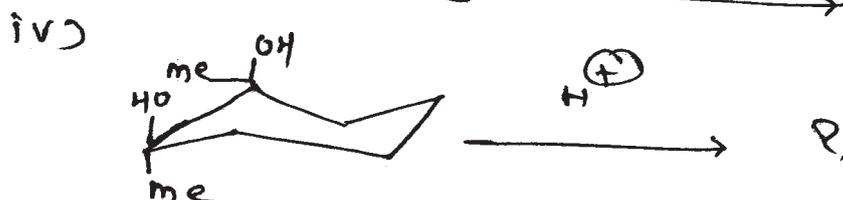
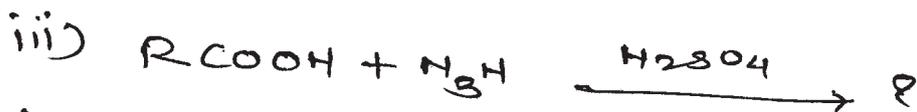
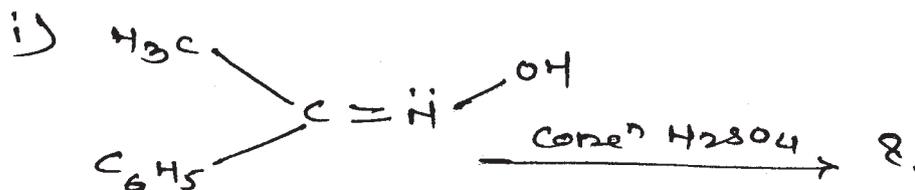
- a) Conformational isomerism of dialkyl cyclohexane
- b) Chirality in detail
- c) Conformation of n- butane
- d) Conformational isomerism of cyclohexane.

SECTION-II

Q4) Define molecular rearrangement. Give reaction mechanism and application of any two rearrangement of electron deficient carbon atom. [10]

OR

Predict the product and explain mechanism involved [10]



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

- Give mechanism involved in Beckmann rearrangement.
- Add a note on Fries rearrangement
- Give brief account on Curtius rearrangement
- Explain Haworth synthesis of anthracene in detail
- Give the mechanism of Farroski rearrangement
- Explain electrophilic aromatic substitution in naphthalene
- Give synthesis and reaction of naphthalene.

Q6) Write short notes on (Any Two):

[10]

- a) Stevens rearrangement
- b) Benzilic Acid rearrangement
- c) Cope rearrangement.
- d) Sommet rearrangement.



Total No. of Questions : 6]

SEAT No. :

P1442

[5049]-305

[Total No. of Pages : 2

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.*
- 4) *Figures to the right indicate full marks.*

SECTION - I

Q1) Write in detail the process of drug distribution. Describe role of plasma proteins in drug distribution. **[10]**

OR

Explain in detail various routes of administration with their advantages and disadvantages. **[10]**

Q2) Answer the following (Any five)

- a) Explain in detail bioavailability and bioequivalence. **[3]**
- b) Explain in detail phases of drug metabolism. **[3]**
- c) Write in detail sources and active ingredient of drugs. **[3]**
- d) Explain the process of drug transportation across cell membrane. **[3]**
- e) Explain the term volume of distribution. **[3]**
- f) Explain clinical significance of half life of drug. **[3]**
- g) Explain Therapeutic drug monitoring. **[3]**

P.T.O.

Q3) Solve any two :

- a) Explain in detail Factors affecting excretion of drugs. [5]
- b) Write about process of development of new drug. [5]
- c) Explain in detail process of drug absorption and factors affecting drug absorption. [5]
- d) Explain mechanism of drug action through enzyme activation and inhibition. [5]

SECTION - II

Q4) Classify antihistaminics with examples. Discuss in detail pharmacology of H₁ - receptor antagonist. [10]

OR

Discuss in detail factors affecting drug action. [10]

Q5) Answer the following (Any five)

- a) Discuss transduction mechanism of kinase linked receptor. [3]
- b) What are different types of dose response curves? Give its characteristics, limitations & importance. [3]
- c) Discuss pharmacological actions of 5 - HT. [3]
- d) What do you mean by drug synergism & drug antagonism? Explain with examples. [3]
- e) Define drug toxicity & give its types. [3]
- f) Define pharmacodynamics & explain different sites of drug action. [3]
- g) Define drug interactions & classify them with example. [3]

Q6) Write short notes on (Any Two) [10]

- a) Adverse drug reactions.
- b) Drug therapy in geriatric patients.
- c) G-protein coupled receptor.
- d) Prostaglandins.



Total No. of Questions :6]

SEAT No. :

P1443

[5049]-306

[Total No. of Pages :2

S.Y. B. Pharmacy

PHARMACOGNOSY & PHYTOCHEMISTRY - I

(2013 Pattern) (Semester - III)

Time : 3 Hours]

[Max. Marks :70

Instructions to the candidates:

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

SECTION-I

Q1) Write pharmacognostic account on digitalis. Explain general biosynthetic pathway of glycosides. **[10]**

OR

Write a note on pharmacognostic scheme for the study of Crude drugs.

Q2) Answer Any Five questions: **[15]**

- a) Importance of Extractive value.
- b) Explain process for extraction of any starch.
- c) Enlist the uses of Neem oil.
- d) Explain chemical tests for wool.
- e) Differentiate between Black catechu & Pale catechu.
- f) Write biological source, properties & uses of Papain.
- g) Differentiate between primary & secondary Metabolite.

P.T.O.

Q3) Answer Any Two questions: [10]

- a) Write pharmacognostic account of Licorice.
- b) Write a note on Chemistry of Lipids.
- c) Comment on rationale behind the use of secondary metabolites as medicinal compounds.
- d) Write a note on Guargum and Aloe.

SECTION-II

Q4) Define & classify Tannins. Write pharmacognostic account of Betic myrobalan. [10]

OR

Explain process of extraction of pectin and Insulin. Add a note on industrial applications of starch.

Q5) Answer Any Five questions: [15]

- a) Classify carbohydrates with examples.
- b) Explain method of preparation of Jute.
- c) Describe properties and chemistry of cyclodextrins.
- d) Describe the advantages of Linseed oil over other edible oils.
- e) Significance of swelling index.
- f) Write pharmacognostic account on cotton.
- g) Explain Isolation of carotenoids.

Q6) Answer Any Two questions: [10]

- a) Explain process for separation of Bromelin.
- b) Write a note on PUFA.
- c) Explain extraction process and chemical tests of Black Catechu.
- d) Comment on pharmacognostic account of Kalmegh.

EEE

Total No. of Questions : 6]

SEAT No. :

P1444

[5049]-401

[Total No. of Pages :2

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) Define rheology and elaborate different types of flow in liquids. **[10]**

OR

Describe various methods for the particle size determination.

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

- a) Explain specific surface area.
- b) Distinguish between molecularity and order a reaction.
- c) State briefly concept of Association colloids: Micelles.
- d) Give classification of viscometers.
- e) Explain the significance of CMC.
- f) What is the effect of temperature on rate of a reaction.
- g) Write about the optical properties of colloids.

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

- a) Spreading coefficient
- b) Lyophilic sols are more stable than lyophobic sols.
- c) Cup and bob viscometer
- d) Arrhenius equation

P.T.O.

SECTION-II

Q4) Elaborate on hydrolysis and oxidation degradation pathways of drug degradation. **[10]**

OR

Explain the concept of electrical double layer and define Nernst and Zeta potential.

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

- a) Distinguish between true density and bulk density.
- b) Distinguish between Anti thixotropy and Rheopexy.
- c) Justify: Half life of a zero order reaction is dependent on initial concentration of reactant while that of a first order reaction is independent on initial concentration of reactant.
- d) Explain surface tension and interfacial tension.
- e) Elaborate the steps in purification of colloids.
- f) What is Andreason pipette used for?
- g) Write a note on stabilization of colloids.

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

- a) Optical microscopy, sieve analysis
- b) Thixotropy
- c) Accelerated stability studies.
- d) Surfactant classification and HLB scale



Total No. of Questions :6]

SEAT No. :

[Total No. of Pages :2

P1445

[5049] - 402

S.Y.B.Pharmacy

PATHOPHYSIOLOGY & CLINICAL BIOCHEMISTRY

(2013 Pattern) (Semester - IV)

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

SECTION - I

Q1) Discuss and classify Cardiac shock. Explain the pathophysiology of Cardiac shock. **[10]**

OR

Define and classify ulcer. Explain in detail pathophysiology of peptic ulcer. **[10]**

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

- a) Write the etiology of coronary artery disease.
- b) Define and enlist the types of COAD.
- c) Define diarrhoea, constipation and varicose vein.
- d) Write the complications of hypertension.
- e) Define and enlist the types of hepatitis.
- f) Write the clinical manifestations of fatty liver.
- g) Discuss the pathophysiology of buerger's disease.

Q3) Write a note on the following (Any Two): **[10]**

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

P.T.O.

SECTION - II

Q4) Discuss etiology and pathophysiology of Chronic Renal Failure. **[10]**

OR

Discuss pathophysiology of Epilepsy in detail.

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

- a) Write a note on Myasthenia gravis.
- b) Define and enlist types of depression.
- c) Explain pathophysiology of leprosy.
- d) Define the terms
 - i) Endometriosis.
 - ii) Infertility.
 - iii) Dysmenorrhoea
- e) Explain in brief malignancy.
- f) Write clinical manifestations of Diabetes mellitus.
- g) Explain hypothyroidism in brief.

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

- a) Alzheimer's Disease.
- b) Rheumatoid arthritis.
- c) Malaria.
- d) Insomnia.



Total No. of Questions : 6]

SEAT No. :

P1446

[5049]-403

[Total No. of Pages : 3

S.Y.B. Pharmacy

PHARMACEUTICAL ORGANIC CHEMISTRY - IV
(2013 Pattern) (Semester-IV)

Time : 3 Hours]

[Max. Marks : 70

Instructions to candidates:

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

SECTION - I

Q1) Give a detail account of methods of synthesis and reactions of furan. **[10]**

OR

Draw the structure and give numbering of following heterocycles with one example of drug belonging to each: **[10]**

- a) Thiophene
- b) Pyrrole
- c) Cinnoline
- d) Coumarin
- e) Pteridine

Q2) Answer in short (Any five) **[15]**

- a) Draw the following structures with numbering:
 - i) 5-acetoxypyridazine
 - ii) 2-mercaptoquinazoline
 - iii) 4-furfuryl-cinnoline
- b) Give any three reactions of indole

P.T.O.

- c) Draw the resonance structures of:
- pyridine
 - pyrrole
- d) Write any two reactions for synthesis of quinoline
- e) Give reason: Nucleophilic substitution in pyridine takes place preferably at 2 position than 4 position.
- f) Write the following reactions of pyridine:
- Nitration
 - Sulfonation
- g) Give any two methods of synthesis of pyridine.

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

- Methods of preparation of Quinoline
- Reactions of pyridine
- Explain the following:
 - Properties of Imidazole
 - Reactions of Imidazole
- Retrosynthetic scheme of Ibuprofen.

SECTION - II

Q4) Define combinatorial Chemistry? Explain Mix and split synthesis in Combinatorial chemistry. Enlist applications of combinatorial chemistry. **[10]**

OR

Establish the cyclic structures of Glucose and give the detailed account on the reaction involved. **[10]**

Q5) Solve any five of the following:

[15]

- a) Explain any two reactions of Arabinoses.
- b) What is the reaction of glucose with
 - i) Nitric acid?
 - ii) Bromine water?
 - iii) Sodium borohydrate?
- c) Explain the use of Nanochemistry
- d) Write a note on Mutarotation
- e) Explain any two methods of preparation of Fructose.
- f) How will you distinguish between glucose and sucrose?
- g) Explain significance and medicinal importance of Carbohydrates.

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

[10]

- a) Microwave assisted synthesis.
- b) Reducing sugars
- c) Ruff degradation
- d) Maryfield peptide synthesis.



Total No. of Questions :6]

SEAT No. :

P1447

[5049]-404

[Total No. of Pages : 2

S.Y.B. Pharmacy

PHARMACEUTICAL ANALYSIS - II

(2013 Pattern) (Semester-IV)

Time : 3 Hours]

[Max. Marks : 70

Instructions to 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 Potentiometry. Discuss in detail different types of electrodes. **[10]**

OR

Explain in detail types of polarographic techniques. Write applications of polarography. **[10]**

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

- a) Explain conductometric titration curve for weak acid vs strong base.
- b) Explain effect of dilution on specific, molecular and equivalent conductance.
- c) Define pH and discuss measurement of pH.
- d) Write about biamperometric titrations.
- e) Write advantages of high frequency titrations over conventional titrations.
- f) Draw neat labeled diagram of electrochemical cell. Explain terms associated with Nernst equation.
- g) What is half wave potential? Explain different parts of polarogram.

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

- a) Rotating platinum electrode
- b) Conductivity meter
- c) Dropping mercury electrode
- d) Applications and advantages of amperometry.

P.T.O.

SECTION - II

Q4) Give an account on theory of optical activity and discuss in detail about spectropolarimeter used for measurement of plane polarized light. [10]

OR

What is coulometric analysis? Discuss in detail about constant current coulometric analysis. [10]

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

- a) Explain the terms specific and molar refraction.
- b) Add a note on silver coulometer.
- c) Give an account of cotton effect.
- d) Explain the effect of concentration, solvent and temperature on optical activity.
- e) Write about factors affecting angle of rotation.
- f) Write the applications of coulometric analysis.
- g) Discuss in brief oxygen combustion flask techniques.

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

- a) Determination of nitrogen by Kjeldahl's method.
- b) Karl Fisher titration apparatus.
- c) ORD and CD curve.
- d) Construction and working of Abbe refractometer.



Total No. of Questions :6]

SEAT No. :

P1448

[5049]-405

[Total No. of Pages :2

Second Year B. Pharmacy
PHARMACOGNOSY AND PHYTOCHEMISTRY - II
(2013 Pattern) (Semester - IV)

Time : 3 Hours]

[Max. Marks :70

Instructions to the candidates:

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

SECTION-I

Q1) Define Alkaloids. Describe biosynthetic pathway for Tropane Alkaloids. Explain microscopy of Datura leaf. **[10]**

OR

Write chemical classification of Alkaloids. Give comparative statement for Bolivian Coca and Peruvian coca.

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

- a) Write method of collection and preparation of Opium.
- b) Write chemical constituents and uses of Sarpagandha.
- c) Draw a labelled diagram of T.S. of Ma-Huang.
- d) Write method of extraction of Caffine.
- e) Write Vitali Morine and Murexide test.
- f) Write chemical tests and uses of Nuxvomica.
- g) Write chemical structures of Xanthine derivatives.

P.T.O.

Q3) Discuss on Any Two of the following: **[2×5=10]**

- a) Life cycle of Ergot.
- b) Chemistry of Alkaloids.
- c) Comparison between cinchona bark and Kurchi bark.
- d) Occurrence and nomenclature of Alkaloids.

SECTION-II

Q4) Classify Terpenoids. Write detail pharmacognosy of Clove. **[10]**

OR

Write in detail about various methods of extraction of volatile oil.

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

- a) Write about cultivation and collection of sandalwood oil.
- b) Describe chemical constituents of Artemisia.
- c) Mention uses of Taxus.
- d) Write biological source and uses of Bixin.
- e) Explain collection and preparation of Cinchona bark.
- f) Discuss significance of Refractive Index.
- g) Explain method for determination of Specific gravity.

Q6) Discuss on Any Two of the following: **[2×5=10]**

- a) Marihuana.
- b) Podophyllum.
- c) Types of Resins.
- d) Guggul.

EEE

Total No. of Questions : 6]

SEAT No. :

P1449

[5049]-406

[Total No. of Pages : 2

S.Y. B.Pharmacy
PHARMACEUTICAL ENGINEERING
(2013 Pattern) (Semester - IV)

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 indicate full marks.*
- 4) *All questions are compulsory.*

SECTION - I

Q1) Explain different mechanisms of Heat Transfer in detail. Add a note on heat transfer to boiling liquids. **[10]**

OR

Give significance of drying in Pharmacy. Explain the mechanism of drying and give a detailed account of Fluidized Bed Dryer. **[10]**

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

- a) Give working of tray dryer.
- b) Explain significance of vapour recompression in evaporation process.
- c) Differentiate between evaporation & drying.
- d) Explain various factors affecting drying process.
- e) Explain Kirchoff's law.
- f) Add a note on molecular diffusion in gases.
- g) Explain working of a drum dryer.

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

- a) Falling film evaporator.
- b) Theory of interphase mass transfer.
- c) Efficiency & capacity of multiple effect evaporator.
- d) Spray dryer.

P.T.O.

SECTION - II

Q4) What is rectification? Give an account of various fractionating columns used in distillation. **[10]**

OR

Explain in detail Mier's theory of supersaturation & give an account of nucleation & crystal growth. **[10]**

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

- a) Construction and working of Pitot tube.
- b) Explain working of differential manometer.
- c) Explain working of Rotameter.
- d) Enlist different types of corrosion.
- e) Explain ring packing in columns.
- f) What is H.E.T.P.?
- g) How is caking of crystals prevented?

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

- a) Bernoulli's theorem & its limitations.
- b) Quantity flow meters.
- c) Boiling point diagram.
- d) Distillation of immiscible liquids.



Total No. of Questions : 6]

SEAT No. :

P1450

[5049]-501

[Total No. of Pages :2

T.Y.B.Pharmacy
INDUSTRIAL PHARMACY-I
(2013 Pattern) (Semester-V)

Time : 3 Hours]

[Max. Marks : 70

Instructions to the candidates:

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

SECTION-I

Q1) What is spherical crystallization? Explain in detail the steps involved in process of spherical crystallization. What are pharmaceutical applications of spherical crystallization? **[10]**

OR

What is pelletization? Describe in details steps involved in extrusion spheronization.

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

- a) What is compression coating technique? Mention advantages of compression coated tablets.
- b) Describe disintegration test and uniformity of dispersion test for dispersible tablets as per IP 2010.
- c) How do you differentiate between glidants, lubricants and antiadherants
- d) What are advantages of direct compression technique? Name directly compressible excipients.
- e) Explain need and advantages of layered tablets.
- f) Describe construction and principle involved in working of fluidised bed granulator.
- g) What is double impression? How it is avoided?

P.T.O.

Q3) Attempt any Two: [10]

- a) Explain various excipients used in tablet formulation and their role in tableting.
- b) Describe dissolution test with acceptance criteria for uncoated tablets as per IP 2010.
- c) Explain biopharmaceutical principles of dosage form design.
- d) Describe construction and working of Diosna granulator.

SECTION-II

Q4) Answer the following (Any one): [10]

- a) Differentiate between hard gelatin and soft gelatin capsule. Discuss filling of hard gelatin capsule.
- b) Explain standard coating pan with its modifications in details.

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

- a) Draw a layout plan for capsule manufacturing.
- b) Explain compression coating of tablets.
- c) Explain 'evaluation of coated tablets'.
- d) What do you mean by enteric coating of tablets. Which polymers are used for enteric coating and how do they act?
- e) Explain different types of gelatin. Enlist various steps involved in manufacture of empty gelatin shell. How is capsule protected against tampering.
- f) What are the problems involed in filling hard gelatin capsules?
- g) Discuss formulation of soft gelatin capsules.

Q6) Answer the following(any two): [10]

- a) Explain fluidized bed coating of tablets
- b) Explain the principle and operations of automatic capsule filling machine.
- c) Discuss various film coating defects and remedies to resolve these defects.
- d) Give an account of various materials used in film coating of tablets.



Total No. of Questions : 6]

SEAT No. :

P1451

[5049]-502

[Total No. of Pages : 2

T.Y.B.Pharmacy

**PHARMACEUTICAL ANALYSIS - III
(2013 Pattern) (Theory) (Semester - V)**

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 about principle and theory of UV - visible spectrophotometric analysis. **[10]**

OR

Explain about instrumentation of spectrofluorimeter. **[10]**

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

- a) Write about cuvettes used in UV Visible spectroscopy.
- b) Classify different instrumental methods of analysis.
- c) Explain atomic spectroscopy and molecular spectroscopy.
- d) Explain about source used in flame photometry.
- e) Explain properties of electromagnetic radiation.
- f) Discuss about intersystem crossing.
- g) Write about filters used in fluorimetric analysis.

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

- a) Instrumentation of Nephelometer.
- b) Deviation from Beer's law.
- c) Fuels and oxidants used in Atomic Absorption Spectroscopy.
- d) A conventional diffraction grating.

P.T.O.

SECTION - II

Q4) Explain about instrumentation of Atomic Absorption Spectroscopy. [10]

OR

Discuss about instrumentation of flame photometry. [10]

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

- a) Explain absorption of energy by molecule.
- b) Explain the term fluorescence and phosphorescence.
- c) Give an account on source used in Atomic Emission Spectroscopy.
- d) Discuss about quenching of fluorescence.
- e) Write advantages of Atomic Absorption spectrophotometry.
- f) Explain excitation and emission spectra.
- g) Discuss about filters used in UV Visible spectroscopy.

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

- a) Applications of fluorimetric analysis.
- b) Types of transitions involved in organic molecule.
- c) Theory of Atomic Emission Spectroscopy.
- d) Factor affecting fluorescence and phosphorescence.



Total No. of Questions :6]

SEAT No. :

[Total No. of Pages :2

P1452

[5049] - 503

T.Y.B. Pharmacy
MEDICINAL CHEMISTRY - I
(2013 Pattern) (Semester - V)

Time : 3 Hours]

[Max. Marks :70

Instructions:

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

SECTION - I

Q1) Explain in detail physicochemical properties affecting drug action. **[10]**

OR

Explain in detail Acetyl choline esterase inhibitors.

Q2) Answer the following (ANY FIVE) **[15]**

- a) Add a note on anticoagulants.
- b) Explain in detail biosynthesis and release of Acetylcholine.
- c) Add a note on Ferguson principle.
- d) Give SAR of thiazide diuretics.
- e) Give SAR of Acetylcholine.
- f) Explain in BBB.
- g) Explain the role of intracellular cyclic nucleotide.

P.T.O.

- Q3)** Write short notes on any two. **[10]**
- a) Cardiac glycosides.
 - b) Calcium channel blockers.
 - c) Stereochemical aspects of drug action.
 - d) Explain Ing's rule of five.

SECTION - II

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

OR

Give synthesis of **[10]**

- a) Atenolol
- b) Prazocin
- c) Losartan
- d) Guanethidine

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

- a) Give structures of Propranolol, Muscarin, Nicotine.
- b) Explain role of Actin-Myosin system in myocardial contraction.
- c) Explain role of MAOs.
- d) Give structures of non selective β blockers.
- e) Give synthesis of methyl dopa.
- f) Give structure and uses Hyoscine.
- g) Give structures of any three Angiotensin Converting Enzyme inhibitors.

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

- a) Adrenergic agonists
- b) Anti-hyperlipidemic drugs
- c) Bioisosterism
- d) Diuretics



Total No. of Questions : 6]

SEAT No. :

P1453

[5049]-504

[Total No. of Pages : 2

T.Y. B. Pharmacy
PHARMACOLOGY-II
(2013 Pattern) (Semester-V)

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

SECTION-I

Q1) Define parasympathomimetic drugs. Classify parasympathomimetic drugs with suitable example. Explain biosynthesis, storage, release and metabolism of acetylcholine. **[10]**

OR

Define adrenergic blockers. Classify alpha (α) blockers with suitable example. Explain the pharmacological effects and therapeutic uses of (α) alpha blockers.

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

- a) Explain biosynthesis of catecholamine.
- b) Classify anticholinergic agents with suitable example.
- c) Explain in brief physostigmine.
- d) Give the adrenergic receptor subtypes with their location.
- e) Enlist therapeutic uses of atropine.
- f) Why adrenaline is used in anaphylactic shock?
- g) Define the following term (Any 3):
 - i) Pheochromocytoma
 - ii) Myasthenia gravis
 - iii) Glaucoma
 - iv) Miotics

P.T.O.

Q3) Write a note of the following (Any 2): **[10]**

- a) Therapeutic uses of Beta (β) blocker.
- b) Pharmacotherapy of glaucoma.
- c) Organophosphate poisoning.
- d) Skeletal muscle relaxants.

SECTION-II

Q4) Discuss biosynthesis, metabolism, mechanism of action, pharmacological action and therapeutic uses of testosterone. **[10]**

OR

Describe in detail pharmacological actions of glucocorticoids and enlist its therapeutic uses.

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

- a) Explain mechanism of action of oxytocin.
- b) Give therapeutic uses of antithyroid drugs.
- c) Classify oral hypoglycemic agents.
- d) What is SERM?
- e) Explain oral contraceptives.
- f) Enlist complication of Type-2 Diabetes mellitus.
- g) Give mechanism of action of Acarbose.

Q6) Write a note on (Any 2): **[15]**

- a) Mineralocorticoids.
- b) Antiprogestins.
- c) Antiandrogens.
- d) Hormones of Adenohypophysis.



Total No. of Questions : 6]

SEAT No. :

P1454

[5049]-505

[Total No. of Pages : 2

T.Y.B.Pharmacy

**ANALYTICAL PHARMACOGNOSY AND EXTRACTION
TECHNOLOGY**

(2013 Pattern) (Semester - V) (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:

- a) Explain the principle, instrumentation and applications of Counter - Current extraction system.
- b) Explain the Principle and applications of HPTLC. **[10]**

Q2) Attempt any five of the following:

[15]

- a) Give the chemical tests for eugenol and digoxin.
- b) Explain the isolation procedure of boswellic acid.
- c) Describe fractional crystallization.
- d) Explain merits and demerits of Supercritical fluid extraction.
- e) Explain determination of volatile matter as per WHO guidelines.
- f) Explain Microwave-assisted extraction with an example.
- g) Enlist significance of proximate phytochemical analysis.

P.T.O.

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

- a) Explain the requirements of Infrastructure as per WHO guidelines for Pharmaceutical Laboratory.
- b) Explain procedure & significance in determination of pesticide residues.
- c) Explain Source, properties, isolation & tests of reserpine.
- d) Explain Principle & procedure of sampling.

SECTION - II

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

- a) Describe in detail:
 - i) Methods of determining foaming index.
 - ii) Principle, procedure & significance in determination of extractable matter.
- b) Explain general rules of ensure safety in a pharmaceutical quality control laboratories as per WHO.

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

- a) Give the chemical tests for Diosgenin and citral.
- b) Explain the isolation procedure of andrographolides.
- c) Enlist different types of adsorbents for column chromatography.
- d) Explain merits and demerits of Soxhlet extraction.
- e) Add a note on "Moisture Content" as per WHO guidelines.
- f) Explain centrifugation method for separation.
- g) Explain difficulties encountered in analysis of natural products.

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

- a) Describe adulteration and explain its types with suitable examples.
- b) Explain froth-floatation technique.
- c) Explain Source, properties, isolation & tests of Piperine.
- d) Enlist the Contents of 'Analytical Test Report' as per WHO guidelines.



Total No. of Questions :6]

SEAT No. :

P1455

[5049]-506

[Total No. of Pages :2

T.Y. B. Pharmacy

**PHARMACEUTICAL BUSINESS MANAGEMENT & DISASTER
MANAGEMENT**

(2013 Pattern) (Semester - V)

Time : 3 Hours]

[Max. Marks :70

Instructions to the candidates:

- 1) *Figures to right to indicate marks assigned.*
- 2) *Write each section in separate answer books.*
- 3) *All questions are compulsory.*

SECTION-I

Q1) What is planning. Describe types & importance of planning. Explain about sales forecasting. **[10]**

OR

What do you mean by organizing? Give principles structure of decentralization & delegation.

Q2) Answer ANY FIVE (Each three marks):

[15]

- a) Write note on management thought.
- b) What do you mean by Objectives of management.
- c) Write short note on Break Even Analysis.
- d) Write about Network Analysis.
- e) Explain decision making process.
- f) Explain the responsibilities of manager.
- g) Delgation of authorities.

P.T.O.

Q3) Write note on ANY TWO (Each Five marks): **[10]**

- a) Taylor principle.
- b) Peter Drucker contribution in modern management.
- c) Departmentalization.
- d) Give concept & purpose of controlling. Describe the budgetary control.

SECTION-II

Q4) Define and explain the functions of Leadership. Explain different leadership styles. **[10]**

OR

Explain the steps involved in launching of new Pharmaceutical Product.

Q5) Answer Any Five of the following (each carries three marks): **[15]**

- a) Distinguish motivators and hygiene factors.
- b) Explain different methods used in sales promotion.
- c) Enlist different channels of distribution. Explain any one in detail.
- d) Explain importance of communication in Pharmaceutical Industry.
- e) Explain the responsibilities of medical representative.
- f) Write about product life cycle of a pharmaceutical product.
- g) Explain the concepts of Disaster Mitigation.

Q6) Answer Any Two of the following (each carries five marks): **[10]**

- a) Inventory control.
- b) Write procedure for determination of pricing.
- c) Interview techniques.
- d) Need of Performance Appraisal.

EEE

Total No. of Questions :6]

SEAT No. :

P1456

[5049]-507

[Total No. of Pages :3

T.Y. B. Pharmacy

**APIT(ACTIVE PHARMACEUTICAL INGREDIENT TECHNOLOGY)
(2013 Pattern) (Semester - V)**

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.*

SECTION-I

Q1) Attempt any one question:

[10]

- a) Define alkylation. Discuss various alkylating agents. Describe the manufacture of any one active pharmaceutical ingredient by alkylation process.

OR

- b) Define nitration. Discuss various nitrating agents. Describe the manufacture of any one active pharmaceutical ingredient by nitration.

Q2) Attempt any five:

[15]

- a) Define oxidation. Enlist various oxidising agents.
- b) Explain any two methods for characterization of polymorphs.
- c) Enlist various methods for reductive amination and discuss any one in brief.
- d) Mention the methods for resolution of racemates. Explain any one method in detail.
- e) Differentiate between unit operation and unit process.
- f) Define active pharmaceutical ingredient, bulk drug and fine chemical with example of each.
- g) Enlist significance of chivality in API industry.

P.T.O.

Q3) Attempt any two: [10]

- a) Discuss types of hydrolysis and manufacture of an API/API intermediate by hydrolysis.
- b) Mention various approaches for asymmetric synthesis. Explain asymmetric synthesis of metoprolol.
- c) Explain the importance of polymorphism in active pharmaceutical ingredients.
- d) Outline the GMP guidelines for API (Q7a) with respect to following points.
 - i) Buildings and facilities
 - ii) Documentation and Records

SECTION-II

Q4) Attempt any one question: [10]

- a) What are process variables in API manufacturing. Enlist the process variables and discuss them in brief.

OR

- b) What is work-up and purpose of work-up. Explain suitable techniques employed in work-up procedures in API manufacturing.

Q5) Attempt any five: [15]

- a) Classify routes for API preparation. Enlist characteristics of cost effective routes.
- b) Discuss reactors in API manufacturing.
- c) Discuss selection of solvents based on their physical characteristics.

- d) Draw the flow chart for manufacturing of amoxicillin trihydrate.
- e) What is a MSDS.
- f) What are the techniques for API purification and isolation.
- g) Give a brief account of characteristics of ideal reagents for preparation of API.

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

- a) Industrial manufacturing of amlodipine with suitable flow charts.
- b) Safety and toxicity considerations for selection of reagents for API preparation.
- c) Strategies for Route selection in API manufacturing.
- d) In - process controls in API manufacturing.

EEE

Total No. of Questions : 6]

SEAT No. :

P1457

[5049]-601

[Total No. of Pages :2

T.Y.B.Pharmacy
INDUSTRIAL PHARMACY-II
(2013 Pattern) (Semester-VI)

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) Write about various approaches adopted to stabilize suspensions. Add a note on Wetting. **[10]**

OR

What are instabilites of emulsion? Explain in detail reasons and precaution measures to avoid instability of emulsion.

Q2) Answer the following(Any5) **[15]**

- a) Enlist and explain identification test for type of Emulsion.
- b) Explain in detail Suspensions for reconstitution.
- c) Describe different Drug release mechanisms from Emulsion as a dosage form.
- d) Write a note on Formulation of Suspensions based on low and high solid content.
- e) Describe layout for manufacturing of Suspension as per Schedule M.
- f) Explain in detail concept Thermodynamic vs Kinetic stability of dispersed systems.
- g) Enlist and describe in detail any one method for manufacturing of Multiple emulsion.

P.T.O.

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

- a) Preservatives in Emulsions
- b) Controlled flocculation
- c) Role of HLB in selection of emulsifying agent
- d) Stoke's law in relation with stability of suspension

SECTION-II

Q4) Give a detail account of evaluation of dermatologicals **[10]**

OR

Give an account of routes of percutaneous absorption of drugs.

Q5) Answer the following(Any5) **[15]**

- a) Describe the role of electrolytes in stabilizing an emulsion.
- b) What are diffusion cells? What is their use in evaluation of dermatological preparations?
- c) "Methyl paraben and propyl paraben is used in combination in dermatological preparations"-explain.
- d) What are emollients and humectants? What is their use in dermatological preparations?
- e) What is phase inversion temperature? Why an emulsion that undergoes phase inversion has better stability?
- f) What are the different types of structures observed in gels?
- g) How spreadability and stickiness of a dermatological preparation is evaluated?

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

- a) Types of ointment bases
- b) Penetration enhancers
- c) Antioxidants in dermatological formulations.
- d) Gel forming agents.



Total No. of Questions : 6]

SEAT No. :

P1458

[5049]-602

[Total No. of Pages : 2

T. Y. B. Pharmacy
PHARMACEUTICAL ANALYSIS - IV
(2013 Pattern) (Semester - VI)

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 chromatography? Explain the rate and plate theory. Write the applications of column chromatography. **[10]**

OR

Explain the factors influencing HPTLC Separation. Discuss the instrumentation and applications of HPTLC system.

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

- a) Write principle of paper chromatography.
- b) Discuss different types of DSC techniques.
- c) Discuss various chromatographic performance parameters.
- d) Give the classification of planar chromatography.
- e) Discuss the column packing techniques.
- f) Write the methods for TLC plate preparation.
- g) Compare between TLC and HPTLC.

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

- a) Adsorbents used in TLC.
- b) Instrumentation of electrophoresis.
- c) Two dimensional TLC.
- d) Electrophoresis.

P.T.O.

SECTION - II

Q4) Elaborate the process of Equipment Qualification. **[10]**

OR

Explain pharmaceutical applications of Radiochemical methods.

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

- a) Explain the term Installation Qualification with suitable examples.
- b) How is LOD calculated as per ICH guidelines?
- c) State system suitability parameters with the limits.
- d) Write principle of Thermogravimetry.
- e) What are types of crucibles in TGA?
- f) Explain the effect of geometry material of sample holder on TGA results.
- g) How can moisture content in sample be determined using DTA?

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

- a) Intermediate Precision.
- b) Linearity and Range.
- c) Neutron Sources.
- d) Polymorphism.



Total No. of Questions :6]

SEAT No. :

[Total No. of Pages :2

P1459

[5049] - 603

T.Y.B. Pharmacy

(3.6.3.) MEDICINAL CHEMISTRY - II

(2013 Pattern) (Semester - VI)

Time : 3 Hours]

[Max. Marks :70

Instructions to the candidates:

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

SECTION - I

Q1) Classify antipsychotic agents with suitable examples and structures. Add a note on phenothiazines. **[10]**

OR

Classify anti-depressants with suitable examples and structures. Add a note on SSRIs. **[10]**

Q2) Solve any **FIVE** Questions: **[5×3=15]**

- a) Give structure, IUPAC and synthesis of tolbutamide.
- b) Classify local anesthetic agents.
- c) What is Fenton reaction? Give its significance in Parkinson's disease.
- d) Comment on chemistry and modes of action of respiratory stimulants.
- e) Discuss cannabinoids as hallucinogens.
- f) Outline the synthesis of Amitriptyline.
- g) Briefly write about azaspirodecanediones as anti-anxiety.

P.T.O.

Q3) Solve any TWO questions: **[2×5=10]**

- a) Classify sedative - hypnotics with examples.
- b) Discuss chemistry and mode of action of sulfonylureas.
- c) Explain important structural features and mode of action of barbiturates.
- d) Discuss SAR of tricyclic antidepressant agents.

SECTION - II

Q4) Explain the role of phase I & phase II reactions in drug metabolism with suitable examples. **[10]**

OR

Explain in detail the etiology and agents used for treatment of Alzheimer's disease with chemistry and mode of actions. **[10]**

Q5) Solve any FIVE: **[5×3=15]**

- a) Outline the synthesis of thiopental sodium and give its IUPAC.
- b) Give the structures and IUPAC of metformin and sodium valproate.
- c) Outline the complete metabolic pathway for diazepam.
- d) Discuss radiopaque compounds as diagnostic agents.
- e) How cocaine played a role as lead molecule in development of local anesthetics.
- f) Give the chemical categories of CNS stimulants with examples.
- g) Comment on halogenated hydrocarbons as general anesthetics.

Q6) Solve any TWO: **[2×5=10]**

- a) Discuss the new classes of oral anti-hyperglycemic agents.
- b) Discuss in detail the agents used in anti-migraine therapy.
- c) Chemical changes in structure of benzodiazepines affect CNS activity. Discuss in detail.
- d) Write a note on dopamine conservers, replacers and agonists used in Parkinson's disease.



Total No. of Questions : 6]

SEAT No. :

P1460

[5049]-604

[Total No. of Pages : 2

T.Y.B. Pharmacy
PHARMACOLOGY - III
(2013 Pattern) (Semester - VI)

Time : 3 Hours]

[Max. Marks : 70

Instructions to candidates:

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

SECTION - I

Q1) Classify sedative Hypnotics. Write a note on Pharmacology of Benzodiazepines. **[10]**

OR

Discuss the pharmacotherapy of Parkinson's disease.

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

- a) What are SSRI? Explain in brief.
- b) Write advantages of benzodiazepine over barbiturates.
- c) Explain mechanism of action and poisoning of barbiturates.
- d) Explain mechanism of action, therapeutic uses and adverse effects of imipramine.
- e) Explain properties of an ideal anesthetics.
- f) Explain newer cyclic analogues for treatment of Epilepsy.
- g) What is cheese reaction?

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

- a) Write a note on stages of anesthesia.
- b) Local anesthetics.
- c) Pharmacotherapy of alcoholism
- d) Halothane

P.T.O.

SECTION - II

Q4) Classify opioid analgesics and write pharmacological details of morphine. [10]

OR

Classify NSAIDs and write pharmacological details of Aspirin.

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

- a) Classify antitussives.
- b) Define and classify laxatives.
- c) Classify anti ulcer agents
- d) Write a note on antacids
- e) Define and classify emetics
- f) Write a note on mucosal defense enhancers
- g) Write a short note on pharmacotherapy of diarrhea

Q6) Attempt any two: [10]

- a) Explain pharmacotherapy of Rheumatoid arthritis.
- b) Write pharmacotherapy of cough.
- c) Classify drugs used in bronchial asthma and add a note on β -agonists
- d) Write MOA, ADR and Uses of (any 2)
 - i) Salbutamol
 - ii) Ranitidine
 - iii) Morphine



Total No. of Questions :6]

SEAT No. :

P1461

[5049]-605

[Total No. of Pages :2

Third Year B. Pharmacy
NATURAL PRODUCT CHEMISTRY
(2013 Pattern) (Semester - VI)

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 various analytical methods of characterization of natural products.
- b) Describe characterization and structural elucidation of alkaloids by chemical methods.

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

- a) Define natural colors and dyes and give its classification.
- b) Write a note on melting point and boiling point.
- c) Write a note on mutant strains and grafts.
- d) What are natural sweeteners and give meaning and non nutritive sweeteners.
- e) Add a note on henna and stevia.
- f) Explain chirality and complexity.
- g) Write a note on ozonolysis.

P.T.O.

Q3) Attempt any two: [10]

- a) Explain cardiovascular active drugs from marine source.
- b) Explain contribution of natural products in new drug discovery.
- c) Explain principle and application of HPLC.
- d) Describe turmeric and gymnema.

SECTION-II

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

- a) Describe in detail method of HPTLC along with its advantages and applications.
- b) Explain characterization and structural elucidation of flavonoids by spectral methods.

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

- a) Write a note on oxidative strategies.
- b) Explain theory of optical rotation.
- c) Write a note on serendipity berry.
- d) Explain optical rotator dispersion.
- e) Write a note on annatto.
- f) Give applications of UV spectroscopy.
- g) Explain relative molecular mass.

Q6) Attempt any two: [10]

- a) Explain principle and applications of NMR.
- b) Describe anticancer active agents of marine source.
- c) Write a note on strategies on new drug discovery.
- d) Explain in detail liquorice as a sweetner.

EEE

Total No. of Questions : 6]

SEAT No. :

P1462

[5049]-606

[Total No. of Pages : 2

T.Y.B.Pharmacy

BIOORGANIC CHEMISTRY & DRUG DESIGN

(2013 Pattern) (Semester - VI - 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 side indicate full marks.*

SECTION - I

Q1) Define bioorganic chemistry and explain its significance in designing enzyme inhibitors with suitable examples. **[10]**

OR

Explain DNA as drugs target. Write in detail about intercalation and alkylation mechanism of interaction.

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

- a) Explain role of tyrosine kinase enzyme and comment on tyrosine kinase cascade.
- b) Explain strand breaking by the drugs.
- c) Explain biochemical role of DHFR and its relevance in designing drugs.
- d) Define Molecular recognition and explain its types.
- e) Discuss HMG CoA inhibitors.
- f) Write about dopamine receptors and enlist their antagonists.
- g) Explain hydrolytic cleavage of strand breaking.

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

- a) Write a note on Topoisomerase II enzyme and their inhibitors.
- b) Explain antisense therapy and give its advantages.
- c) Write a note on structure and function of Thromboxane A2 receptors.
- d) Write a note on Molecular recognition.

P.T.O.

SECTION - II

Q4) Explain prodrug concept and give its applications. **[10]**

OR

Explain the role of structure-based drug design in drug discovery.

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

- a) Write a note on drug design.
- b) Explain statistical aspects in QSAR.
- c) Write a note on molecular docking.
- d) Explain role of stereochemistry in drug design.
- e) Explain Hansch analysis and Free Wilson analysis.
- f) Write a note on Molecular mechanics.
- g) Comment on software used in ligand and structure-based drug design.

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

- a) Explain drug discovery process in brief.
- b) Explain ligand-based drug design.
- c) Write a note on 2D and 3D-QSAR.
- d) Write about success stories of structure based drug design.



Total No. of Questions : 6]

SEAT No. :

P1463

[5049]-607

[Total No. of Pages : 2

T. Y. B. Pharmacy

PHARMACEUTICAL BIOTECHNOLOGY

(2013 Pattern) (Semester - VI)

Time : 3 Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) *Answers 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) Explain steps involved rDNA technology. Add a note on-Production of rDNA constructs and uses for Human insulin. **[10]**

OR

What do you understand by Gene Cloning? What are various types of cloning vectors involved in the process? Describe the role of expression vectors in recombinant DNA technology with suitable examples?

Q2) Answer ANY FIVE of the following: **[15]**

- a) Define the following:
 - i) Biotechnology.
 - ii) Recombinant DNA and
 - iii) Enzyme Immobilization.
- b) Enlist applications of biotechnology to Pharmaceutical Industry.
- c) Write significance of enzymes acting on DNA.
 - i) Restriction endonucleases
 - ii) S1 nuclease
 - iii) Alkaline phosphatase
- d) How will you transfer gene by conjugation method?
- e) Give principle and applications involved in Southern blotting technique or gel electrophoresis.
- f) Describe in brief about gene synthesis.
- g) Explain the steps involved in isolation of nucleic acid.

P.T.O.

Q3) Write short notes on ANY TWO of the following: [10]

- a) Gene machine.
- b) Cloning vectors-pUC 19 and pBR 322.
- c) Site directed mutagenesis.
- d) DNA Fingerprinting.

SECTION - II

Q4) What is hybridoma technology? Explain the steps involved in the production of monoclonal antibodies and applications. [10]

OR

Give details of strain improvement, media, different stages of fermentation and product recovery in production of *any one* antibiotic of your interest.

Q5) Answer ANY FIVE of the following: [15]

- a) Explain the concept of enzyme immobilization. Comment on its applicability with suitable examples.
- b) Give benefits of transgenic animal with suitable examples.
- c) Enlist various criteria to be considered in designing of a fermentor. Draw a neat schematic labelled diagram of fermentor.
- d) Enlist methods for immobilization of enzymes. Add a note on applications of enzyme immobilization.
- e) Enumerate the steps involved in crop preservation with its significance.
- f) Write a detailed account on production of Somatotrophin by rDNA technology.
- g) How to control foam during fermentation?

Q6) Write short notes on ANY TWO of the following: [10]

- a) Vitamin production by fermentation.
- b) Down stream processing.
- c) Interferon production by rDNA technology.
- d) Genomic library.



Total No. of Questions : 6]

SEAT No. :

P1464

[5049]-701

[Total No. of Pages : 2

Final Year B.Pharmacy
STERILE PRODUCTS
(2013 Pattern) (Semester - VII)

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 role of HVAC system in sterile parenteral manufacturing facility.
How is HVAC system maintained and validated? **[10]**

OR

Explain in details importance of personnel training and growing process to be followed for working in sterile parenterals manufacturing process.

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

- a) Explain how quality and quantity of excipients can affect safety and efficacy of sterile products?
- b) What are membrane filters and their applications in sterile product manufacture?
- c) Explain in brief terminal moist heat sterilization process in manufacture of sterile parenteral products.
- d) What excipients are needed for sterile aqueous solution formulation? Support the answer with examples of excipients.
- e) What are advantages of glass over plastic as packaging material for sterile products?
- f) Give classification of sterile products as per route of administration. Support the answer with examples.
- g) What are pyrogens? How pyrogens can be eliminated in production of sterile products?

P.T.O.

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

- a) Explain what is aseptic technique of manufacture of sterile products?
- b) Give principle of test for sterility for sterile parenteral products.
- c) Give importance of pH - solubility profile as preformulation parameter for the development of sterile parenteral product.
- d) Give comparative account of WFI-water for injection and SWFI-sterile water for injection as vehicles for sterile products.

SECTION - II

Q4) Explain the principle, working and applications of lyophilizer. **[10]**

OR

Explain general requirements and formulation development of ophthalmic products.

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

- a) Define and classify ophthalmic products.
- b) Write the advantages of freeze drying.
- c) Explain quality control tests for blood products.
- d) Write different types of bandages.
- e) Write the composition and importance of peritoneal dialysis fluid.
- f) Explain collection and storage of whole human blood.
- g) Explain different types of sutures and ligatures.

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

- a) Total Parenteral nutrition.
- b) Dextran.
- c) Formulation of LVPs.
- d) Stabilization of LVPs.



Total No. of Questions : 6]

SEAT No. :

P1465

[5049]-702

[Total No. of Pages :2

F.Y.B.Pharmacy
PHARMACEUTICAL ANALYSIS-V
(2013 Pattern) (Semester-VII)

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) Describe principle, instrumentation and applications of Raman spectroscopy. **[10]**

OR

Describe principle, instrumentation and applications of TEM technique.

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

- a) Compare NIR and MID IR techniques
- b) What are the advantages of Raman techniques?
- c) What are the applications of NIR
- d) Explain principle of SEM
- e) Explain ATR in IR instrumentation
- f) Explain use of molecular vibrations in IR interpretation.
- g) Compare scanning IR and FTIR techniques

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

- a) Explain characteristic IR bands of alkanes and alkenes.
- b) Discuss dispersive IR instrument
- c) Describe SEM instrumentation in brief.
- d) Discuss in brief FTIR.

P.T.O.

SECTION-II

Q4) Describe the different stationary and mobile phases used in Gas Chromatography. Give the applications of Gas chromatography [10]

OR

Discuss the principle, instrumentation, working and applications of Flash Chromatography

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

- a) Discuss the working of Atomic Emission Spectroscopy.
- b) How derivatization is carried out in GC?
- c) Give the principle of Atomic Emission Spectroscopy.
- d) Give the applications of Atomic Emission Spectroscopy
- e) What are the ideal characteristics of detection system used in Gas Chromatography?
- f) Write the theory of Super Critical Fluid Chromatography
- g) Give the importance of Van Deemter equation.

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

- a) Sample handling technique used in Gas Chromatography.
- b) Differential thermal conductivity and Thermoionic detectors
- c) Instrumentation and working of super Critical Fluid Chromatography.
- d) Super Critical Fluid Extraction Technique.



Total No. of Questions : 6]

SEAT No. :

P1466

[5049]-703

[Total No. of Pages : 2

F.Y. B. Pharmacy
MEDICINAL CHEMISTRY-III
(2013 Pattern) (Semester-VII)

Time : 3 Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) *Attempt all questions.*
- 2) *Figures to the right indicate full marks.*
- 3) *Answer to the two sections should be written in separate books.*

SECTION-I

Q1) Classify opiod analgesics and discuss in details the SAR of MU receptor ligands giving suitable structures. Sketch out synthesis of Dextromethorphan or Methadone. **[10]**

OR

Write classification of antihistamines giving their structures and write SAR of piperazines. Sketch out synthesis of promethazine or Dipnenhydramine.

Q2) Solve Any 5 questions (each question carries 3 marks): **[15]**

- a) Write a note on biosynthesis of eicosanoids.
- b) Write in brief about either H₁ or H₂ receptor antagonists.
- c) Sketch out synthetic route for Diclofenac.
- d) Write SAR of Salicylates as NSAIDs.
- e) Explain structural features of H₂ receptor.
- f) Write MOA & uses of anilines as analgesics.
- g) Write clinical uses of proton pump inhibitors.

P.T.O.

Q3) Solve Any Two questions (each question carries 5 marks): **[10]**

- a) Classify NSAIDs giving their structures.
- b) Explain opioid antagonists.
- c) Chemistry of prostaglandins.
- d) Write synthesis of any 2:
Cetirizine, Ranitidine, Prdidine.

SECTION-II

Q4) Enlist the drug used in gastrointestinal tract with example. Give in detail about proton pump inhibitors and draw synthesis of Omeprazole. **[10]**

OR

What is cough? Explain remedies for cough giving detail on expectorants.

Q5) Solve Any Five: **[15]**

- a) Give an account on Laxative.
- b) Explain in detail mucolytic agents.
- c) Classify antisecretory drug and explain any two in detail.
- d) What is asthma? Give drugs used in asthma.
- e) Write a note on prokinetics.
- f) Draw synthesis of Guanefecin.
- g) Explain narcotics as a antidiarrheal drug.

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

- a) Antispasmodic drug.
- b) Mucolytics.
- c) Antitussive agents.
- d) Antiemetics.



Total No. of Questions : 6]

SEAT No. :

[Total No. of Pages : 2

P2920

[5049] - 704

Fourth Year B.Pharm.

PHARMACOLOGY - IV (Semester - VII)

(2013 Pattern)

Time : 3 Hours]

[Max. Marks : 70

Instructions to the candidates :

- 1) Answer to the two sections should be written in separate book.*
- 2) Neat diagrams must be drawn wherever necessary.*
- 3) All questions are compulsory.*

SECTION - I

Q1) Classify antitubercular agents. Explain in detail mode of action, therapeutic uses and adverse effects of streptomycin. **[10]**

OR

Classify antimalarial agents. Explain in detail mode of action, therapeutic uses and adverse effects of chloroquine.

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

- a) Explain mode of action of Cotrimoxazole.
- b) Why tetracyclines are contraindicated during pregnancy?
- c) Explain advantages and disadvantages of antimicrobial drug combinations.
- d) What is Lepra reaction?
- e) Explain the mechanism of action and antibacterial spectrum of ciprofloxacin.
- f) Explain therapeutic uses of Immunosuppressants.
- g) Classify cephalosporins with example.

P.T.O.

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

- a) Zidovudine
- b) β lactamase inhibitors
- c) Sulfonamides
- d) Vinca alkaloids

SECTION - II

Q4) Classify drugs used in congestive heart failure. Explain pharmacology of Cardiac glycosides. **[10]**

OR

Classify antiarrhythmic agents. Explain role of calcium channel blockers in management of arrhythmia.

Q5) SOLVE ANY FIVE. **[15]**

- a) Discuss role of antidiuretics.
- b) Discuss role of reactive oxygen intermediates in various disorders.
- c) Explain mode of action and therapeutic uses of Clonidine.
- d) Discuss role of anticoagulants in various disorders.
- e) Explain role of Sodium nitroprusside in hypertensive crisis.
- f) Classify drugs used for atherosclerosis.
- g) Explain mode of action and adverse effects of nitrates.

Q6) Write short notes on (ANY TWO) **[10]**

- a) Scope of safety pharmacology.
- b) Management of myocardial infarction.
- c) Potassium sparing diuretics.
- d) Role of β -blockers in cardiac disorders.



Total No. of Questions : 6]

SEAT No. :

[Total No. of Pages : 2

P2921

[5049] - 705

Final Year B.Pharmacy

4.7.5 : NATURAL DRUG TECHNOLOGY

(2013 Pattern) (Semester - VII) (Theory)

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) *Figures to the right indicate full marks.*

SECTION - I

Q1) Solve any ONE : **[10]**

- a) What do you mean by Arista and Bhasma? Give methods of preparation and evaluation of Arista and Bhasma.
- b) Explain the theory and basic concept of Homeopathy. Add a note on diagnosis and treatment in Homeopathy.

Q2) Solve Any Five : **[15]**

- a) Give difficulties and limitations of herbal drug standardization.
- b) Give need and significance of authentication of plant material.
- c) Discuss in short the currently practiced approaches in cultivation of herbal drugs.
- d) Write a note on WHO guidelines to good storage practices for pharmaceuticals.
- e) Write a note on Asava.
- f) Write a note on diagnosis in Ayurveda.
- g) Comment on quality assurance in cultivation and harvesting technology.

P.T.O.

Q3) Solve any TWO : [10]

- a) Discuss the steps in development of crude drug monograph.
- b) Explain different approaches used in authentication of herbal drugs.
- c) Discuss WHO guidelines on Good Agricultural and Collection Practices (GACP).
- d) Comment on quality of crude drugs is affected by storage conditions.

SECTION - II

Q4) Solve any ONE : [10]

- a) What do you mean by oral bioavailability enhancers? Discuss in details the natural products as oral bioavailability enhancers.
- b) Give an account of herbs used in skin and hair care cosmetics.

Q5) Solve any Five : [15]

- a) Give the Pharmacognostic account of Rotenone.
- b) Write a note on bioethanol.
- c) Write a note on evaluation of hair care cosmetics.
- d) Comment on pesticides and environment.
- e) Define and classify herbal dietary supplements.
- f) Give biological source, chemical constituents and uses of Turmeric and Ginko biloba.
- g) Write a note on spirulina.

Q6) Solve any TWO : [10]

- a) Discuss in detail novel drug delivery system for herbal drugs.
- b) What are pest? Describe in detail different methods of pest control.
- c) Discuss in detail inorganic mineral supplements.
- d) Write a note on Skin permeation enhancers.



Total No. of Questions :6]

SEAT No. :

P1467

[5049]-706

[Total No. of Pages :2

F.Y. B. Pharmacy

**4.7.6. BIOPHARMACEUTICS AND PHARMACOKINETICS
(2013 Pattern) (Semester - VII)**

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

SECTION-I

Q1) Explain mechanisms involved in absorption of drug from GI tract. **[10]**

OR

Define apparent volume of distribution. Discuss factors affecting apparent volume of distribution.

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

- a) Effect of surface area of drug on drug dissolution and absorption.
- b) Absorption of drug after buccal administration.
- c) Drug-food interaction.
- d) Phase I reactions in biotransformation of drugs.
- e) Pulmonary route of administration.
- f) BCS class I drugs.
- g) Discuss in brief physiological barriers to drug distribution.

P.T.O.

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

- a) Effect of dosage form on absorption after oral administration.
- b) Clearance concept and renal clearance.
- c) Non-Linear pharmacokinetics.
- d) Necessity of In-vitro-In-vivo co-relation.

SECTION-II

Q4) Define Bioavailability and Bioequivalence and explain study designs for conducting bioequivalence study. **[10]**

OR

Explain ONE Compartmental open model for assessment of parameters by IV Bolus administration.

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

- a) Discuss factors affecting bioavailability of drugs.
- b) What are the advantages of urinary data over plasma data.
- c) How bioavailability determined on the basis of urinary excretion data.
- d) What is Wash out period.
- e) What is Two compartmental analysis.
- f) What is significance of compartmental analysis.
- g) Define and explain in short C_{max} and t_{max} .

Q6) Write short note on (Any 2): **[10]**

- a) Method of residual.
- b) Biowaivers.
- c) Assessment of Bioavailability.
- d) Single verses Multiple dose study.

EEE

Total No. of Questions : 6]

SEAT No. :

[Total No. of Pages : 2

P2922

[5049] - 707

Fourth Year B.Pharmacy (Semester - VII)

4.7.7 : PHARMACEUTICAL JURISPRUDENCE

(2013 Pattern)

Time : 3 Hours]

[Max. Marks : 70

Instructions to the candidates :

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

SECTION - I

Q1) Define “illicit traffic”. Discuss in detail the powers of central Government to permit, control and regulate certain operations under NDPS Act 1985.[10]

OR

What are different administrative bodies under Drugs and Cosmetics Act 1940. Discuss the qualifications, duties and working procedure of Government Analyst.

Q2) Attempt any five (3 marks each) **[15]**

- a) Write the functions of PCI.
- b) What are the objectives of Industrial Development and Regulation Act 1951.
- c) Define Displaced Person and Repatriate under Pharmacy Act 1948.
- d) What are the provisions for experimentation on animals under the Prevention of cruelty to Animals Act, 1960.
- e) Explain objectives of DPCO 2013. Give the general formula for calculation of ceiling price of the scheduled formulation.
- f) Specify Schedule D and Schedule G under Drugs and Cosmetics Act 1940.
- g) Write the classes of certain drugs and cosmetics prohibited for manufacture and sale under drugs and cosmetics Act 1940.

P.T.O.

Q3) Attempt any two (5 marks each) [10]

- a) Define Magic Remedy. Discuss the classes of advertisements prohibited and exempted under Drugs and Magic Remedies Act 1954.
- b) Write the conditions of Loan Licence and Repacking licence.
- c) Discuss the constitution and functions of State and Joint State pharmacy councils.
- d) Write a short note on DTAB.

SECTION - II

Q4) Define Patent. Write in detail about filling and processing of patent. [10]

OR

Elaborate trademark, copyright, industrial design and geographical indications under IPR.

Q5) Attempt any five (3 marks each) : [15]

- a) What are product and process patents?
- b) What is patent infringement?
- c) What is EMR?
- d) Discuss in brief about “opposition to grant of patent”.
- e) Write in brief criteria to obtain patent.
- f) What are Provisional and Complete specifications.

Q6) Attempt any two (5 marks each) [10]

- a) Write a short note on Therapeutic Goods Administration.
- b) Write in brief ANDA and Bioequivalence.
- c) Explain Patent Certification.
- d) Discuss in brief salient features of Hatch Waxman Act with reference to generic drugs.

