

Total No. of Questions : 6]

SEAT No. :

P2072

[Total No. of Pages : 2

[5552] - 101

F. Y. B. (Pharm.)

1.1.1.T- PHARMACEUTICS - I

(2015 Pattern) (Semester - I)

Time : 3 Hours]

[Max. Marks :60

Instructions to the candidates:

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

SECTION - I

Q1) Attempt any one.

[10]

Define drug; what are the different sources of drug? Write the rationale for development of dosage form.

OR

Classify the dosage form and Explain different routes of drug administration in brief.

Q2) Attempt any Four.

[12]

- a) Write the principles of Homoeopathy as alternative system of medicine.
- b) What are the different branches of Pharmaceutics?
- c) Write brief about Ayurvedic Pharmacopoeia.
- d) What are the career opportunities after pharmacy graduation?
- e) Describe Siddha and Unani system of medicine.
- f) Write the scope of Pharmaceutical Engineering.

P.T.O.

Q3) Write Short Notes (Any TWO) [8]

- a) Scope of Hospital Pharmacy.
- b) Pharmacy code of ethics.
- c) U.S.P.
- d) Principle of ayurvedic system of medicine.

SECTION - II

Q4) Attempt any one [10]

Classify the solvents for solution preparations, Discuss the different methods to improve aqueous solubility

OR

What is quality Assurance? Explain the components in CGMP.

Q5) Attempt any Four. [12]

- a) Write difference between simple syrup I.P & simple syrup U.S.P.
- b) Discuss viscosity measurement for solutions.
- c) Write the formulation and direction for simplelinctus I.P.
- d) Discuss the formulation of Enema.
- e) Write the importance of stability study.
- f) Why excipients are used to formulate dosage form?

Q6) Attempt any two [8]

- a) Colours and Hauors
- b) Preservatives in solutions
- c) Aromatic waters
- d) Polymorphism.



[5552] - 102

F.Y.B. Pharm

MODERN DISPENSING PRACTICES

(2015 Pattern) (Semester - I)

Time : 3 Hours]

[Max. Marks :60

Instructions to the candidates:

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

SECTION - I

Q1) Attempt any one.

[10]

- a) Define prescription, Explain in detail responding to prescription.
- b) Explain good compounding and dispensing practices.

Q2) Answer any four.

[12]

- a) What would be the dose for child of 4 and 12 years; if the adult dose is 500mg.
- b) Explain drug profile and give its importance.
- c) Explain importance of storage conditions of formulations
- d) Explain documentation of prescription filling.
- e) Explain in brief containers for dispensed medicines
- f) Explain proof spirit; calculate proof strength for 95% v/v alcohol
- g) In what amount should be 45% and 15% alcohol be mixed to make 1000 ml of 30% alcohol.

P.T.O.

Q3) Write a short note on (Any TWO.) [8]

- a) Give in detail documentation of purchase and stock record.
- b) Factors affecting dose calculation.
- c) Pricing of prescription
- d) Labeling of dispensed product.

SECTION - II

Q4) Answer any one. [10]

- a) Describe organization, structure and design of retail drug store.
- b) Describe in detail therapeutic incompatibility.

Q5) Answer any Four. [12]

- a) Explain reporting of idiosyncratic cases
- b) Explain patient counseling in asthma.
- c) Explain role of pharmacist in vaccination.
- d) Define Incompatibility. Enlist types of incompatibility
- e) Explain in brief concept of self medication.
- f) Explain legal requirements for establishment of drug store
- g) Explain in brief Rational drug use

Q6) Write a Short Notes (Any TWO.) [8]

- a) Physicochemical incompatibility
- b) Pharmacovigilance
- c) Drug Information service
- d) Role of pharmacist in community healthcare and education



Total No. of Questions : 6]

SEAT No. :

P2074

[5552]-103

[Total No. of Pages : 2

F.Y. B.Pharmacy

PHARMACEUTICAL INORGANIC CHEMISTRY (1.1.3T)
(2015 Pattern) (Semester - I)

Time : 3 Hours]

[Max. Marks : 60

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) What is physiological acid-base balance? Write a note on 'electrolytes used in acid-base therapy'.
- b) What are gastrointestinal agents? Classify them with examples. Write a detail note on antacids.

Q2) Solve any four from the following. **[12]**

- a) Define :
 - i) Pharmacopoeia
 - ii) Monograph. Enlist the contents of individual monograph.
- b) Define the term mEq/l. Calculate mEq/l of Na and Cl ions in
 - i) Normal saline solution.
 - ii) Sodium chloride hypertonic injection (1.6% w/v solution of sodium chloride)
- c) Give the principle involved in limit test for iron.
- d) Enlist official waters as per I.P. and describe any one official water.
- e) Give the physiological role of sodium, potassium and phosphate ion.
- f) Give the principle involved in limit test for sulphate.
- g) What is Achlorhydria? Write a note on Acidifying agents.

Q3) Solve any two from the following. **[8]**

- a) Write a note on 'saline cathartics'.
- b) Describe any four methods of removing hardness of water.
- c) Write a note on 'GIT protective and adsorbents'.
- d) Give the principle involved in limit test of Arsenic.

P.T.O.

SECTION - II

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

- a) Explain in detail absorption, distribution and physiological role of iron and iodine. Give preparation, properties, uses and storage of
 - i) Ferrous Sulphate.
 - ii) Ferric ammonium citrate.
- b) What are topical antimicrobial and astringents? Explain mechanism of action of Antimicrobial agents and astringents. Discuss preparation, properties, storage and uses of Potassium permanganate.

Q5) Solve any four from the following. **[12]**

- a) What are expectorants? Give mechanism of action, preparation, properties of Ammonium chloride.
- b) Write a note on fluorides as anticaries agents.
- c) Write a note on inorganic cytotoxic agents.
- d) What are dentifrices? Discuss any one agent in detail.
- e) Give the uses of following inorganic agents.
 - i) Selenium sulfide.
 - ii) Lithium carbonate.
 - iii) Titanium dioxide
- f) Give the biological role of copper.
- g) Write about electrolytes used for replacement therapy.

Q6) Solve any two from the following. **[8]**

- a) What are antidotes? Give the mechanism of action of sodium nitrite and sodium thiosulphate in cyanide poisoning.
- b) Give properties and uses of -
 - i) Talc
 - ii) Zinc oxide
 - iii) Calamine
 - iv) Zinc stearate
- c) Give the preparation, properties, uses and storage of following inorganic gases -
 - i) Oxygen
 - ii) Nitrogen
- d) Write a note on 'Radioopaque Contrast Media'.



Total No. of Questions : 6]

SEAT No. :

P2075

[5552]-104

[Total No. of Pages : 3

F.Y. B.Pharm.

PHARMACEUTICAL ORGANIC CHEMISTRY - I
(2015 Pattern) (Semester - I)

Time : 3 Hours]

[Max. Marks : 60

Instructions to the candidates:

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

SECTION - I

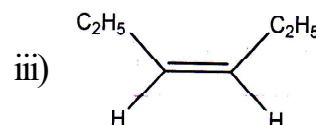
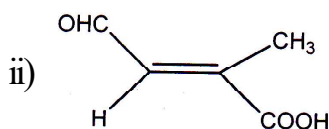
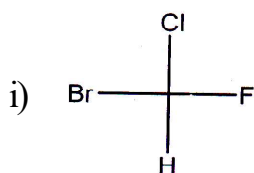
Q1) Explain with mechanism Addition of Hydrogen halide to alkenes and Oxymercuration-Demercuration reaction in alkenes. **[10]**

OR

Define Elimination reactions and explain in detail mechanism, stereochemistry and factors affecting rate of E2 reactions.

Q2) Answer the following. (Any four) **[12]**

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

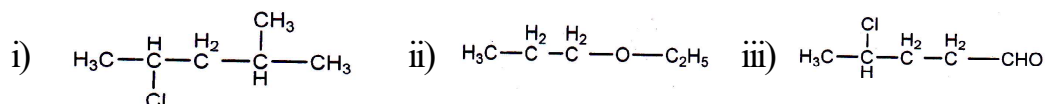


b) Define following terms with suitable examples.

- i) Carbanion
- ii) Carbene
- iii) Nucleophile

P.T.O.

c) Write IUPAC names for following structures.



d) Draw structures from IUPAC names of following:

- i) 2,4,6-trinitro ethylbenzene
 - ii) Methyl propanoate
 - iii) Ethoxy ethane
- e) Write any three methods of preparation of alkanes.
- f) Define the terms Arrhenius acid, Lewis acid, Lowry Bronsted acid.
- g) Explain Tautomerism with example.

Q3) Answer the following. (Any two) **[8]**

- Explain the addition-elimination and elimination-addition mechanisms of nucleophilic aromatic substitution.
- Discuss stability of Primary, Secondary and Tertiary carbanions.
- Define hybridization. Explain sp^3 hybridization with example.
- Classify organic compounds on the basis of elemental composition (at least four classes with suitable examples).

SECTION - II

Q4) Explain the directing effects of following functional groups towards electrophilic substitutions on benzene: [10]

- i) --OH
- ii) --NO_2

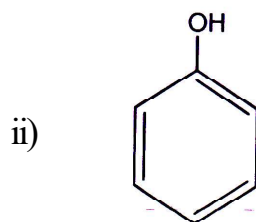
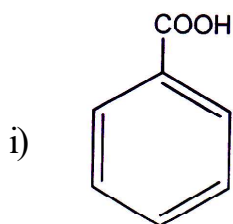
OR

Classify structural isomers with example? Explain geometrical isomers with example.

Q5) Answer the following. (Any four) [12]

- Compare inductive effect with mesomeric effect.
- Explain Hoffman rule for 1,2 elimination reaction?
- Write a note on Diels Alder reaction.

- d) Arrange following in order of increasing acidity with explanation
- Acetic acid
 - Trichloroacetic acid
 - Fluoroacetic acid
- e) State and explain Anti-Markovnikoff Rule.
- f) Explain Inductive effect and electromeric effect with example.
- g) Draw all possible resonating structures of following.



Q6) Answer the following. (Any two)

[8]

- Explain any four types of chemical reactions with suitable examples.
- Explain Inter and Intra molecular forces of attraction.
- Write their any two methods of preparation and two reactions of alkynes.
- Explain free radical reaction mechanism.



Total No. of Questions : 6]

SEAT No. :

P2076

[5552]-105

[Total No. of Pages : 2

First Year B.Pharmacy

1.1.5 HUMAN ANATOMY AND PHYSIOLOGY - I
(2015 Pattern) (Semester - I) (Credit System)

Time : 3 Hours]

[Max. Marks : 60

Instructions to the candidates:

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

SECTION - I

Q1) Explain the Functions of Blood and explain in detail the Mechanism of Blood clotting. **[10]**

OR

Draw neat labeled diagram of cell. Explain in detail transport of substances across plasma membrane?

Q2) Answer the following: (any four) **[12]**

- a) Explain the structure and functions of RBC.
- b) Explain with the help of figure an example of Positive feedback loop.
- c) Explain the Structure of Plasma membrane.
- d) Explain the Structure of Nerve tissue.
- e) Explain the terms that are used to identify body parts:
 - i) Anatomical position
 - ii) Superior
 - iii) Posterior
- f) Explain various Stages of cell division.
- g) Explain the levels of structural organization.

Q3) Write short note on (Any two) **[8]**

- a) WBCs.
- b) Body Imaging Techniques.
- c) Anatomy and functions of Lymph Node.
- d) Organ transplantation.

P.T.O.

SECTION - II

Q4) Define cardiac cycle and describe various events occurring in cardiac cycle. **[10]**

OR

Enlist the organs of digestive system. Describe the, Location, structure histology and functions of liver.

Q5) Answer the following. (Any four) **[12]**

- a) Define the terms: Health Promotion, Nutrition & Balanced Diet.
- b) Draw neat labeled diagram of interior of heart.
- c) Describe the various phases of action potential in cardiac muscles.
- d) Discuss structure & functions of Pancreas.
- e) Explain the functions of Digestive System.
- f) Write a note on heart valves.
- g) Discuss about Salivary glands.

Q6) Write short note on (Any two) **[8]**

- a) Conduction system of Heart.
- b) ECG.
- c) Stomach: Anatomy, Histology & Functions.
- d) Family planning.



Total No. of Questions : 6]

SEAT No. :

P2077

[Total No. of Pages : 2

[5552] - 106

First Year B. Pharmacy.

**1.1.6.- COMMUNICATION AND SOFT SKILL DEVELOPMENT
(2015 Pattern) (Semester - I) (Credit System)**

Time : 3 Hours]

[Max. Marks :60

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 meaning and importance of communication. Explain objectives of Communication. Describe the different modes of overcoming barriers of communication. **[10]**

OR

Describe the Expository style of writing and states its structure.

Q2) Answer the following (Any 4) **[12]**

- a) State various purposes of writing.
- b) Explain about abstract.
- c) Explain importance of Punctuation marks in English language.
- d) Language as a tool of communication.
- e) Write the salient features of technical communication.
- f) Write about semantics of connectives.
- g) Explain Scope & Significance of technical communication.

P.T.O.

Q3) Write short note on (Any 2) [8]

- a) Differentiate between technical communication and general writing.
- b) Body Language
- c) Knowing the audience
- d) Formal report

SECTION - II

Q4) What is globalization? State the advantages and disadvantages of globalization. Add a note on Email. [10]

OR

Define Intrapersonal and Interpersonal skills. Explain various Intrapersonal skill with their importance. [10]

Q5) Answer the following (Any 4) [12]

- a) Write an application for the post of quality management incharge in pharmaceutical industry.
- b) Write the importance of group discussion.
- c) Enlist and explain the components of Resume.
- d) Format of leave letter.
- e) What is empathy. Discuss its types.
- f) Explain Vowels and Consonants in phonetics.
- g) Explain steps in problem solving.

Q6) Write short note on (Any 2) [8]

- a) Problem solving
- b) Enquiry letters
- c) Email
- d) Role of information technology in modern era



Total No. of Questions : 6]

SEAT No. :

P2078

[Total No. of Pages : 2

[5552]-201

First Year B. Pharmacy

1.2.1 (T) PHARMACEUTICS - II

(2015 Pattern) (Credit System) (Semester - II)

Time : 3 Hours]

[Max. Marks :60

Instructions to the candidates:

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

SECTION - I

Q1) a) Describe construction, working, advantages, disadvantages of rotary drum filter with neat diagram. **[10]**

OR

Discuss cyclone separation. Write principle, construction and working of cyclone separator with diagram.

Q2) Answer the following (Any 4): **[12]**

- a) Describe sieving as a method of size separation for powders.
- b) Describe the construction and working of Edge Runner Mill.
- c) Give official standards for powder gradation as per British Pharmacopoeia.
- d) What are the advantages and applications of size reduction?
- e) Describe in brief Ball mill.
- f) What are various types of containers?
- g) Define packaging. Write a note on Primary and Secondary packaging with suitable example.

P.T.O.

Q3) Write short note on (Any 2):

[8]

- a) Types of glass as per USP.
- b) Evaluation of plastic as packaging material.
- c) Hydrolytic resistance (water attack) test.
- d) Fluid energy mill.

SECTION - II

Q4) Explain mechanisms involved in Powder and Liquid mixing. Explain in brief V shape and double cone blender. **[10]**

OR

Discuss various components of Good Manufacturing Practices.

Q5) Answer the following (Any 4):

[12]

- a) Enlist and explain any one factors influencing Drug absorption.
- b) Discuss in brief bioavailability and bioequivalence.
- c) Describe in brief ribbon and sigma blenders.
- d) Write on endocytosis.
- e) What is first pass effect?
- f) Write in short on renal excretion.
- g) Write on planetary mixer.

Q6) Write short note on (Any 2):

[8]

- a) Typical plasma drug concentration - Time profile.
- b) Batch Manufacturing Record.
- c) Prevention of aeration and foam.
- d) General layout of pharmaceutical manufacturing unit.



Total No. of Questions : 6]

SEAT No. :

P2079

[5552]-202

[Total No. of Pages : 2

First Year B. Pharmacy

**1.2.2 T: DOSAGE FORM DESIGN
(2015 Pattern) (Semester - II) (Credit System)**

Time : 3 Hours]

[Max. Marks : 60

Instructions to the candidates:

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

SECTION - I

Q1) Define powders. Classify the powders explain the method of preparation of effervescences granules. **[10]**

OR

Define emulsion, give its classification with examples and discuss instability of Emulsions. **[10]**

Q2) Solve any four from the following. **[12]**

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

Q3) Write short note on. (Any Two). **[8]**

- a) What is Stoke's law? Give its significance and instability of suspension.
- b) Explain the self-emulsifying drug delivery system.
- c) Explain the different Methods of mixing in powders.
- d) Note on Displacement value with its significance in suppository.

P.T.O.

SECTION - II

Q4) Define suspension? What are ideal properties of suspension? Add an account of physical stability of suspension. **[10]**

OR

What are various approaches to enhance the drug solubility. **[10]**

Q5) Solve any four from the following. **[12]**

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

Q6) Write short note on. (Any Two). **[8]**

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



Total No. of Questions :6]

SEAT No. :

P2080

[5552]-203

[Total No. of Pages : 2

F.Y. B. Pharm.

PHARMACEUTICAL ORGANIC CHEMISTRY-II
(2015 Pattern) (Semester-II) (Credit System)

Time : 3 Hours]

[Max. Marks : 60

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 the terms 1°, 2° and 3° amines with suitable example and how will you distinguish between them? Give any three methods of preparations and reactions of amines with suitable examples. **[10]**

OR

Explain the reactivity of carbonyl group towards nucleophilic addition reactions. Write any four methods of preparation and any four reactions of carbonyl compounds.

Q2) Answer the following any four : **[12]**

- a) Which one of the following is more basic, give reasons. 2, 4, 6 trimethylaniline and aniline.
- b) Write any three chemical reactions of phenols.
- c) Give any three methods of preparation of alcohol.
- d) What are hydrazones how are they prepared.
- e) Draw structures for the following IUPAC names 2-butenal, 2, 4- dimethylaniline and 1-methoxy -2-propanol.
- f) Explain MPV Reduction.
- g) Give any three methods of preparation of ethers.

P.T.O.

Q3) Write short note on any two :

[8]

- a) Cannizzarro's reaction.
- b) Sulphonic acid preparation and reactions.
- c) Aldol condensation
- d) Preparation and uses of diazonium salts.

SECTION-II

Q4) What are nucleophilic substitution reactions? Explain reactivity of alkyl halides towards nucleophilic substitution reactions. Comment on walden inversion. **[10]**

OR

Discuss in detail factors affecting nucleophilic aliphatic substitution and comment on solvolysis.

Q5) Answer the following (any four) :

[12]

- a) Hofmann degradation.
- b) Preparation of Grignard reagent
- c) Michael addition.
- d) Give any two reactions of acid chlorides.
- e) Give any two reactions of isocyanides.
- f) Discuss structure and nomenclature of cyanides.
- g) Give any two methods of preparation of alkyl halides.

Q6) Write short notes on any two :

[8]

- a) Kinetics and stereochemistry of S_N2 reaction.
- b) Dicarboxylic acids
- c) Reactions of carboxylic acids.
- d) Alkaline hydrolysis of esters.



Total No. of Questions : 6]

SEAT No. :

P2081

[5552]-204

[Total No. of Pages : 2

F.Y. B. Pharmacy

1.2.4. HUMAN ANATOMY AND PHYSIOLOGY - II

(2015 Pattern) (Credit System) (Semester - II)

Time : 3 Hours]

[Max. Marks : 60

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) *Black figures to the right indicate full marks.*

SECTION - I

Q1) Explain the structure & types of neuron. Describe in detail phases of action potential in neurons. **[10]**

OR

Draw a neat labeled diagram of respiratory system. Explain mechanism of breathing and exchange of gases at lung and tissue level.

Q2) Answer the following (Any 4) **[12]**

- a) Explain the structure of internal ear.
- b) Describe the location, structure, and functions of the trachea.
- c) Write a note on interior of eyeball.
- d) Enlist cranial nerves with their Type & functions.
- e) Explain the meninges of the CNS.
- f) Define and give clinical significance of different respiratory volumes.
- g) Describe preganglionic and postganglionic neurons of the autonomic nervous system.

Q3) Write short note on (Any 2) **[8]**

- a) Physiology of Vision.
- b) Cerebrum.
- c) Structure & Functions of Skin.
- d) Lungs.

P.T.O.

SECTION - II

Q4) Describe the location, hormones and their functions of anterior and posterior pituitary gland in detail. **[10]**

OR

Describe the external and internal gross anatomical features of the kidneys.

Q5) Answer the following (Any 4) **[12]**

- a) Discuss histology of the ovaries.
- b) Define the terms: Diabetes mellitus, Cushing's Syndrome, Acromegaly
- c) Enlist different hypothalamic hormones with their functions.
- d) Describe the structure of sperm.
- e) Draw neat labelled diagram of Nephron. Add a note on renal corpuscles.
- f) Write a note on Semen.
- g) Explain the anatomy & histology urinary bladder

Q6) Write short note on (Any 2) **[8]**

- a) Female reproductive cycle.
- b) Synthesis, storage and release of thyroid hormone.
- c) Spermatogenesis.
- d) Hormonal Regulation of Tubular Reabsorption and Tubular Secretion.

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Total No. of Questions : 6]

SEAT No. :

P2083

[5552]-206

[Total No. of Pages : 2

First Year B. Pharmacy
PHARMACEUTICAL ANALYSIS - I
(2015 Pattern) (Semester - II)

Time : 3 Hours]

[Max. Marks : 60

Instructions to the candidates:

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

SECTION - I

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

OR

What are neutralization titrations? Explain in detail Universal and mixed indicators with suitable examples.

Q2) Answer the following (any four). **[12]**

- a) Define Primary standard and secondary standard with examples.
- b) Write about T-test.
- c) Differentiate between volumetric analysis and gravimetric analysis.
- d) Explain effect of temperature on non-aqueous titrations.
- e) What is buffer index? Write equation to calculate buffer index.
- f) Discuss in brief Ostwald's theory.
- g) Explain the terms Molarity, Normality and Molality.

Q3) Write short notes on (any two). **[8]**

- a) Permanganate titrations.
- b) Give principle and reactions involved in assay of Hydrogen peroxide solution.
- c) Types of errors.
- d) Titration of amino acid.

P.T.O.

SECTION - II

- Q4)** Discuss in detail unit operations in gravimetry. Add note on applications of Gravimetric analysis. **[10]**

OR

What is pM indicator? Discuss masking and demasking in detail.

- Q5)** Answer the following (any four). **[12]**

- a) How will you prepare and standardize 0.1 N AgNO_3 solution.
- b) Differentiate between co-precipitation and post precipitation.
- c) Give two examples of each organic and inorganic precipitating agents.
- d) Compare Mohr's method and Volhard's method.
- e) "Sulphuric acid is used in redox titrations" Give reason.
- f) Explain Assay of calcium gluconate as per I.P.
- g) Explain common ion effect. How is it utilized for controlling the concentration of weak electrolyte.

- Q6)** Write short notes on (any two). **[8]**

- a) Sodium Nitrite Titration.
- b) Ostwald ripening and von weimarn ratio.
- c) Replacement Complexometric titrations.
- d) Give principle and reactions for a type of precipitation titration which involves formation of coloured precipitate.



Total No. of Questions : 6]

SEAT No. :

P2084

[Total No. of Pages : 2

[5552] - 301

S.Y. B. Pharmacy

PHYSICAL PHARMACEUTICS-I

(2015 Pattern) (Credit system) (Semester - III)

Time : 3 Hours]

[Max. Marks :60

Instructions to the candidates:

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

SECTION - I

Q1) Attempt any one.

[10]

Explain the phase diagram for two component system containing solid and liquid phases, add a note on solid dispersions

OR

Write the ideal gas equation; explain the kinetic molecular theory and van der waal equation for real gases.

Q2) Attempt Any four.

[12]

- a) Why depression of freezing point is a colligative property?
- b) Explain the significance of boiling point diagram in fractional distillation.
- c) Write the principle of two phase system aerosol.
- d) Explain the equivalent Conductance of strong and weak Electrolytes.
- e) Explain the Claude's method for liquefaction of gases.
- f) A solution containing 15g of non electrolyte solute dissolved on 100g of water has a boiling point of 101.9°C. what is the molecular weight of sucrose if ebullioscope constant (K_b) for water of 0.51
- g) Differentiate between ideal solution and real solution.

P.T.O.

Q3) Write short notes (Any two) [8]

- a) Measurement of Osmotic pressure.
- b) Gibbs phase rule and its pharmaceutical applications.
- c) One component system.
- d) Colligative properties of electrolytes.

SECTION -II

Q4) Attempt any one

Explain the concept of crystallization and methods of crystal analysis.

[10]

OR

State Nernst Distribution law along with factors affecting and Applications

Q5) Attempt Any four [12]

- a) Define solubility parameter and give its significance.
- b) Give examples of different polymorphs.
- c) Explain the changes taking place after glass transition temperature is reached.
- d) Explain effect of temperature and pressure on solubility of gases in liquids.
- e) Describe the methods of crystal analysis.
- f) Discuss effect of various parameters on solubility.
- g) Discuss solubility and permeability co-relationship in detail.

Q6) Write short Notes on (Any TWO) (each question carries 5 marks): [8]

- a) Application of polymorphism.
- b) Solubility of electrolytes.
- c) Thermodynamics
- d) Crystal parameters



Total No. of Questions : 6]

SEAT No. :

P2085

[5552]-302

[Total No. of Pages : 2

S.Y. B.Pharm.

PHARMACEUTICAL MICROBIOLOGY

(2015 Pattern) (Semester - III)

Time : 3 Hours]

[Max. Marks : 60

Instructions to the candidates:

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

SECTION - I

Q1) Explain in detail growth curve of bacteria. **[10]**

OR

Write general properties and morphology of viruses. **[10]**

Q2) Answer the following. (any four) **[12]**

- a) Write the morphology and importance of Penicillium.
- b) Draw the structure of HIV.
- c) Explain different methods used for preservation of microbial cultures.
- d) Differentiate between Yeast and Mould.
- e) How will you detect presence of Escherichia Coli in Pharmaceuticals.
- f) List different techniques used for counting of bacteria.
- g) Write the functions of bacterial capsules.

Q3) Write a note on. (any two) **[8]**

- a) Louis Pasteur.
- b) Probiotics.
- c) Whittaker's Five Kingdom concept.
- d) Microbial limit test.

SECTION - II

Q4) Define 'sterilization'. List different methods used for sterilization. Explain sterilization by moist heat. **[10]**

OR

Define 'Antibody'. Explain in detail types of antibodies. **[10]**

P.T.O.

Q5) Answer the following. (any four) **[12]**

- a) Write the advantages of Membrane Filtration.
- b) Write the ideal properties of disinfectants.
- c) Differentiate between Active immunity and Passive immunity.
- d) Explain the principle of precipitation reaction.
- e) What are Vaccines?
- f) What is microbial virulence?
- g) Write quality control tests for bacterial vaccine.

Q6) Write a note on. (any two) **[8]**

- a) RW test.
- b) CMI.
- c) ELISA.
- d) Cold sterilization.



Total No. of Questions : 6]

SEAT No. :

P2086

[5552]-303

[Total No. of Pages : 2

S.Y. B.Pharm.

PHARMACEUTICAL BIOCHEMISTRY
(2015 Pattern) (Semester - III) (Theory)

Time : 3 Hours]

[Max. Marks : 60

Instructions to the candidates:

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

SECTION - I

Q1) Explain Replication in Eukaryotic Cell. **[10]**

OR

Explain effect of substrate concentration on enzyme activity.

Q2) Attempt short note on any four of the following. **[12]**

- a) Functions of carbohydrates.
- b) Differentiation between Prokaryotic and Eukaryotic cell.
- c) Fibrous Proteins.
- d) Biological role of hyaluronic acid and heparin.
- e) End Group analysis.
- f) Applications of enzymes with emphasis on marker enzymes.
- g) Colour reactions of proteins (any three).

Q3) Write notes on any two of the following. **[8]**

- a) Secondary structure of proteins.
- b) Essential Fatty Acids.
- c) Scope of Pharmaceutical Biochemistry in Pharmaceutical Sciences.
- d) Functional proteins.

P.T.O.

SECTION - II

Q4) Explain the steps involved in both phases of HMP shunt. Give the significance of this metabolic pathway. **[10]**

OR

Explain beta oxidation of unsaturated Fatty acid. How are fats are a better fuel than carbohydrates?

Q5) Attempt short note on any four of the following. **[12]**

- a) Glycogenolysis.
- b) Vit. C.
- c) Fate of Pyruvate.
- d) Homeostasis of Glucose.
- e) Utilization of Cholesterol.
- f) Importance of NADPH.
- g) Biosynthesis of any one aromatic amino acid.

Q6) Write notes on any two of the following. **[8]**

- a) Fat soluble vitamins.
- b) Urea cycle and its significance.
- c) Pyrimidine biosynthesis.
- d) Gluconeogenesis.



Total No. of Questions : 6]

SEAT No. :

P2087

[5552]-304

[Total No. of Pages : 3

S.Y. B.Pharm.

234 : PHARMACEUTICAL ORGANIC CHEMISTRY - III
(2015 Pattern) (Semester - III)

Time : 3 Hours]

[Max. Marks : 60

Instructions to the candidates:

- 1) All questions are compulsory.
- 2) Answer of the two sections should be written in two separate answer books.
- 3) Digits written at right side indicate full marks of that question.

SECTION - I

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

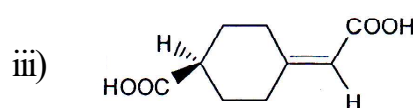
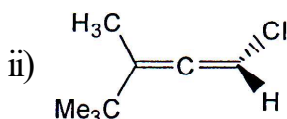
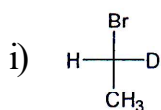
- a) Define stereochemistry and give its significance in biological activity. Discuss in details about various conformations of cyclohexane.

OR

- b) Define Carbohydrates, classify it with suitable examples and give its significance with medicinal importance. Give note on establishment of structure of glucose.

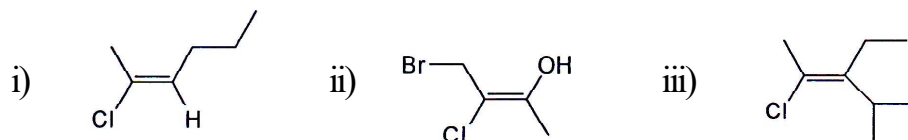
Q2) Attempt any four from the following. **[12]**

- a) What will happen when glucose treated with :
- i) Nitric Acid
 - ii) Bromine water
- b) Draw cyclic structure of Glucose and fructose.
- c) Define :
- i) Chirality
 - ii) Atropisomers
 - iii) Optical Activity
 - iv) Enantiomers
 - v) Meso compounds
 - iv) Diastereomers
- d) Assign R and S configurations



P.T.O.

e) Assign E and Z configuration



f) Give a note on Conformational isomerism in ethane.

g) Explain why equatorial substituted chair form is more stable than axial substituted chair form of mono-substituted cyclohexane.

Q3) Attempt any two from the following. [8]

- Define racemic modification. Enlist different methods used for resolution of a racemic mixture and explain any one of them.
- Write a note on mutarotation.
- Conformation of n-butane.
- Write a note on Killiani Fischer synthesis and Ruff degradation.

SECTION - II

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

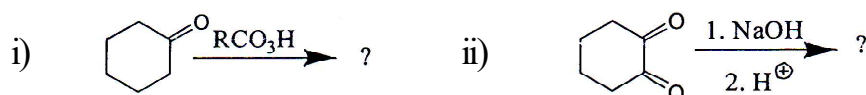
- Define and classify rearrangement reaction. Write a note on Pinacol-Pinacolone and Hoffmann rearrangement including its mechanism and at least two applications of each.

OR

- Define and classify amino acids in details with suitable examples. Give methods of preparation and reactions of amino acids.

Q5) Attempt any four from the following. [12]

- Predict the product :



- Describe reaction and mechanism for Claisen's rearrangement.

- c) Discuss the rearrangement with mechanism of Favorski rearrangement.
- d) Discuss the rearrangement with mechanism of Schmidt rearrangement.
- e) Explain Fries rearrangement.
- f) Enlist various rearrangement reactions involves migration to electron deficient carbon and give mechanism of any one of them.
- g) Enlist various rearrangement reactions involves migration to electron deficient oxygen and give mechanism of any one of them.

Q6) Attempt any two from the following. **[8]**

- a) Define and classify pericyclic reaction? Add a note on Cope rearrangement?
- b) Explain the term Isoelectric point of amino acid.
- c) Stevens rearrangement.
- d) Write a note on Beckmann rearrangement.



Total No. of Questions : 6]

SEAT No. :

P3394

[Total No. of Pages : 2

[5552] - 305
S.Y. B. Pharm (Semester - III)
PHARMACOLOGY - I
(2015 Pattern)

Time : 3 Hours]

[Max. Marks : 60

Instructions to the candidates :

- 1) All questions are compulsory.*
- 2) Figures to the right indicate full marks.*
- 3) Write answers for section I and section II in separate answer sheets.*

SECTION - I

Q1) Enlist various parenteral routes of drug administration. Write advantages and disadvantages of intravenous, intramuscular and subcutaneous route. [10]

OR

Define drug metabolism. Explain various phases of drug metabolism with examples [10]

Q2) Solve any four [12]

- a) Define absorption, bioavailability and bioequivalence. [3]
- b) Write a brief note on routes of drug elimination [3]
- c) What are advantages and disadvantages of inhalation route of drug administration? [3]
- d) Enlist factors affecting drug metabolism. [3]
- e) Explain enzyme induction and inhibition with example. [3]
- f) What is role of physiological barrier in drug distribution? [3]
- g) What is significance of volume of distribution and half-life of drug? [3]

Q3) Solve any two [8]

- a) Explain nature and sources of drugs. [4]
- b) Discuss various phases of clinical trials. [4]
- c) Explain factors affecting bioavailability of drug. [4]
- d) Write a short note on transport of drugs across plasma membrane. [4]

P.T.O.

SECTION - II

Q4) Discuss synthesis, storage, release & pharmacological actions of Prostaglandins. [10]

OR

Define Adverse Drug Reactions. Explain in detail types of ADR with suitable examples. [10]

Q5) Solve any four [12]

- a) What are sites and mechanism of drug action? [3]
- b) Define Mutagenicity, Carcinogenicity and Teratogenicity. [3]
- c) Classify drug receptors with examples. [3]
- d) Outline synthesis, storage and release of histamine. [3]
- e) What is significance of dose response curve? [3]
- f) What is drug synergism? Give examples. [3]
- g) Define efficacy, affinity and therapeutic index. [3]

Q6) Solve any two [8]

- a) Write in brief Drug Antagonism and its types with suitable examples. [4]
- b) Discuss rational drug treatment during lactation. [4]
- c) Discuss structure and mechanism of Ion Channel linked receptors. [4]
- d) Write in brief note on Drug-Drug Interactions. [4]



Total No. of Questions : 6]

SEAT No. :

P2088

[Total No. of Pages : 2

[5552]-306

Second Year B. Pharmacy

**PHARMACOGNOSY AND PHYTOCHEMISTRY - I
(2015 Pattern) (Semester - III)**

Time : 3 Hours]

[Max. Marks :60

Instructions to the candidates:

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

SECTION - I

Q1) Define and classify Carbohydrates with suitable examples. Write method of extraction, properties and uses of pectin. **[10]**

OR

What are triglycerides? Classify them, describe the detail pharmacognosy of Ricinus communis. **[10]**

Q2) Attempt any Four of the following: **[12]**

- a) Write method of preparation of Bees wax.
- b) Describe properties and uses of cyclodextrin.
- c) Describe any two methods of evaluation of fixed oil.
- d) Write B.S., C. C., uses of Plantago and Okra mucilage.
- e) Describe the method of extraction of Shark liver oil.
- f) Write chemical tests for identification of fixed oils.
- g) Write a brief note on cotton.

P.T.O.

Q3) Attempt any two of the following: [8]

- a) Note on Flax seed.
- b) Describe source and properties of Sterculia and Tragacanth.
- c) Explain method of extraction of psyllium mucilage.
- d) Note on Carotinoids.

SECTION - II

Q4) Describe general method of extraction of glycosides. Write detail pharmacognostic account of Mulethi. [10]

OR

Define and classify Tannins. Describe method of determination of tannins using hide powder. [10]

Q5) Attempt any four of the following: [12]

- a) Explain Goldbitter skin test.
- b) Write source, chemical tests and uses of Dianthrone glycoside.
- c) Explain in brief Foxglove leaf.
- d) Describe method of preparation of black catechu.
- e) Comment on chemistry of steroidal cardiac glycoside.
- f) Write Source and uses of Androgrpholide.
- g) Describe B.S., C.C., uses of artimisin.

Q6) Attempt any two of the following: [8]

- a) Write chemical tests for cardiac glycosides.
- b) Write short note on Behda.
- c) Write biosynthetic pathway of digitoxin.
- d) Note on Amla.



Total No. of Questions : 6]

SEAT No. :

P2089

[Total No. of Pages : 2

[5552]-401
S.Y.B. Pharmacy
PHYSICAL PHARMACEUTICS - II
(2015 Pattern) (Semester - IV) (Theory)

Time : 3 Hours]

[Max. Marks :60

Instructions to the candidates:

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

SECTION - I

Q1) Explain the methods to determine shelf life of a pharmaceutical formulation.
Write a note on accelerated stability studies. **[10]**

OR

What do you understand by Newton's law of flow? Describe various types of flow:

Q2) Attempt any four of the following : **[12]**

- a) Illustrate applications of rheology in suspension.
- b) Explain yield value in plastic flow?
- c) What is Langmuir adsorption isotherm?
- d) Explain surface tension. How can you measure it?
- e) Explain the HLB scale.
- f) Justify : first order reaction is independent on initial concentration of reactant.
- g) What do you understand by reversible reactions?

Q3) Write notes on any two of the following: **[8]**

- a) Explain the concept of thixotropy and state its application in pharmacy.
- b) Surface active agents.
- c) Kraft and cloud point.
- d) Order and molecularity.

P.T.O.

SECTION - II

Q4) Define colloids. What are its different types? Compare the properties of different types of colloids. **[10]**

OR

Enumerate the various derived properties of powder. How can these be determined?

Q5) Attempt any four of the following : **[12]**

- a) Describe : Brownian motion and Gold number. Give its importance in the field of pharmacy.
- b) Explain coulter counter method in detail.
- c) Justify factors affecting flow of powders.
- d) Briefly describe DLVO theory.
- e) Explain method to determine particle size based on sedimentation method.
- f) What are protective colloids? What are its applications in pharmacy?
- g) Explain assessment of flow properties of powders.

Q6) Write notes on any two of the following: **[8]**

- a) Importance of particle size and size distribution.
- b) Colloidal system with reference to its stability.
- c) Method for determining surface area.
- d) Electrical double layer.



Total No. of Questions :6]

SEAT No. :

[Total No. of Pages :2

P2090

[5552]-402

S.Y.B Pharmacy

PATHOPHYSIOLOGY & CLINICAL BIOCHEMISTRY

(2015 Pattern) (Semester-IV)

Time : 3 Hours]

[Max. Marks : 60

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) Define Hypertension. Explain its types, etiology and pathophysiology. [10]

OR

Classify and explain the etiology and pathophysiology of hepatitis.

Q2) Attempt any four of the following: [12]

- a) Discuss the etiology of peptic ulcer.
- b) Explain the term COPD.
- c) Write in detail the complications of Angina pectoris.
- d) Discuss the treatment of hypertension.
- e) Write short note on inflammation.
- f) Explain the diagnosis and plan of treatment of Myocardial Infarction.
- g) Discuss the pathophysiology of reversible cell injury.

Q3) Write notes on the following (any two): [8]

- a) Peripheral arterial diseases.
- b) Irreversible cell injury.
- c) Peptic ulcer.
- d) Hypoxia and ischemic cell injury.

P.T.O.

SECTION-II

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

OR

Define Diabetes. Explain in detail pathophysiology of Diabetes mellitus.

Q5) Attempt any four: [12]

- a) Discuss the clinical manifestations of Schizophrenia.
- b) Write the causative agent for Leprosy and AIDS.
- c) Explain pathophysiology of Malaria.
- d) Explain in brief Gout.
- e) Write pathophysiology of Renal Calculi.
- f) Write a note on Myasthenia gravis.
- g) Define:
 - i) Hypothyroidism
 - ii) Endometriosis
 - iii) Anemia

Q6) Write note on following (any two): [8]

- a) Rheumatoid Arthritis
- b) Parkinson's Disease
- c) Leukemia
- d) Pathophysiology of Gout



Total No. of Questions : 6]

SEAT No. :

P2091

[Total No. of Pages : 2

[5552]-403
S. Y. B. PHARMACY
PHARMACEUTICAL ORGANIC CHEMISTRY - IV
(2015 Pattern) (Semester - IV)

Time : 3 Hours]

[Max. Marks :60

Instructions to the candidates:

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

SECTION - I

Q1) Explain the rules of disconnection in retrosynthesis. Discuss retrosynthesis of Sulfamethoxazole. **[10]**

OR

Give the detailed account of methods of synthesis and reactions of pyrrole. **[10]**

Q2) Answer any four of the following : **[12]**

- a) Write methods of synthesis and reactions of anthracene.
- b) Give an account of Tea bag method in combinatorial synthesis.
- c) Distinguish between conventional heating and microwave heating.
- d) Give methods of preparation, reactions and uses of aluminium isopropoxide.
- e) Write electrophilic substitution reactions of imidazole.
- f) Discuss Haworth synthesis of phenanthrene.
- g) Pyridine is more basic than pyrrole. Give reason.

Q3) Write short notes on any two of the following: **[8]**

- a) Applications of microwave assisted synthesis.
- b) Reducing agents.
- c) Electrophilic substitution reactions of thiophene.
- d) 'Mix and Split' combinatorial synthesis.

P.T.O.

SECTION - II

Q4) Give structures, numbering of the following heterocycles with one example of drug belonging to each. **[10]**

- i) Thiazole
- ii) Cinnoline
- iii) Benzimidazole
- iv) Isoxazole
- v) Pyrimidine

OR

What is combinatorial synthesis? Discuss various linkers and solid supports used in solid phase synthesis. Discuss solid phase peptide synthesis.

Q5) Answer any four of the following : **[12]**

- a) Furan undergoes Diels Alder reaction. Why?
- b) What are advantages and disadvantages of solution phase combinatorial synthesis?
- c) Write the resonating structures and reactions of isoquinoline.
- d) Which positions are preferentially attacked by electrophiles in indole? Why?
- e) What is DCC? Give its synthesis and uses.
- f) Write nucleophilic substitution reactions of pyridine.
- g) Give any three reactions of thiophene.

Q6) Write short notes on any two of the following: **[8]**

- a) Synthesis and reactions of Naphthalene.
- b) Electrophilic substitution reactions of quinoline.
- c) Fischer Indole synthesis & Skraup's synthesis.
- d) Retrosynthesis of ibuprofen.



Total No. of Questions : 6]

SEAT No. :

P2092

[5552]-404

[Total No. of Pages : 2

S.Y. B. Pharmacy
PHARMACEUTICAL ANALYSIS - II
(2015 Pattern) (Semester - IV)

Time : 3 Hours]

[Max. Marks : 60

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) a) Classify electrodes used in potentiometry and write a note on glass and Calomal electrode. **[10]**

OR

- a) Explain Ilkovic equation and discuss the factors affecting the current voltage curve.

Q2) Attempt any four of the following. **[12]**

- a) Discuss potentiometric titration for neutralization reaction.
- b) Write the principle of polarography.
- c) Discuss the effect of dilution in conductometry.
- d) How you calibrate of pH meter?
- e) Discuss the principle of conductometry.
- f) Explain the term molar and equivalent conductance.
- g) Discuss current potential relationships.

Q3) Write short notes on any two of the following **[8]**

- a) Qualitative and quantitative applications of Polarography.
- b) Nernst Equation and its limitations.
- c) Applications of conductometry.
- d) Linear Scan polarography.

P.T.O.

SECTION - II

Q4) Explain factors affecting angle of rotation and give instrumentation of Polarimeter. [10]

OR

What are general characteristics of Coulometry and discuss in detail controlled current Coulometry.

Q5) Attempt any four of the following. [12]

- a) Explain preparation of Karl-Fischer reagent.
- b) Explain Amperometric titrations of reducible ions against non-reducible ions.
- c) Discuss about types of electrodes in Amperometry.
- d) Give applications of Coulometric titrations.
- e) Define molar refraction and explain factors affecting refractive index.
- f) Explain in brief Pulfrich refractometer.
- g) Explain types of plain polarized light.

Q6) Write short notes on any two of the following [8]

- a) Instrumentation of polarimeter.
- b) Biamperometric titrations.
- c) Dipping/Immersion type refractometer.
- d) Karl-Fischer titration.

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Total No. of Questions : 6]

SEAT No. :

P2093

[5552]-405

[Total No. of Pages : 2

S. Y. B.Pharm.

PHARMACOGNOSY & PHYTOCHEMISTRY - II

(2015 Pattern) (Semester - IV)

Time : 3 Hours]

[Max. Marks : 60

Instructions to the candidates:

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

SECTION - I

Q1) Explain in detail biogenesis of Tropane alkaloids with a pharmacognostic account of Datura. **[10]**

OR

Explain in detail different methods for extraction of volatile oil.

Q2) Answer any four questions. **[12]**

- a) Provide chemical constituents and chemical test for coca.
- b) Provide microscopic details of cinna mon bark.
- c) Explain in brief History and contribution to modern medicine of Nuxvomica.
- d) Provide chemical constituents and chemical test for identification for Saffron.
- e) Explain cultivation and collection of Ipecac.
- f) Provide chemical constituents and uses of Lavender.
- g) Give Allied drugs and substitutes for Rauwolfia.

Q3) Write short notes on any two **[8]**

- a) Tobacco
- b) Kruchi
- c) Glycoalkaloid
- d) Coleus

P.T.O.

SECTION - II

Q4) Explain in detail biogenesis of Quinoline alkaloids of Cinchona. [10]

OR

Define and classify resin with a detail pharmacognostic account of Podophyllum.

Q5) Answer any four questions. [12]

- a) Differentiate between Cinchona Ledgeriana and Cinchona Succirubra.
- b) Provide uses and substitutes for Artemisia.
- c) Provide chemical constituents and chemical test for identification of Nuxvomica.
- d) Provide chemical constituents and uses of Ginseng.
- e) Provide chemical constituents and uses of Pilocarpus.
- f) Provide chemical constituents and uses of Baswellia.
- g) Differentiate between seeds and corms of colchicum.

Q6) Write short notes on any two. [8]

- a) Marihuana
- b) Ephedra
- c) Purine alkaloids
- d) Opium



Total No. of Questions : 6]

SEAT No. :

[Total No. of Pages : 2

P2094

[5552]-406

S.Y. B. Pharmacy
PHARMACEUTICAL ENGINEERING
(2015 Pattern) (Semester - IV)

Time : 3 Hours]

[Max. Marks : 60

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

[10]

- a) Explain the process of heat transfer to boiling liquids. Add a note on different types of heat exchangers.
- b) Explain mechanism & theory of drying. Explain in detail fluidized bed dryer.

Q2) Attempt any four

[12]

- a) Explain thermostatic traps for removal of condensates.
- b) Differentiate bet evaporation & drying.
- c) Add a note on tray dryer.
- d) Explain stefan Boltzman's constant.
- e) Explain kirchoff's law.
- f) Draw a diagram of shell & tube heat exchanger.

Q3) Write notes on any two

[8]

- a) Freeze Dryer.
- b) Two film theory of interphase mass transfer.
- c) Fourier's law & steady state heat transfer.

P.T.O.

SECTION - II

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

- a) Explain different types of corrosion & methods to combat corrosion.
- b) Explain principle, types & working of fractionating columns.

Q5) Attempt any four **[12]**

- a) Explain mier's theory of supersaturation & its limitations.
- b) Describe oslo crystallizer.
- c) Write a note on orifice meter.
- d) Give applications of freezedryer.
- e) Describe inclined manometer.
- f) Describe Pitot tube.

Q6) Write short notes on any two. **[8]**

- a) Boiling point diagram.
- b) Variable area flow meter.
- c) Molecular distillation.

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Total No. of Questions : 6]

SEAT No. :

P2095

[Total No. of Pages : 2

[5552] - 501

T. Y. B. Pharm.

INDUSTRIAL PHARMACY - I

(2015 Pattern) (Semester - V) (Credit System)

Time : 3 Hours]

[Max. Marks :60

Instructions to the candidates:

- 1) All questions are compulsory.*
- 2) Answer to the TWO Sections should be written in separate books.*
- 3) Figures to the right indicate full marks.*
- 4) Draw neat labeled diagrams wherever necessary.*

SECTION - I

Q1) Solve any ONE

[10]

- a) Discuss Tablet additives.
- b) Discuss defects in tablet with its remedies.

Q2) Answer the following (Any FOUR)

[12]

- a) Discuss drug related factor for dosage form design.
- b) Define dispersible tablet with its advantages.
- c) Discuss advantages, disadvantages and types of tablet.
- d) Wet granulation and Dry granulation.
- e) Heckel Plot and Kawakita Plot.
- f) Define enteric coated tablet. Give FOUR names of enteric coated polymers.
- g) BCS classification of drug.

P.T.O.

Q3) Write Short Note (Any TWO) [8]

- a) Evaluation Of Granules With Standards
- b) Types Of Tooling In Tablet Machine.
- c) Weight Variation Test Of Tablet With IP And USP Tolerance Limit.
- d) Methods of preparation of effervescent tablet.

SECTION - II

Q4) Solve any ONE [10]

- a) Discuss filling of hard gelatin capsule by volumetric principle and explain uniformity of weight test.
- b) Discuss advances in coating pans and elaborate on perforated pans.

Q5) Answer the following (Any Four) [12]

- a) Explain evaluation of gelatin used in soft gelatin shell.
- b) Discuss shell hardness ratio.
- c) What is base adsorption?
- d) Give composition of coating formula
- e) How does pan rpm affect coating?
- f) Which are the polymers used for enteric coating?
- g) What is orange peeling defect?

Q6) Write Short Note (Any TWO) [8]

- a) Dissolution test for capsules.
- b) Manufacture of gelatin.
- c) Fluidised bed coating.
- d) Discuss the concept of scale-Up.



Total No. of Questions :6]

SEAT No. :

P2096

[5552]-502

[Total No. of Pages : 2

T.Y.B. Pharmacy
PHARMACEUTICAL ANALYSIS-III
(2015 Pattern) (Semester - V)

Time : 3Hours]

[Max. Marks : 60

Instructions to the candidates:

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

SECTION- I

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

OR

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

Q2) Attempt any four of the following: **[12]**

- a) Discuss atomic spectroscopy and molecular spectroscopy.
- b) Classify different instrumental methods of analysis.
- c) Explain about Liquid liquid extraction.
- d) Explain prism monochromator.
- e) Explain properties of electromagnetic radiation.
- f) Explain solvent used for UV-Visible spectrophotometry.
- g) Write about photomultiplier tube.

Q3) Write a note on any two of the following. **[8]**

- a) Steps involved in quantitative analysis.
- b) First and second derivative spectroscopy.
- c) Emission spectrum
- d) Woodward rule

P.T.O.

SECTION-II

Q4) Explain fulorescence and phosphorescence. Discuss in detail about instrumentation of fluorimetry. [10]

OR

Explain principle involved in Atomic absorption spectroscopy, Discuss in detail about applications of Atom Absorption Spectroscopy. [10]

Q5) Attempt any four of the following. [12]

- a) Explain types of quenching in fluorimetry.
- b) Explain principle involved in Nephelometry.
- c) Describe application of flame photometry.
- d) Discuss advantages and disadvantages of phosphorimetry.
- e) Explain synchronous fluorescence.
- f) Draw diagram and explain working of hollow cathode lamp.
- g) Describe Doppler Effect in AAS.

Q6) Write note on any two of the following. [8]

- a) Factors affecting fluorescence
- b) Burners used in flame photometry.
- c) Instrumentation of Nephelometry.
- d) Application of fluorimetry and phosphorimetry.



Total No. of Questions : 6]

SEAT No. :

P2097

[Total No. of Pages : 2

[5552] - 503

T. Y. B. Pharm.

MEDICINAL CHEMISTRY-I

(2015 Pattern) (Semester - V)

Time : 3 Hours]

[Max. Marks :60

Instructions to the candidates:

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

SECTION - I

Q1) Explain the role of solubility, partition coefficient and hydrogen bonding in drug action with suitable examples under each parameter. **[10]**

OR

Give Biosynthesis, release and metabolism of Non-epinephrine

Q2) Answer the following (Any Four) **[12]**

- a) Draw the structure of
 - i) Propranolol
 - ii) Quinidine
 - iii) Nitroglycerine
- b) Give the scheme of synthesis for Atenolol.
- c) Write structure, IUPAC name and uses of dicyclomine hydrochloride.
- d) Give SAR of Atropine.
- e) Give structure and uses of selective α_1 blockers.
- f) Write the steps involved in synthesis of Guanethidine.
- g) Explain the signal transduction.

P.T.O.

Q3) Answer the following (Any TWO) [8]

- a) Give SAR and MOA of thiazide diuretics.
- b) Write a note on Cardiotonic drugs
- c) Write a note on Bioisosterism.
- d) Biosynthesis, release and metabolism of Acetylcholine

SECTION - II

Q4) What are sympathomimetics? Classify it with suitable examples with structure. Give a detailed SAR for adrenergic agonists with help of suitable examples. [10]

OR

What are antihypertensive agents ?Classify it with suitable examples with structure.Discuss in detail the class of calcium channel blockers.

Q5) Answer the following (Any four) [12]

- a) Discuss SAR of Acetylcholine.
- b) Explain the various phase-II biotransformation reactions in drug metabolism
- c) Outline scheme of synthesis of Neostigmine
- d) Write structure , IUPAC name and uses of methyldopa
- e) Explain the chemistry of ACE inhibitors.
- f) Explain the chemistry of β - blockers
- g) Discuss the ferguson principle.

Q6) Answer the following (Any TWO) [8]

- a) Explain the chemistry and MOA of organic nitrates as an Antianginal agents.
- b) Classify antiarrythimic agent and their structures.
- c) Write a note on Loop diuretics.
- d) Write a note on Anti-hyperlipidemic drugs.



Total No. of Questions : 6]

SEAT No. :

P2098

[5552]-504

[Total No. of Pages : 2

T.Y. B.Pharmacy

3.5.4. : PHARMACOLOGY - II

(2015 Pattern) (Semester - V)

Time : 3 Hours]

[Max. Marks : 60

Instructions to the candidates:

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

SECTION - I

Q1) Define Adrenergic drugs. Classify adrenergic drugs with suitable example on the basis of their therapeutic uses. Explain mechanism of action, therapeutic uses, and adverse effects of adrenaline. **[10]**

OR

Define Parasympathomimetic drugs. Classify parasympathomimetic agents with suitable example. Explain the biosynthesis, storage, release and metabolism of acetylcholine.

Q2) Answer the following. (Any four) **[12]**

- a) Classify anticholinergic drugs with suitable example.
- b) Explain antidiabetic agent not given with beta blocker.
- c) Explain biosynthesis of adrenaline.
- d) Explain atropine as preanaesthetic agent.
- e) How myasthenic crisis and cholinergic crisis is differentiated?
- f) Classify skeletal muscle relaxants with suitable example.
- g) Classify anticholinesterases with suitable example.

Q3) Write a short note on (Any two): **[8]**

- a) Ganglion blocker.
- b) Pharmacotherapy of myasthenia gravis.
- c) Pharmacological actions of Beta blocker.
- d) Indirectly acting sympathomimetic agents.

P.T.O.

SECTION - II

Q4) Classify antihypertensive agents. Explain the pharmacology of ACE inhibitors. **[10]**

OR

Classify diuretics with suitable examples. Discuss the pharmacology of Loop diuretics.

Q5) Answer the following. (any four) **[12]**

- a) Explain the action of beta-2 agonist in the treatment of bronchial asthma.
- b) Write mode of action and therapeutic uses of vasopressin.
- c) Classify antiarrhythmic agents with suitable examples.
- d) Discuss the mechanism of action of calcium channel blockers.
- e) Classify drugs used in atherosclerosis.
- f) Write the mechanism of action of cardiac glycosides.
- g) Write a note on osmotic diuretics.

Q6) Write a short note on (any two) **[8]**

- a) Antitussive agents.
- b) Pharmacology of centrally acting antihypertensive agents.
- c) Mast cell stabilizers.
- d) Thiazide Diuretics.



Total No. of Questions : 6]

SEAT No. :

P2099

[5552]-505

[Total No. of Pages : 2

Third Year B.Pharmacy
ANALYTICAL PHARMACOGNOSY AND EXTRACTION
TECHNOLOGY

(2015 Pattern) (Semester - V) (Theory)

Time : 3 Hours]

[Max. Marks : 60

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) Write in brief principle, working, merits and application of Supercritical fluid Extraction method.
- b) Write in detail about Principle and application of column chromatography.

Q2) Attempt any four of the following: **[12]**

- a) Explain the isolation of Piperine by direct solvent extraction method.
- b) Explain Principle and application of paper chromatography.
- c) Explain extraction of polyphenols from green tea by Microwave Assisted Method.
- d) Draw the structures of :
 - i) Digoxin
 - ii) Eugenol
 - iii) Curcumin
- e) Explain Soxhlet Extraction.
- f) Explain fractional crystallization as a method of separation.
- g) Describe the isolation of Artemisinin.

Q3) Write a note on any two: **[8]**

- a) Ultra sound Assisted Extraction.
- b) Rose oil isolation by Enfleurage method.
- c) Froth flotation techniques.
- d) HPTLC.

P.T.O.

SECTION - II

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

- a) Comment on Good Laboratory Practices for pharmaceutical laboratories as per WHO guideline.
- b) Write in brief principle, methods and significance of 'Determination of moisture content' as per WHO guidelines.

Q5) Attempt any four of the following. **[12]**

- a) Explain Counter Current extraction.
- b) Brief about 'Determination of Arsenic content' as per WHO guidelines.
- c) Explain the significance of determination of various types of 'Ash Values'.
- d) Define adulteration and types of it with examples.
- e) Explain quality control parameter 'Aflatoxins'.
- f) Explain social relevance and difficulty in analysis of natural products.
- g) Explain principle, procedure and significance of 'Foaming Index'.

Q6) Attempt any two: **[8]**

- a) Principle and procedure of sampling.
- b) Radioactive contamination.
- c) Infusions and Decoction.
- d) DNA fingerprinting for standardization of herbals.



Total No. of Questions : 6]

SEAT No. :

P2100

[Total No. of Pages : 2

[5552] - 506

T. Y. B. Pharmacy

**PHARMACEUTICAL BUSINESS MANAGEMENT &
DISASTER MANAGEMENT
(2015 Pattern) (Semester - V)**

Time : 3 Hours]

[Max. Marks :60

Instructions to the candidates:

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

SECTION - I

Q1) Explain in brief concept of material management in pharmaceutical industry.[10]

OR

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

Q2) Answer Any four (Each 03 marks): **[12]**

- a) Write in brief about Inventory control.
- b) Describe various types of planning.
- c) What do you mean by *Management audit*?
- d) Define objective. Give importance of objective.
- e) What is decision making? Give its importance.
- f) State about various channels of distribution.
- g) Explain the responsibilities of manager.

P.T.O.

Q3) Write short note on Any Two (Each 04 marks): **[8]**

- a) Departmentalization
- b) PERT & CPM technique
- c) Budgetary control
- d) Role of drug store and hospitals related to patient care management.

SECTION - II

Q4) Define Sales Promotion and give different techniques of sales promotion. **[10]**

OR

Give detailed account of sale forecasting.

Q5) Answer Any Four (Each 03 marks): **[12]**

- a) Define price. Give various factors affecting on price.
- b) Give types of Reinforcement theory.
- c) What are various methods of advertising?
- d) What are disaster mitigation strategies?
- e) Give importance and function of communication.
- f) Describe in brief managerial grid.
- g) Maslow's theory.

Q6) Write short note on Any Two (Each 04 marks): **[8]**

- a) The Disaster Management cycle.
- b) PLC with example
- c) Inventory control
- d) Equity Theory



Total No. of Questions : 6]

SEAT No. :

[Total No. of Pages : 2

P2101

[5552]-507

T.Y.B. Pharm.

**ACTIVE PHARMACEUTICAL INGREDIENT TECHNOLOGY
(2015 Course) (Semester - V) (Credit System)**

Time : 3 Hours]

[Max. Marks : 60

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 question.

[10]

- a) Define oxidation. Describe various oxidising agents. Explain the manufacturing process for any one Active Pharmaceutical ingredient by oxidation.

OR

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

Q2) Attempt any four.

[12]

- a) Distinguish between Unit Process and Unit operation.
- b) Explain Hydrolysis with suitable example.
- c) Define Active pharmaceutical ingredient, Bulk drug and Fine chemical with example of each.
- d) What is esterification. Explain types of esterification.
- e) Explain flow chart for synthesis of Metformin.
- f) Enlist the factors affecting chemical processes. Explain any two in detail.

Q3) Write a short note on (any two).

[8]

- a) Oxidation as unit process.
- b) Manufacturing method and flow chart for synthesis of Ranitidine.
- c) Reactors used in API industry.
- d) Manufacturing process of API by esterification

P.T.O.

SECTION - II

Q4) Attempt any one question [10]

- a) Explain strategies for selection of most appropriate route in API manufacturing process.

OR

- a) Discuss process variables in API manufacturing and their effect on product quality and yield.

Q5) Attempt any four [12]

- a) Enlist the characteristics of ideal reagent for preparation of API.
- b) Discuss health hazards in API manufacturing.
- c) Discuss classification of solvents in API manufacturing.
- d) What is work-up in optimization of chemical process?
- e) Enlist Green chemistry approaches in API synthesis and discuss any one in brief.
- f) Discuss methods for resolution of racemic mixtures.

Q6) Write short notes on (Any Two) [8]

- a) MSDS and its contents
- b) IPCs in API manufacturing
- c) Polymorphism in API
- d) Asymmetric synthesis of (S)-Propranolol



Total No. of Questions : 6]

SEAT No. :

P2102

[Total No. of Pages : 2

[5552]-601

T.Y. B. Pharmacy

3.6.1.T : INDUSTRIAL PHARMACY - II

(2015 Pattern) (Semester-VI)

Time : 3 Hours]

[Max. Marks : 60

Instructions to the candidates:

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

SECTION - I

Q1) Solve any one **[10]**

- a) Describe how DLVO theory explains stability of dispersions.
- b) Give an account of excipients used in emulsion manufacture.

Q2) Answer the following (Any four) **[12]**

- a) What is phase inversion temperature?
- b) What is HLB? Explain its advantages and limitations.
- c) Give steps in formulation of flocculated suspension in structured vehicle.
- d) Differentiate between floccule and cake.
- e) What are deflocculated suspensions?
- f) What is volume of sedimentation for suspensions?
- g) How globule diameter affects stability of suspension?

Q3) Write short note (Any two) **[8]**

- a) Explain factors determining emulsion type.
- b) Which stress conditions are used to test the stability of suspensions.
- c) Describe controlled flocculation in structured vehicle.
- d) Give design of layout for manufacture of suspension with workstation listing.

P.T.O.

SECTION - II

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

- a) Discuss the factors affecting formulation of semisolid dosage form.
- b) Design the layout of manufacturing facility for emulsion as per schedule M.

Q5) Answer the following (Any four) **[12]**

- a) Write a note on Flux.
- b) Enlist the factors to be considered in selection of equipment.
- c) Define and differentiate between medicated jelly and lubricant jelly.
- d) Define and classify semisolid emulsions.
- e) Discuss physicochemical factors affecting formulation of semisolid dosage form.
- f) Give application of Pastes.
- g) Discuss formulation, Manufacturing and evaluation of creams.

Q6) Write short note (Any two) **[8]**

- a) Selection Criteria of bases.
- b) Equipments used for Semisolids.
- c) Gels
- d) Factors critical to process development for disperse system.



Total No. of Questions : 6]

SEAT No. :

[Total No. of Pages : 2

P2103

[5552]-602

Third Year B. Pharmacy
PHARMACEUTICAL ANALYSIS - IV
(2015 Pattern) (Semester - VI) (Theory)

Time : 3 Hours]

[Max. Marks : 60

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 Principle of Adsorption Column Chromatography. Explain rate and plate theory in details. **[10]**

OR

Explain Principle and pharmaceutical applications of Paper Chromatography. Discuss various paper chromatography development techniques.

Q2) Attempt any four of the following. **[12]**

- a) Write the methods of TLC plate preparation.
- b) Write the applications of Electrophoresis.
- c) Write a note on Stahl's Triangle.
- d) Discuss any three adsorbents used in TLC.
- e) Write about column packing techniques.
- f) Discuss the merits of HPTLC.
- g) Explain 'Capacity Factor'.

Q3) Write a note on any two of the following. **[8]**

- a) Paper Electrophoresis.
- b) Automated Multiple Development
- c) Applications of TLC and explain Horizontal TLC.
- d) R_f Value and its significance.

P.T.O.

SECTION - II

- Q4)** Discuss in detail about principle, instrumentation and applications of Differential Scanning Calorimetry. **[10]**

OR

Explain different validation parameters of analytical method validation as per ICH guideline.

- Q5)** Attempt any four of the following. **[12]**

- a) Explain TGA curve with example.
- b) Write about Coolidge tube.
- c) Discuss principle of X ray crystallography.
- d) Write about applications of differential thermal analysis.
- e) Explain applications of radiochemical methods.
- f) Give importance of installation qualifications.
- g) Write principle of DTA.

- Q6)** Write a note on any two of the following. **[8]**

- a) Different types of thermobalance.
- b) Crystal monochromator.
- c) Geiger- Muller counter.
- d) Instrumentation of Isothermal titration calorimetry.



Total No. of Questions :6]

SEAT No. :

[Total No. of Pages : 2

P2104

[5552]-603

T.Y. B. Pharmacy
MEDICINAL CHEMISTRY-II
(2015 Pattern) (Semester-VI)

Time : 3 Hours]

[Max. Marks : 60

Instructions to the candidates:

- 1) *All questions are compulsory.*
- 2) *Answers to the two sections should be written in separate answer sheets.*
- 3) *Write neat structures and diagrams wherever necessary.*
- 4) *Figures to the right indicate full marks.*

SECTION-I

Q1) a) Classify Sedative and hypnotics. Discuss SAR, Mode of action and uses of barbiturates. **[10]**

OR

Describe Phase I and Phase II reactions in drug metabolism with suitable examples.

Q2) Attempt any four questions. Each question carries 3 marks : **[12]**

- a) Give the structure, IUPAC of phenytoin, and metformin.
- b) Write metabolic path way for Tolbutamide.
- c) Draw scheme of synthesis of thiopental sodium.
- d) Discuss SAR of Benzodiazepines as sedative hypnotic agents.
- e) Draw scheme of synthesis of phenytoin.
- f) Classify general anaesthetics with suitable examples.
- g) Draw scheme of synthesis of Procaine.

Q3) Write short note on (any two) : **[8]**

- a) Local anaesthetics.
- b) Application of drug metabolism studies in new drug discovery.
- c) Draw the synthesis of Mepivacaine
- d) Anticonvulsants.

P.T.O.

SECTION-II

Q4) Classify Antidepressant agents with suitable example and structure. Draw the synthesis of amitriptyline. [10]

OR

Classify anxiolytics with suitable example and structure. Write MOA of benzodiazepines. Draw the synthesis of Diazepam.

Q5) Attempt any four questions Each question carries 3 marks : [12]

- a) Write about coagulant agents.
- b) Draw scheme of synthesis of Haloperidol.
- c) Why carbidopa is Prescribed with levodopa. Justify the Statement.
- d) Write SAR of Phenothiazines as antipsychotic agent.
- e) Give SAR of butyrophenone.
- f) Write in brief note on Antiparkinson agents.
- g) Draw scheme of synthesis of chlorpromazine.

Q6) Write short note on (any two) : [8]

- a) Anticoagulants.
- b) CNS Stimulants.
- c) Anti alzheimer agents.
- d) Tricyclic antidepressant.



Total No. of Questions : 6]

SEAT No. :

[Total No. of Pages : 2

P2105

[5552]-604

**T.Y. B. Pharmacy
PHARMACOLOGY - III
(2015 Pattern) (Semester - VI)**

Time : 3 Hours]

[Max. Marks : 60

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 Antiepileptic drugs. Explain the pharmacological actions adverse effects & therapeutic uses of Phenytoin. **[10]**

OR

Classify General Anesthetic drugs. Explain in detail various stages of General Anesthesia. Explain the ideal properties of General Anesthetic agent.

Q2) Answer the following (any four) **[12]**

- a) Discuss pharmacotherapy of Alcoholism.
- b) Define the following
 - i) Euphoria
 - ii) Sedative
 - iii) Hypnotics.
- c) Explain postanesthetic medication.
- d) Classify antipsychotic drugs.
- e) Explain Mode of action of Local Anesthetics.
- f) What are the advantages of benzodiazepines over barbiturates.
- g) Classify sedative Hypnotic drugs.

Q3) Write notes on (any two) **[8]**

- a) Benzodiazepine antagonist.
- b) Anxiolytics.
- c) Local Anesthetic drugs.
- d) Mental depression.

P.T.O.

SECTION - II

Q4) Classify NSAID'S. Explain the Pharmacological effects, adverse effects & therapeutic uses of Paracetamol. **[10]**

OR

Classify anti-Parkinsonian drugs with examples. Explain the pharmacology of Levodopa.

Q5) Answer the following (any four) **[12]**

- a) Morphine poisoning
- b) Define the following
 - i) Rheumatoid arthritis.
 - ii) Osteoarthritis
 - iii) Gout
- c) Discuss COX-2 Inhibitors.
- d) Give examples and therapeutic uses of H₂ antagonists.
- e) Classify anti-emetics with examples.
- f) Explain Mode of action of Allopurinol.
- g) Discuss types of Opioid receptors.

Q6) Write notes on (any two) **[8]**

- a) Rheumatoid arthritis.
- b) Constipation and diarrhoea.
- c) Pharmacotherapy of osteoarthritis.
- d) Opioid Antagonists

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Total No. of Questions : 6]

SEAT No. :

[Total No. of Pages : 2

P2107

[5552]-606

T.Y. B. Pharmacy

BIOORGANIC CHEMISTRY & DRUG DESIGN

(2015 Pattern) (Semester - VI)

Time : 3 Hours]

[Max. Marks : 60

Instructions to the candidates:

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

SECTION - I

Q1) Write physiological role of Angiotensin Converting Enzyme. Explain design of inhibitors of angiotensin converting enzyme. Write medicinal applications of inhibitors of Angiotensin Converting Enzyme. **[10]**

OR

Describe structure of Cholinergic receptors. Write medicinal applications of Cholinergic agonist and antagonist.

Q2) Attempt any four of the following **[12]**

- a) Write physiological role of enzyme Monoamine Oxidase. Write classification of inhibitors of Monoamine oxidase with examples and medicinal applications.
- b) Explain Molecular Recognition. Write types of molecular recognition.
- c) Write mechanism of action of Thymidylate synthase inhibitor along with medicinal applications.
- d) Write physiological role of enzyme cyclooxygenase. Write inhibitors of enzyme cyclooxygenase along with medicinal applications and associated side effects.
- e) Write mechanism of action of drugs acting by intercalation of DNA.
- f) Write physiological role of enzyme HMGCOA reductase. Write inhibitors of enzyme HMGCOA reductase along with its medicinal application.
- g) Write a note on Adenosine receptors.

P.T.O.

Q3) Attempt any two of the following **[8]**

- a) Explain Physiological role of enzyme Reverse Transcriptase. Explain inhibitors of enzyme reverse transcriptase along with its medicinal applications.
- b) Write a note on Nitrogen mustards DNA alkylating agents.
- c) Explain estrogen receptors and mechanism of estrogenic action.
- d) Write physiological role of enzyme Carbonic anhydrase. Write inhibitors of enzyme Carbonic anhydrase along with medicinal applications and associated side effects.

SECTION - II

Q4) Explain lead discovery & methods of lead optimization. **[10]**

OR

How molecular modelling is useful in new drug discovery & development?

Q5) Attempt any four of the following **[12]**

- a) Give basic objective of prodrug design & explain need of developing prodrug.
- b) Write a note on drug discovery.
- c) Explain pharmacophore modelling.
- d) Explain concept & applications of QSAR.
- e) Explain free-wilson method in QSAR.
- f) Explain Hansch Analysis.
- g) Write about programs used in molecular docking.

Q6) Attempt any two of the following: **[8]**

- a) Define the term “Prodrug”. Give detailed account on types of prodrug design with suitable examples.
- b) Write about success stories of structure based drug design.
- c) Write the physicochemical parameters in QSAR.
- d) Discuss different approaches to the rational design of enzyme inhibitors.

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Total No. of Questions : 6]

SEAT No. :

P2108

[5552]-607

[Total No. of Pages : 2

T.Y. B. Pharmacy

PHARMACEUTICAL BIOTECHNOLOGY

(2015 Pattern) (Semester-VI)

Time : 3 Hours]

[Max. Marks : 60

Instructions to the candidates:

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

SECTION-I

Q1) What is role of cloning vector? Enlist different types of cloning vectors and explain in detail pUC19. **[10]**

OR

Define r-DNA technology, Explain steps in r-DNA technology and its applications.

Q2) Answer the following (any four) **[12]**

- a) Explain role of alkaline phosphatase in r-DNA.
- b) What is gene sequencing?
- c) Write role of restriction endonuclease II with examples.
- d) Enlist methods of gene transfer and explain any one of them.
- e) Discuss in short site directed mutagenesis.
- f) Describe in short different methods for isolation of DNA.
- g) What is DNA fingerprinting?

Q3) Write short note on (any two) **[8]**

- a) c-DNA library
- b) Nucleic acid blotting
- c) Gel electrophoresis
- d) Expression vector

P.T.O.

SECTION-II

Q4) Define fermentation. Discuss in detail downstream processing. **[10]**

OR

Give details of production and applications of monoclonal antibodies.

Q5) Answer the following (any four) **[12]**

- a) Write different types of fermenters.
- b) Explain fermentation of any one antibiotic.
- c) Explain in short production of vitamin B12.
- d) Write advantages and disadvantages of enzyme immobilization.
- e) Discuss in brief production of interferon.
- f) Discuss in detail enzyme immobilization by covalent binding.
- g) Write methods and significance of cryopreservation.

Q6) Write short note on (any two) : **[8]**

- a) Transgenic animals
- b) Human insulin
- c) Human gene therapy
- d) Production of Vitamin B₂



Total No. of Questions :6]

SEAT No. :

[Total No. of Pages : 2

P2109

[5552]-701

**Final Year B. Pharmacy
STERILE PRODUCTS
(2015 Pattern) (Semester - VII)**

Time : 3Hours]

[Max. Marks : 60

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) Give complete account of Performulation studies for Sterile formulations.[10]

OR

Explain in detail types of vehicles, selection of vehicles and additives used in the formulation of SVP's.

Q2) Attempt any four :

[12]

- a) Explain in brief Tonicity adjustments in Parenterals
- b) What is bacteriostatic WFI and how it is prepared?
- c) Write classification of SVP's.
- d) Write a note on Water attack test
- e) Discuss blow fill seal technique
- f) Write hazards encountered by packaging material.
- g) Write significance of HVAC system in manufacturing of Sterile products.

Q3) Attempt any two:

[8]

- a) What is Pilot plant scale up process for SVP's? Write its objectives.
- b) Write a note on Prefilled syringes.
- c) Describe testing and rating of HEPA filter.
- d) Give complete account of HVAC System.

P.T.O.

SECTION-II

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

OR

Discuss in detail stability aspects and quality control test for LVPs.

Q5) Attempt any four. **[12]**

- a) Define and classify ophthalmic products.
- b) Explain quality control test for blood products.
- c) Write the composition and importance of Total Parenteral Nutrition (TPN)
- d) Discuss collection and storage of whole human blood.
- e) Explain different types of Sutures and Ligatures.
- f) State the applications of contact lens.
- g) Discuss general requirement for sterile parenteral products.

Q6) Write note on (any two) **[8]**

- a) Antioxidants in Parenterals
- b) Surgical Cotton
- c) Contact Lens
- d) Plasma Volume Expanders.



Total No. of Questions : 6]

SEAT No. :

P2110

[5552]-702

[Total No. of Pages : 2

F.Y. B.Pharm.

PHARMACEUTICAL ANALYSIS - V
(2015 Pattern) (Semester - VII)

Time : 3 Hours]

[Max. Marks : 60

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 TEM technique. [10]

OR

Describe principle, instrumentation and advantages of Raman technique.

Q2) Attempt any four of the following. [12]

- a) Compare GC and HPLC techniques.
- b) What are the applications of Raman technique?
- c) What are the applications of SEM techniques?
- d) Classify HPLC detectors and explain any one of them.
- e) Describe applications of NIR techniques.
- f) Explain IR spectral features of aromatic compounds.
- g) Describe any one IR detector.

Q3) Write a note on any two of the following. [8]

- a) HPLC solvent programming.
- b) HPLC applications.
- c) IR solid and liquid sample handling.
- d) Factors affecting IR vibration frequencies.

SECTION - II

Q4) Discuss principle, instrumentation and applications of GC. [10]

OR

Describe instrumentation, working and applications of super critical fluid chromatography.

P.T.O.

Q5) Attempt any four of the following. **[12]**

- a) What are the advantages of flash chromatography?
- b) Give important applications of flash chromatography.
- c) Discuss GC sample handling.
- d) Discuss theory of Flash Chromatography.
- e) Write principle of Super Critical Fluid Extraction.
- f) Why derivatization is carried out in GC?
- g) Compare GC and SFC.

Q6) Write a note on any two of the following. **[8]**

- a) Temperature programming in GC.
- b) Internal and External standard method.
- c) Advantages of Super Critical Fluid Chromatography.
- d) Flow injection analysis.



Total No. of Questions : 6]

SEAT No. :

P2111

[5552]-703

[Total No. of Pages : 2

**Fouth Year B.Pharm.
MEDICINAL CHEMISTRY - III
(2015 Pattern) (Semester - VII)**

Time : 3 Hours]

[Max. Marks : 60

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: **[10]**

- a) Classify antineoplastic agents with suitable example. Describe mode of action and SAR of alkylating agents.
- b) What are antibiotics? Give chemical classification of antibiotics with examples. Discuss in brief about macrolide antibiotics.

Q2) Attempt any four. **[12]**

- a) Write a short note on hormone based anticancer therapy.
- b) Write a short note on resistance to antibiotics.
- c) Give an account of peptide antibiotics.
- d) Give significance of β -lactamase enzyme. Write a short note on β -lactamase inhibitors.
- e) Write a short note on Vinca alkaloids as anticancer agents.
- f) Define antibiotics and classify them with examples.
- g) Give an account of chemistry and stability of penicillins.

Q3) Attempt any two. **[8]**

- a) Give chemistry and SAR of tetracyclines.
- b) Give IUPAC name, mechanism of action and scheme of synthesis of cephadroxil.
- c) Write a short note on antimetabolites as anticancer agents.
- d) Give the SAR of streptomycin.

P.T.O.

SECTION - II

Q4) Discuss various synthetic antibacterial agents. Discuss the chemistry, SAR and MOA of sulphonamides with examples. Outline synthesis of metronidazole. **[10]**

OR

Classify antiviral agents. Explain the SAR and MOA of nucleoside analogs with examples. Outline synthesis of Nevirapine.

Q5) Solve any four. **[12]**

- a) Classify antituberculosis agents with examples. Discuss MOA and SAR of Isoniazid.
- b) Outline the synthesis of Amodiaquine.
- c) Discuss in brief about drugs used for treatment of Trypanosomiasis.
- d) Give the drugs used as Dihydrofolate reductase inhibitors with examples.
- e) Give the structure, MOA and therapeutic use of :
 - i) Saquinavir
 - ii) Halofantrine
- f) Classify with examples drugs used for treatment of amoebiasis.
- g) Explain with examples drugs used as anthelmintics.

Q6) Write short notes on. (any two) **[8]**

- a) Antimalarial agents.
- b) Polyene antibiotics.
- c) Fluoroquinolones.
- d) Nonnucleoside analogs.



Total No. of Questions : 6]

SEAT No. :

[Total No. of Pages : 2

P2112

[5552]-704

**Fourth Year B.Pharm.
PHARMACOLOGY - IV
(2015 Pattern) (Semester - VII)**

Time : 3 Hours]

[Max. Marks : 60

Instructions to the candidates:

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

SECTION - I

Q1) Classify antineoplastic agents with example. Explain in detail mode of action, therapeutic uses and adverse effects of alkylating agents. **[10]**

OR

Discuss in detail mode of action, therapeutic uses, adverse effects and drug interactions of tetracyclines.

Q2) Solve any four. **[12]**

- a) Explain mechanism of action and therapeutic uses of rifampicin.
- b) Give rationale behind combination of sulfamethoxazole and trimethoprim.
- c) Explain mechanism of action and therapeutic uses of erythromycin.
- d) Explain mechanism of action and adverse effects of albendazole.
- e) What is gray baby syndrome?
- f) Explain mechanism of action of griseofulvin and fluconazole.
- g) Penicillins are ineffective on human cells. Justify.

Q3) Solve any two. **[8]**

- a) Artemisinin combination therapy.
- b) Aminoglycosides.
- c) Principles of antibiotic dosing.
- d) Ciprofloxacin.

P.T.O.

SECTION - II

Q4) Explain biosynthesis, storage, release, metabolism, mode of action, pharmacological actions and therapeutic uses of thyroid hormones. **[10]**

OR

Discuss in detail pharmacology of glucocorticoids.

Q5) Solve any four. **[12]**

- a) Discuss in brief relationship between hypothalamus and pituitary gland.
- b) Explain mechanism of action of mineralocorticoids.
- c) Explain mechanism of action and therapeutic uses of vasopressin.
- d) Discuss physiological effects of glucagon.
- e) Elaborate pharmacology of gonadotropins.
- f) Discuss various insulin preparations.
- g) Explain therapeutic uses of growth hormone.

Q6) Solve any two. **[8]**

- a) Sulfonylureas.
- b) Oral contraceptives.
- c) Uterine stimulants.
- d) Drugs regulating calcium homeostasis.



Total No. of Questions : 6]

SEAT No. :

P2114

[5552]-706

[Total No. of Pages : 2

Final Year B. Pharmacy

4.7.6. BIOPHARMACEUTICS AND PHARMACOKINETICS

(2015 Pattern) (Semester - VII)

Time : 3 Hours]

[Max. Marks : 60

Instructions to the candidates:

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

SECTION-I

Q1) What is absorption? Enlist factors influencing absorption of drugs. Discuss patient related factors in detail. **[10]**

OR

What is One Compartmental open model? Give Assessment of pharmacokinetic parameters from plasma and urine data after I.V. bolus.

Q2) Answer the following (Any 4): **[12]**

- a) What is Phase I & phase II
- b) What is apparent volume of Distribution
- c) Explain Wagner Nelson method for estimation of K_a
- d) What is Non compartmental analysis.
- e) Explain how polymorphism affect drug dissolution
- f) What is Protein binding
- g) Explain Salivary excretion of drug.

Q3) Write short note on (Any 2): **[8]**

- a) Clearance
- b) Bioactivation & Tissue Toxicity
- c) Blood Brain Barrier
- d) pH partition Hypothesis

P.T.O.

SECTION - II

Q4) Define Bioavailability and Bioequivalence. Explain Methods of assessing bioavailability. **[10]**

OR

What is Non linear pharmacokinetics? Explain Determination of V_{max} and K_m from Michaelis menten equation.

Q5) Answer the following (Any 4): **[12]**

- a) What is Wash out period
- b) How bioavailability of poorly water soluble drug is increased
- c) Explain multiple dose bioequivalence study
- d) Explain Dissolution Apparatus I as per USP
- e) Explain Higuchi's mathematical model for dissolution
- f) What are Biowaivers
- g) What is significance of Non linear pharmacokinetics

Q6) Write short note on (Any 2): **[8]**

- a) IVIVC
- b) Biopharmaceutical classification system
- c) Theories of dissolution
- d) Balanced Incomplete Block Design



Total No. of Questions : 6]

SEAT No. :

P2115

[Total No. of Pages : 2

[5552]-707

Fourth Year B. Pharm.

4.7.7(T) PHARMACEUTICAL JURISPRUDENCE

(2015 Pattern) (Semester - VII)

Time : 3 Hours]

[Max. Marks :60

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) Enlist different administrative bodies under Drugs and Cosmetic Act 1940. Explain constitution of Drug Technical advisory Board (DTAB). **[10]**

OR

What are objectives of Pharmacy Act 1948? Explain constitution of Pharmacy Council of India.

Q2) Answer the following (Any 4) **[12]**

- a) Write in brief about Hathi Committee report.
- b) What are the functions of Pharmacy Council of India?
- c) What are the objectives of the drugs (Price control) order 2013 and explain schedules thereunder.
- d) Define cruelty to animals
- e) Specify schedule C and M under Drug & Cosmetic Act, 1940
- f) What are adulterated drugs?
- g) Enumerate the main recommendations of Drug Enquiry Committee.

Q3) Write short note on (Any 2) **[8]**

- a) Explain the general formula for calculation of ceiling price of a scheduled formulation.

P.T.O.

- b) What is a code of pharmaceutical ethics? Explain pharmacist role in relation to his job.
- c) Explain qualification and duties of Government analysts.
- d) Discuss the objectives of consumer protection act.

SECTION - II

Q4) Define patent. Write in detail about filing and processing of patent. **[10]**

OR

What is IPR? Write its significance and elaborate different forms of IPR.

Q5) Answer the following (Any 4) **[12]**

- a) What is geographical indications under IPR.
- b) What do you mean by process patent?
- c) What are salient features of Indian Patent Act 1970.
- d) Write in brief about Orange Book.
- e) What is CDSCO and explain its importance.
- f) Write significance of Hatch Waxman Act.
- g) What is a patent infringement.

Q6) Write short note on (Any 2) **[8]**

- a) What is bioequivalence Explain the contents of ANDA.
- b) Comment on USFDA.
- c) World Health Organization.
- d) Explain in brief about Patent Certification.



Total No. of Questions :6]

SEAT No. :

P2116

[Total No. of Pages : 2

[5552]-801

Final Year B. Pharmacy
ADVANCED DRUG DELIVERY SYSTEM
(2015 Pattern) (Semester - VIII)

Time : 3 Hours]

[Max. Marks : 60

Instructions to the candidates:

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

SECTION - I

Q1) Define Controlled Release formulation. Enlist advantages of Controlled Drug Delivery System (CDDS). Describe Physicochemical properties of drug which influence design of CDDS. **[10]**

OR

Define Polymer. Explain Thermoplastic and Thermosetting Polymers. Explain Crystallinity as an important parameter affecting selection of polymer for modified release system.

Q2) Answer the following (any four) **[12]**

- a) DSC as an evaluation parameter for Polymer
- b) Adhesive as a formulation component for TDDS
- c) Vapor pressure Powered Pump (Infusaid) Parenteral Implants
- d) Hormonal IUDs
- e) Demerits of GRDDS/Floating Drug Delivery Systems
- f) Osmotic drug delivery systems for Liquid
- g) Azo-Prodrug based Colonic Drug Delivery

Q3) Write Short Note on (any two) **[8]**

- a) Formulation approach to increase gastric retention of GRDDS
- b) Alternative Biorelevant In Vitro Dissolution testing methods using Rat Cecal Content for Evaluation of Colon Specific Drug Delivery System.
- c) High Density GRDDS Formulations
- d) ALZET Osmotic Pump.

P.T.O.

SECTION - II

Q4) Explain Daltons Law and Raoult's Law for Vapour pressure of Propellents. The Molecular weight of Propellant 11 is 137.38 and that of Propellant 12 is 120.93. The Vapour Pressure (psia) of Propellant 11 at 70°F is 13.4 while that of Propellant 12 at 70°F is 84.9. Calculate the vapour pressure at 70°F of a Propellant blend consisting of propellant 12/11 in 30:70 ratio. [10]

OR

Define Aerosol. Enlist specific advantages of aerosols over other dosage form. Discuss Aluminium and Glass containers for pharmaceutical Aerosols.

Q5) Answer the following (any four) [12]

- a) What is Optimization. Enlist significance/advantages of optimization
- b) Enlist three examples of Enteric Resins used as a coating materials for Microencapsulation.
- c) Explain Polymer-Polymer incompatibility technique of Microencapsulation.
- d) Explain Polymer-Polymer Interaction or Complex technique of Microencapsulation.
- e) Propellant as a component of Aerosol.
- f) Role of Surfactant and Lubricants in an attempt to control the rate of agglomeration in suspension aerosol.
- g) Dosage with metered Valve in Pharmaceutical aerosol as QC evaluation parameter.

Q6) Write Short Note on (any two) [8]

- a) Explain Particles agglomerates immediately following suspension owing to solubility and moisture in suspension aerosols. Remedial measures need to be taken to solve the same problem.
- b) Two level Factorial Design
- c) Weight checking, leak testing and spray testing as a QC parameter for pharmaceutical Aerosol
- d) Interfacial Polymerization method for Microencapsulation.



Total No. of Questions : 6]

SEAT No. :

P2117

[Total No. of Pages : 2

[5552]-802
Final Year B. Pharmacy
4.8.2 - COSMETIC SCIENCE
(2015 Pattern) (Semester - VIII) (Credit System)

Time : 3 Hours]

[Max. Marks :60

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) Black figures to the right indicate full marks.*

SECTION - I

Q1) Define and classify cosmetics. Give an account of various additives used in manufacturing of cosmetics. **[10]**

OR

Give detail account on anatomy, composition and functions of skin. Add a note on Cold Cream.

Q2) Answer the following (Any Four) **[12]**

- a) Explain about formulation of after shave lotions.
- b) Describe in brief about face powders.
- c) Explain about quality of water in cosmetic industry.
- d) Discuss about powder rouges.
- e) Write about blending and fixation of perfumes.
- f) Explain about anti ageing cream.
- g) Give the difference between cosmetics and drug formulation.

Q3) Write short note on (Any Two) **[8]**

- a) Lipsticks
- b) Face make up preparations
- c) Sunscreen preparations
- d) Antiperspirants and Deodorants

P.T.O.

SECTION - II

Q4) What are dentifrices? Explain in detail about componets of tooth paste. Add a note on evaluation of tooth powder. **[10]**

OR

What are cosmeceuticals? Describe the importance of various cosmeceutical agents.

Q5) Answer the following (Any Four) **[12]**

- a) Discuss in brief about evaluation tests for manicure preparations.
- b) Explain how baby talcum powders differ from talcum powders for adults.
- c) Write in brief about various nail care products.
- d) Discuss various types of hair coloring systems.
- e) Write in brief about composition of mouthwashes.
- f) What are depilatories? Write about ingredients used in depilatories.
- g) Explain significance of diluent : solvent ratio in nail lacquer.

Q6) Write short note on (Any Two) **[8]**

- a) Eye mascara
- b) Baby shampoos
- c) Powder compacts
- d) Hair tonics



Total No. of Questions : 6]

SEAT No. :

P2118

[5552]-803

[Total No. of Pages : 2

Final Year B. Pharmacy
PHARMACEUTICAL ANALYSIS - VI
(2015 Pattern) (Semester - VIII)

Time : 3 Hours]

[Max. Marks : 60

Instructions to the candidates:

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

SECTION - I

Q1) Attempt any one question.

- a) Discuss chemical shift in ^1H -NMR and factors affecting Chemical shift. **[10]**

OR

- a) Explain the basic theory of ^1H -NMR. Also discuss the construction and working of a conventional 600 MHz NMR instrument.

Q2) Attempt any four questions **[12]**

- a) Compare between ^1H -NMR and ^{13}C -NMR.
- b) Differentiate between acetaldehyde and propionaldehyde by ^1H -NMR.
- c) Discuss stationary phases used in ion exchange chromatography.
- d) Discuss selection of solvents in ^1H -NMR measurements.
- e) Explain $n + 1$ rule with suitable examples.
- f) Explain significance of J values in ^1H -NMR.

Q3) Write short notes on (any two) **[8]**

- a) Hyper fine splitting in ESR
- b) Applications of Ion exchange chromatography
- c) Double Resonance
- d) Characteristic Chemical shift values of alkyne, aromatic, aldehydic and carboxylic acid protons.

P.T.O.

SECTION - II

Q4) Give the principle and application of Super Critical Fluid Chromatography. Explain in brief instrumentation of Super Critical Fluid Chromatography. [10]

OR

Explain in brief principle and instrumentation of Mass Spectrometry. Add a note on different techniques of ionization.

Q5) Answer the following (Any four) [12]

- a) Write a brief note on theory and application of Flash Chromatography.
- b) Explain applications of Mass Spectrometry.
- c) Explain molecular ion and fragment ion in Mass Spectrometry.
- d) Explain in brief applications of Flow injection Analysis.
- e) What is resolution in Mass Spectrometry?
- f) Explain quadrupole mass analyzer in Mass Spectrometry.
- g) Write a note on Instrumentation of Flash Chromatography.

Q6) Write a short note on any two of the following: [8]

- a) Various types of mass detectors in Mass Spectrometry.
- b) TOF analyzer in Mass Spectrometer.
- c) Liquid Chromatography-Mass Spectroscopy (LC- MS)
- d) Instrumentation of Flow Injection Analysis

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Total No. of Questions : 6]

SEAT No. :

P2119

[5552]-804

[Total No. of Pages : 2

**Final Year B. Pharmacy
MEDICINAL CHEMISTRY - IV
(2015 Pattern) (Semester - VIII)**

Time : 3 Hours]

[Max. Marks : 60

Instructions to the candidates:

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

SECTION - I

Q1) Classify antihistaminic drugs by giving examples of each class. Write in details about H₁ receptor antagonist and Sketch synthetic route of diphenhydramine. **[10]**

OR

Write in detail about mechanism involved in inflammation. Add a note on drugs acting against it and draw synthesis of Ibuprofen.

Q2) Solve any four questions (each question carries 3 marks) **[12]**

- a) Write SAR of Pethidine.
- b) Discuss Proton pump inhibitors.
- c) Give IUPAC name and synthesis for Piroxicam.
- d) Write a note on endogenous opioids.
- e) Write SAR and MOA of opioid anti-diarrhoeal.
- f) Write in brief about H₃ receptor agonist.
- g) Discuss in brief about prostaglandins and its analogs.

Q3) Write a note on any two (each question carries 04 marks) **[8]**

- a) Explain importance of tautomerism of histamine.
- b) Give short account of methadones and benzomorphans as analgesics.
- c) Explain in brief about leucotriene antagonist.
- d) Sketch scheme of synthesis for Ranitidine and Promethazine.

P.T.O.

SECTION - II

Q4) Classify adrenal cortex hormones with structures. Describe its SAR, mechanism of action and biological uses. **[10]**

OR

Classify oral hypoglycemic agents with structure from each class. Comment on sulphonylureas. Draw synthetic route for Tolbutamide.

Q5) Solve any four questions (each question carries 3 marks) **[12]**

- a) Comment on Oral Contraceptives
- b) Comment on synthetic analogs of sex hormones
- c) Draw structures with numbering of gonane, estrane and androstane.
- d) Classify the drugs used in the treatment of hyperthyroidism with structure
- e) Explain metabolism of serotonin in body.
- f) Comment on drugs used in kidney function test.
- g) Draw synthetic route for Metformin.

Q6) Write a note on any two (each question carries 04 marks) **[8]**

- a) SAR and role of Androgens
- b) Anti-thyroid agents
- c) Radio-opaque diagnostic agents
- d) Serotonergic agents



Total No. of Questions : 6]

SEAT No. :

[Total No. of Pages : 2

P2120

[5552]-805

Final Year B. Pharmacy
4.8.5 - PHARMACOLOGY - V
Including Biostatistics
(2015 Pattern) (Credit System) (Semester - VIII)

Time : 3 Hours]

[Max. Marks : 60

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) Define hospital Pharmacy. Explain the role of hospital pharmacist in hospital committees. **[10]**

OR

Define Pharmacovigilance. Explain the role of Pharmacovigilance in ADR monitoring and reporting.

Q2) Answer the following (Any 4) **[12]**

- a) Explain scope and responsibilities of hospital pharmacist.
- b) Define Safety pharmacology and explain objectives of safety pharmacology.
- c) Write methods for assessment of patient compliance.
- d) Explain minimum standard for hospital pharmacy.
- e) Classify ADR with examples.
- f) Write the organization and operation of therapeutic committee.
- g) Explain the factors responsible for ADR.

Q3) Write short note on (Any 2) **[8]**

- a) Strategies to improve patient compliance
- b) Rational drug therapy
- c) Hospital Formulary
- d) Drug food interaction

P.T.O.

SECTION - II

Q4) Define Clinical research. Write and explain types of clinical research. [10]

OR

Write ICH-GCP guidelines for clinical trial.

Q5) Answer the following (Any 4) [12]

- a) Write importance of informed consent.
- b) Explain declaration of Helsinki.
- c) Write role of clinical trial in new drug development.
- d) Discuss the components of informed consent.
- e) Explain the significance of palliative care.
- f) Write importance of institutional review board.
- g) Elaborate history of clinical trial

Q6) Write short note on (Any 2) [8]

- a) The Nuremberg code
- b) The Belmont report
- c) Schedule Y
- d) Phases of Clinical Trial

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Total No. of Questions : 6]

SEAT No. :

P3395

[Total No. of Pages : 2

[5552] - 806

Fourth Year B. Pharmacy (Semester - VIII)

**NATURAL PRODUCATS : COMMERCE, INDUSTRY &
REGULATIONS (486)
(2013 Pattern)**

Time : 3 Hours]

[Max. Marks : 60

Instructions to the candidates :

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

SECTION - I

Q1) Solve any One

[10]

- a) Describe global and domestic market size of natural products in commerce. Add a note on hindrance to export of natural products.
- b) Explain present and future prospect of herbal drug industry. Elaborate plant based industri-es wotking on medicinal and aromatic plants in India.

Q2) Solve any four

[12]

- a) Explain trademark and copyright.
- b) Describe patenting ol herbal drugs.
- c) Highlight the importance of documentation in herbal drug regulation.
- d) Discuss technical and funding assistance schemes.
- e) Wrife a note on biop'racy.
- f) Illustrate significance of biofuels in national economy.
- g) Explain in brief about commerce of spices exported from India.

Q3) Write notes on any two

[8]

- a) Career opportunities in Herbal drug industry.
- b) Global and domestic market of } lethal excipients.

P.T.O.

- c) Scope of Phytopharmaceuticals in domestic market.
- d) Licensing requirements for production of herbal drugs in india.

SECTION II

Q4) Solve any One **[10]**

- a) Describe herbal-drug and herbal-food interactions. Give in detail toxicity and interactions of Digitalis.
- b) Explain guidelines for safety monitoring of herbal drugs in pharmacovigilance system.

Q5) Solve any four **[12]**

- a) What are side effects of Ginseng and Turmeric?
- b) Give applications of allergens in health care system.
- c) Write drug interactions of Garlic.
- d) Classify plant allergens with suitable examples.
- e) Give possible causes for the herb drug interaction.
- f) Describe plants causing hay fever.
- g) Discuss interactions of Ephedra.

Q6) Write notes on any two **[18]**

- a) Preparation of allergenic extract.
- b) Toxicity and drug interactions of Cinchona.
- c) Allergy and idiosyncrasy.
- d) Pharmacovigilance of herbal drugs and its need.



Total No. of Questions : 6]

SEAT No. :

P2121

[5552]-807

[Total No. of Pages : 2

Fouth Year B.Pharmacy

**(4.8.7T) : QUALITY ASSURANCE TECHNIQUES
(2015 Pattern) (Semester - VIII)**

Time : 3 Hours]

[Max. Marks : 60

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 concept of quality assurance and quality control. Write in detail about IPQC in pharmaceutical industry. **[10]**

OR

Define calibration. Explain in detail the calibration of dissolution test apparatus.

Q2) Attempt any four of the following. **[12]**

- a) Describe the concept of quality.
- b) How do you calibrate pH meter?
- c) Enlist important documents & records. Add a note on importance of documentation.
- d) What are Good Laboratory Practices?
- e) What are IQ and PQ equipment?
- f) Write on quality risk management.

Q3) Write short notes on any two of the following. **[8]**

- a) BPCR
- b) Calibration Master Plan
- c) GMP

SECTION - II

Q4) Define validation. Explain in detail about Validation Master Plan. **[10]**

OR

Explain the concept of Quality by Design (QbD). Write in detail about steps in QbD approach.

P.T.O.

Q5) Attempt any four of the following.

[12]

- a) Which is the regulatory body governing medicine in Australia? Explain its role.
- b) Write storage conditions of stability testing of new drug as per ICH guidelines.
- c) What is prospective validation?
- d) Describe organization and functions of USFDA.
- e) Write about need and objectives of validation.
- f) When revalidation is required?

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

[8]

- a) MHRA
- b) WHO
- c) ICH

