Total No. of Questions : 6]

SEAT No. :

**P856**

[Total No. of Pages : 2

# [5854]-51
# T.Y.B.PHARMACY (Semester-V)
# INDUSTRIAL PHARMACY - I
# (2015 Pattern)

*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) ***Neat diagrams must be drawn wherever necessary.***

## SECTION - I

***Q1)*** **Attempt any one question:** **[10]**

a) Discuss process of tablet compression in detail.

b) Comment on formulation and evaluation of mouth dissolving tablets.

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

a) Discuss fluid bed granulation techniques.

b) What are tabletting properites?

c) Discuss various tablet tools.

d) Give rationale for granulation.

e) Explain spheronization.

f) Explain friability test for tablets.

g) Explain the process tablet disintegration.

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

a) Add a note on Tablet defects.

b) Explain weight variation and content uniformity test for tablet as per IP.

c) Discuss physics of tablet compression.

d) Write about granulation bonding mechanisms.

***P.T.O.***

## SECTION - II

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

a) Discuss filling of hard gelatin capsule by volumetric principle and explain uniformity of weight test for capsules.

b) Describe sugar coating operation in details.

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

a) Give composition of soft gelatin capsule shells.

b) What are required characteristics of core tablets for coating?

c) Give advantages and disadvantages of capsule dosage form.

d) What is orange peel defect in tablet coating?

e) What is base adsorption.

f) Describe factors affecting gelatin shell manufacture?

g) Explain disintegration test for enteric coated tablets.

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

a) Write a note on perforated pans.

b) How hard gelatin shells can be made tamper proof?

c) Describe rotary die process for preparation of soft gelatin capsules.

d) Give an account of film forming polymers in tablet coating.

Total No. of Questions : 6]

SEAT No. :

P857

[Total No. of Pages : 2

# [5854]-52

## T.Y.B.Pharmacy

## PHARMACEUTICAL ANALYSIS - III

## (2015 Pattern) (Semester - V)

*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 books.***



### SECTION - I

***Q1)*** Explain Principle, Theory and Instrumentation of UV-Visible spectrophotometric analysis. **[10]**

OR

Explain Principle, Instrumentation and Applications of Flame Photometry.

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

a) Explain chemical deviation in Beer's and Lambert's law.

b) Write a note on sampling plans.

c) Write a note on monochromators in UV-Visible spectroscopy.

d) Write a note on factors affecting λmax.

e) Write a note on Photomultiplier tube detector.

f) Derivative spectroscopy.

g) Draw a neat labelled diagram of Double beam UV-Visible spectrophotometer.

***P.T.O.***

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

a) Derive Beer's and Lambert's law.

b) Explain interaction of EMR with matter.

c) Woodward Fisher rule.

d) Define Chromophore, Auxochrome and explain λmax shifts.

## SECTION - II

*Q4)* Write principle and instrumentation of Atomic Emission Spectroscopy. **[10]**

OR

Write in detail about principle, instrumentation and applications of phosphorimetry.

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

a) Sources used in Atomic Absorption spectroscopy.

b) Applications of Nephelometry and Turbidimetry.

c) Describe Doppler effect in AAS.

d) Explain instrumentation of Turbidimetry.

e) Write a note on burners used in AAS.

f) Explain factors affecting fluorescence and phosphorescence.

g) Discuss sources used in fluorimetric analysis.

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

a) Write applications of fluorimetry and phosphorimetry.

b) Oxidants and fuels used in Atomic Absorption Spectroscopy.

c) Write theory and instrumentation of Fluorimeter.

d) Write a note on Nephelometer.

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Total No. of Questions : 6]

SEAT No. :

**P858**

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# [5854] - 53
# T.Y. B.Pharmacy
# MEDICINAL CHEMISTRY - I
# (2015 Pattern) (Semeser - 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 books.***
3) ***Figures to the right side indicate full marks.***

## SECTION - I

***Q1)*** Write biosynthesis, release and metabolism of Acetylcholine **[10]**

OR

What are antiarrythmic agents? Classify them giving the structure of each class. Discuss in detail about class-I drugs. **[10]**

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

a) Explain the Fergusion principle.

b) Write structure and uses of

i) Atenolol

ii) Clofibrate

c) Explain the chemistry of $\alpha$-adrenergic blockers.

d) Draw the structure, IUPAC name and specific uses of Salbutamol.

e) Explain SAR of Site - III diuretics.

f) Give an account of theories involved in drug receptor interaction.

g) Explain the bood brain barriers.

***Q3)*** Answer the following (Any Two) **[8]**

a) Explain the stereochemical aspects of drug design.

b) Write a note biosynthesis and metabolism of Noradrenaline.

c) Write a note on protein binding.

d) Discuss in detail ganglionic blocking agents.

***P.T.O.***

## SECTION - II

***Q4)*** What are the receptors? Discuss in detail about forces involved in drug receptor interaction. **[10]**

OR

What are antihyperlipidemic? Classify it with their examples and structure explain the SAR and MOA of any two class of it. **[10]**

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

a) Explain in brief about phase - II reactions.

b) Explain the SAR of Acetylcholine.

c) Give the scheme of synthesis for Hydralazine.

d) Explain the potassium sparing diuretics and their chemistry.

e) Discuss the SAR of adrenergic agonist.

f) Discuss β-adrenergic receptor blocking agent.

g) Write the structure, IUPAC name and uses of Carbachol.

***Q6)*** Answer the following (Any Two) **[8]**

a) Explain the chemistry of cholinergic receptors and their subtypes.

b) Explain the chemistry of Calcium channel blockers.

c) Write a note on Site - II type of diuretics.

d) Write a note on Cardiotonic drugs.

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Total No. of Questions : 6]

SEAT No. :

**P859**

[Total No. of Pages : 2

**[5854]-54**

# T.Y. B.Pharmacy

## 3.5.4. PHARMACOLOGY - II

## (2015 Pattern) (Credit System) (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 side indicate full marks.***

## SECTION - I

***Q1)*** Define and classify Cholinomimetics. Explain the Muscarinic and Nicotinic actions of acetylcholine. **[10]**

OR

Explain biosynthesis, storage and release of catecholamines. Classify adrenoceptor blockers with suitable examples. Write an account on Selective $\alpha_1$ - blockers.

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

a) Define and classify anticholinesterase drugs. Enlist their therapeutic uses.

b) Write an account on Organophosphorus poisoning and its treatment.

c) Discuss ganglionic blockers.

d) Explain biosynthesis, storage and release of acetylcholine.

e) Classify Adrenoceptors. Comment on their signal transduction mechanism.

f) Define and classify antimuscarinic drugs.

g) Add an account on non-catecholamine $\beta_2$-selective agonists.

***P.T.O.***

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

a) Skeletal Muscle Relaxants.

b) Pharmacological Actions and therapeutic uses of Atropine.

c) β-Blockers.

d) Pharmacotherapy of Glaucoma.

## SECTION - II

***Q4)*** Classify antihypertensive drugs with suitable examples. Explain pharmacological action, mechanism of action, therapeutic uses and contraindications of ACE inhibitors. **[10]**

OR

Classify antianginal drugs with suitable examples. Explain pharmacological action, mechanism of action, therapeutic uses and contraindications of Nitrates.

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

a) Explain mechanism of action of digital is in congestive heart failure.

b) Justify propranolol is contraindicated with salbutamol for patient suffering from hypertension and bronchial asthma.

c) Explain pharmacological action of Quinidine in cardiac arrhythmia.

d) Pharmacological action and therapeutic uses of Calcium channel blockers.

e) Discuss drugs used in atherosclerosis.

f) Explain pharmacotherapy for cough.

g) Describe drug-drug interaction of Nitrates with Beta blockers & CCBs.

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

a) Classification of diuretics and Pharmacology of Spironolactone.

b) Drug therapy for bronchial asthma.

c) Pharmacotherapy for Myocardial infarction and ischemia.

d) Drugs used in combinations for cardiovascular disorders with suitable examples.

Total No. of Questions : 6]

SEAT No. :

**P860**

[Total No. of Pages : 2

# [5854]-55

## T.Y. B. Pharmacy

## 355 : 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) ***Figures to the right indicate full marks.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Answer to the two sections should be written in separate books.***

### SECTION - I

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

a) Write in details Principle, Working, Merits and applications of Supercritical Fluid Extraction.

OR

b) Explain principle and applications of HPTLC for the plant derived products.

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

a) Write principle and working of counter current Extraction.
b) Write source, properties, isolation of sennosides.
c) Explain extraction of rose oil by Enfleurage Method.
d) Elaborate in details on Fractional distillation.
e) Write properties & tests for curcumin.
f) Explain extraction of Isoflavones of soy by ultrasound assisted extraction.
g) Enlist different chromatographic seperation techniques.

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

a) Explain the extraction of Peppermint oil by steam distillation.
b) Write a note on centrifugation.
c) Elaborate in details on froth flotation technique.
d) Enlist various methods of extraction and add a note on Soxhlet Extraction.

***P.T.O.***

## SECTION - II

***Q4)*** Solve any one of the following. **[10]**

a) Explain procedure principle and significance of determination of Ash value and Moisture content.

OR

b) Describe in details Good Practices for Pharmaceutical quality control laboratories (as per WHO).

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

a) Define adulteration & Explain different types of adulteration.

b) Enlist various quality control Efficacy parameters of herbal drug's as per WHO.

c) Explain procedure for Bitterness value.

d) Write significance of foaming index.

e) Describe determination of radioactive contamination in herbal drug's.

f) Write a note on sublimation.

g) Explain Biology approach in standardization of herbal drugs.

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

a) Explain principle & procedure involved in determination of pesticide residue.

b) Write a note on Haemolytic activity.

c) Write source, properties and tests of strychnine.

d) Explain principle and procedure of sampling techniques.

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Total No. of Questions : 6]

SEAT No. :

**P861**

[Total No. of Pages : 2

# [5854]-56

## Third Year B. Pharmacy

## 356 : PHARMACEUTICAL BUSINESS MANAGEMENT & DISASTER MANAGEMENT

## (2015 Pattern) (Semester - V)

*Time : 3 Hours]* *[Max. Marks : 60*

***Instructions to the candidates:***

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



### SECTION - I

***Q1)*** Explain in details about Network technique. **[10]**

OR

Explain in brief concept of material management in Pharmaceutical Industry.

***Q2)*** Answer any four. (Each 3 marks) **[12]**

a) Describe various types of budget.

b) What are numerous types of decision?

c) Principles of Taylor's scientific management.

d) Describe numerous varieties of objectives.

e) How Administration is completely different from management.

f) What is MBO? Offer benefits & disadvantages of it.

g) Give the functions & responsibilities of the manager.

***Q3)*** Write short note on any two. (Each 4 marks) **[8]**

a) Steps concerned for planning.

b) Fayol contributions.

c) Concept of Drug distribution system in hospital.

d) ABC-analysis.

***P.T.O.***

## SECTION - II

***Q4)*** Elaborate the concept of product life cycle with example. **[10]**

OR

Give details account of communication.

***Q5)*** Answer any four. (Each 3 marks) **[12]**

a) Justify how sales promotion can increase by different methods.

b) Describe in brief about Vroom theory.

c) How sales promotions is differ from Advertisement.

d) Explain in brief about Hertzberg's theory.

e) What are factors affecting determination of price?

f) Describe in brief about Disaster Mitigation.

g) What do you mean by performance Appraisal.

***Q6)*** Write short note on any two. (Each 4 marks) **[8]**

a) The Disaster Management Cycle.

b) Delphi Technique.

c) Leadership style and qualities of leader.

d) Inventory control.

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Total No. of Questions : 6]

SEAT No. :

**P862**

[Total No. of Pages : 2

# [5854]-57

## Third Year B. Pharm.

## 357 : ACTIVE PHARMACEUTICAL INGREDIENTS TECHNOLOGY

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



## SECTION - I

***Q1)*** Define axidation. Describe various oxidising agents. Explain the manufacturing process for any one active pharmaceutical ingredient by axidation. **[10]**

OR

Discuss factors affecting Bechamp reduction. Discuss types of reducing agents used in Amination by reduction.

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

a) Give details of filters used in API manufacturing unit

b) Give details of absorption equipments used in API manafacturing unit

c) Distinguish between unit process and unit operation

d) Enlist reducing agents used in amination by reduction

e) Explain spent acid strength or dehydrating value of sulpheric acid (DVS)

f) Define API, Bulk chemical and fine chemical with suitable. Examples.

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

a) Unit process of Hydrolysis

b) Reactors used in API mfg. process

c) Industrial manufacturing and flow chart of Amlodipine.

d) Unit process of nitration

***P.T.O.***

## SECTION - II

***Q4)*** Enlist and discuss strategies for selection of appropriate route for scale up of API **[10]**

OR

What is material safety data sheet? Explain the content of material safety data sheet in detail.

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

a) Discuss selection of solvents in process of API synthesis.

b) What is chirality? Explain racemic mixture in short

c) What is the purpose of work-up in API preparation

d) What is IPQC? Describe in short

e) Discuss equipment in API manufacturing

f) Give methods of effluent minimization and control

g) Discuss the tools for purifying the product in API synthesis.

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

a) Write note on polymorphism in API industry

b) Green chemistry approach in API synthesis

c) USFDA guideline on chirality

d) Resolution of racemic mixture

Total No. of Questions : 6]

SEAT No. :

**P863**

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## T.Y. B.Pharmacy

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



## SECTION - I

***Q1)*** Solve any one : **[1×10=10]**

a) Define and classify suspensions. Evaluate suspensions.

b) Describe different theories of emulsification and stability of emulsion.

***Q2)*** Answer the following. (any four) **[4×3=12]**

a) Explain Stokes law and its utility in formulation of suspension.

b) Explain Ostwald ripening.

c) Write a note on flocculating agents.

d) Write a note on suspending agents.

e) How emulsion type is identified? Give suitable example.

f) Describe interaction between surfactant and antimicrobial agents.

g) How does thixotropy play important role in suspensions?

***Q3)*** Write short note. (Any two) **[2×4=8]**

a) Structured vehicle.

b) Factors affecting emulsion type.

c) Manufacture of suspensions.

d) HLB system.

***P.T.O.***

## SECTION - II

***Q4)*** Solve any one : **[1×10=10]**

a) Discuss physicochemical factors of drug and skin related factors affecting formulation of semisolid dosage form. Add a not eon drug release from semisolid bases.

b) Discuss in detail formulation, manufacturing methods and evaluation of ointment. Add a note on types of ointment.

***Q5)*** Answer the following. (any four) **[4×3=12]**

a) Discuss vehicle related factors affecting design of semisolid dosage form.

b) Write a note on flux and its measurement.

c) Explain a role of penetration enhancer in semisolid dosage form with example.

d) Describe Draize Test for preclinical screening of semisolids for predicting skin irritation.

e) Differentiate between ointment and cream. Add a note on advantages of cream over ointment.

f) Discuss types of semisolid dosage forms.

g) Explain how anatomy and physiology of skin helps in penetration of drug through a skin.

***Q6)*** Write a note on. (Any two) **[2×4=8]**

a) Equipment used in manufacturing of semisolids.

b) Concept of scale up and technology transfer for dispersed system.

c) Manufacturing facilities for semisolids as per schedule M.

d) Percutaneous absorption.

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**Total No. of Questions : 6]**

**SEAT No. :** ____

**P864**

**[Total No. of Pages : 2**

# [5854]-62

## T.Y. B. Pharmacy

## PHARMACEUTICAL ANALYSIS - IV

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

OR

Discuss various components of HPTLC instrument. Write the applications of HPTLC system.

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

a) Write the applications of Electrophoresis.
b) Write about different types of chromatographic papers.
c) Write various types of developments of Electrophoresis.
d) Write principle of Electrophoresis.
e) Write about Solvents selection for planer chromatography.
f) Write for TLC plate preparation.
g) Discuss the applications of TLC.

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

a) Rf Value and its significance.
b) Instrumentation of Electrophoresis.
c) Difference between TLC and HPTLC.
d) Paper chromatography.

***P.T.O.***

## SECTION - II

***Q4)*** Discuss in details of instrumentation of TGA. **[10]**

OR

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

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

a) Discuss principle of X - ray crystallography.

b) Write about applications of differential thermal analysis.

c) Discuss applications of radiochemical methods.

d) Discuss applications of X-ray diffraction method.

e) Tagging of compound

f) Instrumentation of X-ray diffraction technique

g) Instrumentation of DSC.

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

a) Measurement of radioactivity.

b) Principal of DTA.

c) Powder method in X-ray diffraction method.

d) Analytical Method Validation as per USP guideline.

**Total No. of Questions : 6]** **SEAT No. :**

**P865** **[Total No. of Pages : 2**

# [5854]-63

## 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, Internal choices are given.***
2) ***Figures to the right indicate Full Marks.***
3) ***Draw neat diagram and structures wherver necessary.***

### SECTION - I

***Q1)*** Define and classify sedatives and hypnotics with suitable example. Discuss chemistry, SAR and MOA of benzodiazepines. **[10]**

OR

Define and classify local anesthetic, Discuss ester-based local anesthetic agents. **[10]**

***Q2)*** Answer any Four : **[12]**

a) Discuss phase - I drug metabolism with suitable examples.

b) Define and classify general anesthetic with suitable examples.

c) Outline the synthesis of procaine.

d) Outline the synthesis of thiopental sodium.

e) Discuss applications of drug metabolism studies in new drug discovery.

f) Write metabolic pathway for tolbutamide.

g) Give structure, IUPAC name of phenytoin and metformin.

***Q3)*** Answer any Two : **[8]**

a) Discuss chemistry, SAR and MOA of barbiturates.

b) Write a note on succinimides class of anticonvalsant agent.

c) Discuss amide based local anesthetic agents.

d) Write a note on intravenous general anesthetic agents.

***P.T.O.***

## SECTION - II

***Q4)*** Discuss chemistry, SAR and MOA of phenothiazines class of antipsychotics. **[10]**

OR

Define and classify antidepressant agents with suitable examples add a note on MAO inhibitors. **[10]**

***Q5)*** Answer any Four : **[12]**

a) What are CNS stimulants? Classify them with suitable examples.

b) Define and classify antipsychotics agents with suitable examples.

c) Discuss chemistry and MOA of butyrophenone class of antipsychotics.

d) Outline the synthesis of amitriptyline.

e) Outline the synthesis of warfarin.

f) Discuss SAR of benzodiazepines as sedative and hypnotic agents.

g) Explain chemistry and MOA of peripheral dopa decarboxylase inhibitor.

***Q6)*** Write note on any Two : **[8]**

a) Blood anti-coagulants.

b) Drugs used in the treatment ofAlzheimer's disease.

c) Tricyclic antidepressants.

d) Methylxanthines class of CNS stimulants.

Total No. of Questions : 6]

SEAT No. :

P866

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# [5854]-64

## ThirdYear B. Pharmacy

## PHARMACOLOGY - III

## (2015 Pattern) (Semester - VI) (Theory) (364 T)

*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 antiepileptics, write mechanism of action, pharmacological action, adverse effect and therapeutic uses of phenytoin. **[10]**

OR

Classify general anaesthetics drug. Explain in detail various stages of general anaesthetics. Explain the ideal properties of general anaesthetic agent.

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

a) Pharmacotherapy of Parkinson disease.

b) Explain mode of action of local anaesthetics.

c) What are the sign, symptoms and treatment barbiturate poisoning.

d) Classify antidepressant drugs.

e) Explain pharmacological action & metabolism of Alcohol.

f) Write a note on preanesthetic medication.

g) Classify antipsychotic drug with example of each class.

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

a) Pharmacotherapy of Alzeimers Disease.

b) Antianxiety drugs.

c) Management of Alcoholism.

d) Antiemetic drug.

***P.T.O.***

## SECTION - II

***Q4)*** Classify NSAIDS and write pharmacological details of salicylates. **[10]**

OR

Classify anti-ulcer drugs. Explain in detail the pharmacotherapy of peptic ulcer.

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

a) Write a note on morphic poisoning.

b) Classify drugs used in Bronchial Asthma and add a note on β-agonist.

c) Write a short note on pharmacotherapy of diarrhea.

d) Classify antitussive.

e) Explain the types of opioid receptor.

f) Discuss mechanism of action, therapeutic uses and adverse effect of salbutamol.

g) Pharmacotherapy of rheumatoid arthritis

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

a) Antiemetics

b) Pharmacotherapy of COPD

c) Write MDA, ADR and uses of (i) Salbutamol (ii) Ranitidine (iii) Morphine

d) Pharmacotherapy of Gout.

Total No. of Questions : 6]

SEAT No. :

P867

[Total No. of Pages : 2

# [5854]-65

## T.Y. B. Pharmacy

## NATURAL PRODUCT CHEMISTRY

## (2015 Pattern) (Semester - VI) (365)

*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 and well labelled diagrams or structures wherever necessary.***



### SECTION - I

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

a) Write classification of natural sweetners with examples & describe stevia as a natural sweetner.

b) Elaborate role of natural products in New drug Discovery.

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

a) Define dye, mordant and write properties of dyes.

b) Write biological source, chemical constitutents & uses of turmeric as a natural colour.

c) Write a note on anticancer agents from marine source.

d) Write a note on mutant strains & grafts for biosynthetic studies.

e) Write a note on receptor binding properties.

f) Write note on Natural polymers.

g) What is trace technique? Give its applications.

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

a) Write a note on marine drugs used in cardiovascular diseases.

b) Write a note on isolated organ methods, tissues and cells for biosynthetic studies.

c) Give the applications of gums & Mucilage as natural polymers.

d) Write biological source, chemical constitutents & uses of Annatto & Indigo.

***P.T.O.***

## SECTION - II

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

a) What is importance of dietary supplements in human health? Explain it with reference to prebiotics, probiotics & Omega-3 fatty acids.

b) Explain in detail on Natural products used as Bioavailability enhancers.

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

a) What are sunscreens and role of natural products in sunscreens.

b) Write a note on Neem as pesticide.

c) What are dietary fibers & Give its applications.

d) What is the role of menthol as skin permeation enhancer?

e) What is the significance of biofuel in national economy.

f) Write a note on Ginkgo as dietary supplement.

g) Give the ideal properties of pesticides.

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

a) Comment on natural skin permeation enhancer.

b) Write a role of piperine in bioavailability enhancement.

c) How hyaluronic acid plays role in wound healing?

d) What are the methods of pest control?

**Total No. of Questions : 6]**

**SEAT No. :** ____

**P868**

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# [5854]-66
# T.Y. B.Pharmacy
# BIO-ORGANIC CHEMISTRY & DRUG DESIGN
# (2015 Pattern) (Semester - VI) (Theory)

***Time : 3 Hours]*** ***[Max. Marks : 70***

***Instructions to the candidates:***

1) ***All questions are compulsory. Internal choices are available.***
2) ***Figures to the right indicate full marks.***
3) ***Draw well labeled diagrams wherever necessary.***
4) ***Do not write anything on question paper except genuine seat number.***

## SECTION - I

***Q1)*** Attempt any one of the following.

What are enzymes? Classify them as per International Union of Biochemistry and Microbiology. **[10]**

OR

Explain the concept of drug design resulting in drugs based on inhibition of enzymes. **[10]**

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

a) Explain DNA as drug target.

b) Enlist and exemplify different methods of docking.

c) Write the use of prodrugs in overcoming some side effects of drugs.

d) What is Free Wilson Analysis? Explain with an example.

e) Describe GLP-1 as a target for drug design.

f) Write about the morphology of $GABA_A$ receptor.

g) Explain the utility of PPAR-$\gamma$ receptors in controlling hyperglycemia.

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

a) Introduction of QSAR as a tool in drug design.

b) Captopril as ligand for ACE in ligand based drug designing.

c) Binding of Ach to cholinergic receptors.

## SECTION - II

***Q4)*** Attempt any one of the following.

What is structure based drug design. Explain with the help of a suitable example. **[10]**

OR

Explain the concept of ligand based drug design resulting in marketed drugs. **[10]**

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

a) Explain adrenergic receptor as drug target.

b) Enlist and exemplify different methods of QSAR.

c) Explain topoisomerase II enzyme as a target for drug design.

d) What is Hanzch equation? Explain its utility in drug design.

e) Classify cholinergic receptors as their site of location and mechanism of action.

f) Write about the morphology of Angiotensin receptor.

g) Explain the utility of Phosphofructokinase enzyme as drug target.

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

a) Pro-drug approach to enhance water solubility of drugs.

b) Physostigmine as a prototype for analogue synthesis of AChE inhibitor.

c) Binding to norepinephrine to $alpha_2$ adrenergic receptors.

Total No. of Questions : 6]

SEAT No. :

**P869**

[Total No. of Pages : 2

# [5854]-67

## Third Year B. Pharmacy

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



## SECTION - I

***Q1)*** Discuss in detail nucleic acid blotting. Add a note on isolation of DNA. **[10]**

OR

What is cloning vector? Enlist different types of cloning vectors and explain Ti plasmid in detail.

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

a) Write ideal characteristics of cloning vectors.

b) What is gene sequencing? Explain.

c) Draw a well labeled diagram of shuttle vector.

d) Write the importance of site directed mutagenesis.

e) Give an account of host system in genetic engineering.

f) Write applications of Biotechnology.

g) Discuss role of alkaline phosphatase in genetic engineering.

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

a) Gene transfer by Transduction

b) Restriction endonuclease

c) DNA fingerprinting

d) Expression vector

***P.T.O.***

## SECTION - II

***Q4)*** What is enzyme immobilization? Describe methods and applications of enzyme immobilization. **[10]**

OR

Describe in detail production of any one antibiotic by fermentation technology.

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

a) Draw structural aspects of typical fermenter.

b) What is cryopreservation?

c) Discuss in brief production of Interferon.

d) Write applications of transgenic animals.

e) Explain in short production of any one vitamin.

f) Write applications of hybridoma technology.

g) Classify different types of fermenters.

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

a) Applications of fermentation technology.

b) Human gene therapy-Applications

c) Down stream processing

d) Monoclonal antibodies

**Total No. of Questions : 6]**

**SEAT No. :** ____

**P870**

**[Total No. of Pages : 2**

# [5854]-71

## Fourth Year B.Pharmacy

## PHARMACEUTICS

## Sterile Products

## (2015 Pattern) (Semester - VII)

***Time : 3 Hours]*** ***[Max. Marks : 60***

***Instructions to the candidates:***

1) ***Answers to the two sections should be written in separate answer books.***
2) ***Draw a Neat labelled diagrame wherever necessary.***
3) ***Figures to the right indicate full marks.***



### SECTION - I

***Q1)*** Explain in detail types of vehicles, selection of vehicles and additives used in the formulation of small volume parenterals (SVPs). **[10]**

OR

Define preformulation. Describe different physicochemical properties of drug that should be studies for sterile formulations.

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

a) Discuss about sterile reconstituted products.

b) Describe factors for deciding the type of container and closure system for sterile parenteral products.

c) Explain in brief about various routes of parenteral administration.

d) What are membrane filters and their applications in sterile product manufacture?

e) Write significance of HVAC system in manufacturing of sterile products.

f) How type I glass is differentiated from type II glass as per I.P?

g) Write about antioxidants in parenterals.

***P.T.O.***

***Q3)*** Write a notes on (Any two) **[8]**

a) Prefilled syringes.

b) Blow fill seal technique

c) HEPA filter and laminar flow

d) Quality control tests for SVPs.

## SECTION - II

***Q4)*** Discuss in detail stability aspects and quality control tests for LVPs. **[10]**

OR

Explain in detail collection and storage of whole human blood. Add a note on quality control of blood products.

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

a) Explain in short evaluation tests for ophthalmic products.

b) Write about the substances added for stabilization of LVPs.

c) Write about absorbent foom.

d) Explain working of freeze dryer.

e) Write ideal properties of plasma volume exponder.

f) Write the advantages and disadvantages of injection ports.

g) Define and classify ophthalmic products.

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

a) Total parenteral nutrition.

b) Application of freeze drying.

c) Contact Lens.

d) Parenteral devices.

Total No. of Questions : 6]

SEAT No. :

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# [5854]-72

## Fourth Year B. Pharmacy

## PHARMACEUTICAL ANALYSIS - V

## (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 in separate answer books.***
3) ***Figures to the right indicate full marks.***



### SECTION - I

***Q1)*** Draw block diagram of gas chromatography & give function of each part. Explain FID. Electrolytic conductivity. ECD used in gas chromatography. **[10]**

OR

Describe molecular vibration and factors affecting IR absorption frequency.

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

a) Describe limitations of IR in quantitative analysis.

b) Give application of gas chromatography.

c) Explain carries gases used in uc.

d) Describe overtone and vibrational coupling.

e) Classify and compare the columns used in gas chromatography.

f) Explain any three sources of light used in Mid-IR.

g) How intermolecular hydrogen bonding affects appearance of absorption bond in IR.

***P.T.O.***

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

a) Need of derivatisation and its method in GC.

b) Comparison of dispensive IR with FT-IR.

c) Sample introduction technique used in GC.

d) IR spectral feature of amide. aldehyde. Carboxylic acid and alcohols.

## SECTION - II

***Q4)*** Write principle, instrumentation and applications of SEM. **[10]**

OR

Describe system suitability parameter and trouble shooting in HPLC.

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

a) Explain sample preparation in TEM.

b) Explain the term longitudinal diffusion & its effects on HETP.

c) Write applications of Raman spectroscopy.

d) Explain mass spectrometric detector in HPLC.

e) Write principle and mechanism of Raman scattering.

f) Explain mobile phase preparation in HPLC.

g) Explain reciprocating pump with its advantages and disadvantage in HPLC.

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

a) Advantage of UPLC.

b) Instrumentation of NIR.

c) Instrumentation of Raman spectroscopy.

d) TEM.

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Total No. of Questions : 6]

SEAT No. :

**P872**

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# [5854] - 73
# Fourth Year B. Pharmacy
# MEDICINAL CHEMISTRY - III
# (2015 Pattern) (Semester - VII) (473)

*Time : 3 Hours]* *[Max. Marks : 60*

***Instructions to the candidates:***

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

## SECTION - I

***Q1)*** Discuss Nomenclature and sar of B-Lactam antibiotics and write synthesis of amoxycillintrihydrate. **[10]**

OR

Discuss chemistry and sar cephalosporins write synthesis of cephadroxill. **[10]**

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

a) Write sar of Tetracycline.

b) Write note on unclassified antibiotics.

c) Discuss chemistry of macrolides.

d) Write note on therapeutically important aminoglycosides.

e) Write note on polypeptide antibiotics.

f) Write synthesis of chlorambucil.

g) Write synthesis of methotrexate.

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

a) Write note on beta lactamase inhibitors.

b) Classify antibacterial Antibiotics and write structure of one drug from each class.

c) Explain nomeclature of tetracyclines.

d) Write note on anticancer monoclonal antibodies.

***P.T.O.***

## SECTION - II

***Q4)*** Classify antimalarial agents based on life cycle of malaria parasite with examples. Discuss the chemistry, SAR and MOA of amino quinolines. **[10]**

OR

Classify antifungal agents. Explain the chemistry, SAR and MOA of azole derivatives. Outline synthesis of 5-Flucytosine. **[10]**

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

a) Classify antituberculosis agents with examples. Discuss MOA and SAR of Isoniazid.

b) Outline the synthesis of Metronidazole with its therapeutic uses.

c) Discuss in brief about drugs used for treatment of Leishmaniasis.

d) Enlist various Dihydrofolate reductase inhibitors with examples and therapeutic uses.

e) Give the Structure, MOA and therapeutic use of:

i) Saquinavir

ii) Sulphadoxine

f) Classify antiviral drugs with examples. Elaborate the drugs used for DNA viruses.

g) Explain with examples drugs used as anthelmintics.

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

a) Antileprosy agents.

b) Polyene antibiotics.

c) Sulphonamides.

d) Reverse Transcriptase inhibitors.

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**Total No. of Questions : 6]**

**SEAT No. :** ____

**P873**

**[Total No. of Pages : 2**

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# Fourth Year B. Pharmacy
# 4.7.4. PHARMACOLOGY - IV
# (2015 Pattern - Credit System) (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)*** Write classification, mechanism of action, antibacterial spectrum, resistance, therapeutic uses, adverse effects of aminoglycoside antibiotics. **[10]**

OR

Describe Malaria Life Cycle, classify Antimalarial Drugs with suitable examples and write MOA of Chloroquine.

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

a) Explain the MOA, uses and adverse effects of Sulfonamides.

b) Write classification of Quinolones and add a note on Urinary antiseptics.

c) Comment on the rationality of the fixed dose combination of Amoxycillin and Clavulinic Acid.

d) Classify Antifungal Agents with suitable examples.

e) Explain MOA of Macrolide antibiotics.

f) Comment on the rationality of the fixed dose combination of Sulfamethoxazole and Trimethoprim.

g) Write a note on Antiamoebic agents.

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

a) Write a short note on Bacterial Resistance.

b) Write MOA and uses of Beta Lactamase Inhibitors.

c) Write MOA, uses and adverse effects of Tetracyclins.

d) Classify antileprotic agents with suitable examples along with their MOA.

***P.T.O.***

## SECTION - II

***Q4)*** Write Biosynthesis, Mechanism of Action and Pharmacology of Adrenocorticosteroids. **[10]**

OR

Enlist Hormones Secreted by Anterior Pituitary Gland and write Physiological functions, Pathological Role, uses and Antagonists of Growth Hormone.

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

a) Write Pharmacotherapy of Hyperthyroidism.

b) Write a note on Secretion and Physiological functions of Androgens.

c) Write a note on Tocolytics.

d) Write a note on Oral Contraceptives.

e) Write a note on Oral Hypoglycemic agents.

f) Explain the Hypothalamus Pituitary Relationship.

g) Write a note on Antiandrogens.

***Q6)*** Answer the following (Any 2) : **[8]**

a) Write a note on biosynthesis, secretion, mechanism of action and pharmacology of Glucagon.

b) Write a pharmacotherapy of Type I Diabetes Mellitus and add a note on diabetic complications.

c) Write Physiological functions of Prolactin and add a note on Hyperprolactinemia.

d) Write Physiological functions of Somatostatin and add a note on Somatostatin analogues.

Total No. of Questions : 6]

SEAT No. :

**P874**

[Total No. of Pages : 2

# [5854]-75

## Final Year B. Pharmacy

## 475 : NATURAL DRUG TECHNOLOGY

## (2015 Pattern) (Semester - VII) (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)*** Give WHO guidelines on 'Good Agricultural and Collection Practices' (GACP) **[10]**

OR

Explain Ayurveda System of Medicine, Give the theory and Basic Concepts, and add a brief note on diagnosis and treatment from Ayurveda System of medicine.

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

a) Write a note on Vatika.
b) Write a short note on Churna.
c) Explain principle of MTT assay.
d) Write a note on Siddha system of medicine.
e) Discuss the deterioration of crude drugs due to
   i) Moisture
   ii) Temperature
f) Elicitors induced production of secondary metabolites.
g) Write a note Elicitors induced production of secondary metabolites.

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

a) Write a note on Brine Shrimp Lethality Assay.
b) Write a note on types of tissue culture.
c) Write a note on 'Homeopathy System of medicine'.
d) Give the preparation methods for Asava and Arishta.

***P.T.O.***

## SECTION - II

***Q4)*** Explain in detail structure elucidation of Digoxin. **[10]**

OR

Discuss herbs used in skin & hair care cosmetics. Classify skin care products. Explain in detail preparation & evaluation of skin care products.

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

a) Give principle & application of HPTLC.

b) Explain in brief Nanoparticles.

c) Give method of preparation of hair care products.

d) Give various approaches & potentials of Novel drug delivery system.

e) Describe various physical methods used for natural product analysis.

f) Give chemical analysis of alkaloid with example.

g) Explain combustion analysis for herbal drugs.

***Q6)*** Answer the following. (Any Two) **[8]**

a) Write note on Liposomes & Phytosomes.

b) Give principle & application of IR spectroscopy.

c) What are terpenoids? Give UV & IR interpretation of Citral.

d) Write note on Novel vesicular herbal formulation.

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Total No. of Questions : 6]

SEAT No. :

**P875**

[Total No. of Pages : 2

# [5854]-76

## Fourth 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) ***Answers to the two sections should be written in separate asnwer books.***
3) ***Neat labeled diagrams must be drawn wherever necessary.***
4) ***Figures to the right indicate full marks.***



## SECTION - I

***Q1)*** What is absorption? Explain mechanisms involved in absorption of drug.**[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 Enterohepatic cycling of drug.

b) Give significance of apparent volume of Distribution

c) What are Displacement interaction

d) What is Two compartmental analysis

e) What is induction of drug metabolizing enzyme

f) Which are the types of protein binding

g) 'Most of the drugs produce bitter after taste' clarify the statement.

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

a) Kinetics of Protein Binding

b) Effect of GI pH on absorption of drug

c) Estimation of Ka

d) First Pass Metabolism

***P.T.O.***

## SECTION - II

***Q4)*** Define Bioavailability and bioequivalence. Explain Review of regulatory requirements for conducting bioequivalence study. **[10]**

OR

What is BCS classification of drug, Give its Significance? Add a note on *IVIVC*

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

a) What is Michaelismenten equation

b) Add a note on Single dose bioequivalence study

c) Explain Film theory of Dissolution

d) Explain Dissolution Apparatus I as per USP

e) What are the causes of nonlinear pharmacokinetics.

f) What is difference between Biowaivers and Biosimilars

g) Explain how salt formation of poorly water soluble drug increases its bioavailability.

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

a) Mathematical models for dissolution

b) Estimation of Vmax and Km

c) Absolute and Relative Bioavailability

d) Assessment of Bioavailability.

**Total No. of Questions : 6]**

**SEAT No. :** ____

**P5978**

**[Total No. of Pages : 2**

# [5854]-77

## Final Year B.Pharmacy

## 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) ***Answer to the two sections should be written in separate answer book.***
3) ***Figures to the right indicate full marks.***

### SECTION - I

***Q1)*** What is code of Pharmaceutical ethics. **[10]**

OR

Give the constitution & functions of Pharmacy council of India as Pharmacy Act, 1948.

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

a) What is state pharmacy council.
b) Define schedule M & C.
c) What is prices and price list MAPE calculation.
d) What is the purpose of Magic & Remedies Act.
e) What is Education Regulations.
f) What is purpose of consumer protection Act, 1986.
g) What is Industrial Development & Regulation Act, 1951.

***Q3)*** Write short note on : **[8]**

a) Sale of Opium
b) Revision and amendments of pricing.
c) Powers of Drug Inspector.
d) Preparation of register and qualifications for entry into registers.

***P.T.O.***

## SECTION - II

***Q4)*** What is Design, Trademark and copyright. **[10]**

OR

What is Intellectual property right? And what is product patent.

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

a) What are criteria for obtaining patents.

b) What is ANDA & its filling.

c) Give salient features of U.S. Patent.

d) What is WHO and its functions.

e) What is ISO and its functions

f) What are exclusive marketing rights.

g) Processing of patent.

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

a) USFDA

b) CDSCO

c) Geographical Indication

d) MHRA

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Total No. of Questions : 6]

SEAT No. :

**P876**

[Total No. of Pages : 2

# [5854]-81
# F.Y. 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 books.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Figures to the right indicate full marks.***

## SECTION - I

***Q1)*** Discuss the properties for selecting pharmaceutical polymers. **[10]**

OR

Elaborate the different approaches for fabrication of Controlled Release Dosage forms.

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

a) Explain in brief design and fabrication of elementary osmotic pumps.

b) Prebiotics and probiotics.

c) Role of physicochemical properties of drugs in designing controlled Release Dosage forms.

d) Classification of liposomes.

e) Enlist characterization techniques of polymers.

f) Different components of Transdermal patches.

g) Classify modified release drug delivery systems.

***Q3)*** Answer any two of the following questions. **[8]**

a) Rate preprogrammed drug delivery system.

b) Approaches adopted for formulation of Gastro-Retentive drug delivery systems.

c) Elaborate the concepts and evaluation of mucosal drug delivery systems.

d) Discuss the methods of liposome preparation and drug loading.

***P.T.O.***

## SECTION - II

***Q4)*** Explain the need for microencapsulation. Describe the coacervation or phase separation method and polymer-polymer incompatibility method for microencapsulation. **[10]**

OR

Describe the use of optimization in pharmaceutical industry with suitable examples.

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

a) What are the factors influencing drug deposition in inhalation aerosols?

b) Write a note on advances in pharmaceutical aerosols.

c) Describe briefly factorial design.

d) Explain the mode of operation for aerosols containing compressed gases.

e) Enlist the polymers used in the method of microencapsulation.

f) Describe the spheronization technique of microencapsulation.

g) Give an example of application of optimization in a tablet formulation.

***Q6)*** Answer any two of the following questions. **[8]**

a) Differentiate between MDI and DPI.

b) Describe the formulation aspects of pharmaceutical aerosols.

c) Explain the fluidized bed coater method of microencapsulation.

d) Elaborate on the concept of design of experiment (DOE).

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**Total No. of Questions : 6]**

**SEAT No. :** ____

**P877**

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# [5854]-82

## Fourth Year B. Pharmacy

## COSMETIC SCIENCE

## (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) ***Neat labeled diagrams must be drawn wherever necessary.***
4) ***Black figures to the right indicate full marks.***

### SECTION - I

***Q1)*** Discuss in detail about formulation development, manufacturing and evaluation of Lipsticks. **[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) Discuss about powder rouges.
b) Explain in brief about the formulation of shaving creams.
c) Describe in brief about bath oils.
d) Discuss formulation aspects of cleansing cream.
e) Discuss in brief about quality of water in cosmetic industry.
f) Define cosmetics. Classify skin cosmetics.
g) Discuss formulation aspects of vanishing cream.

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

a) Colours and Perfumes in Cosmetics
b) Face powders
c) Moisturizing cream
d) Antiperspirants and Deodorants

***P.T.O.***

## SECTION - II

***Q4)*** Discuss in detail about formulation development, manufacturing and evaluation of Shampoos. **[10]**

OR

Discuss in detail about ideal properties, components of nail lacquer. Add a note on its manufacturing and evaluation.

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

a) Discuss general rules in formulation of depilatiories as thioglycollates, explain role of calcium hydroxide in thioglycollate type depilatories.

b) What are abrasives? Write in brief about significance of particle size for abrasives.

c) Explain how baby talcum powders differ from talcum powders for adults.

d) Discuss the formulation aspect of tooth powder.

e) Differentiate between cosmetics and cosmeceuticals.

f) Write about baby powders.

g) Discuss the formulation aspect of eye liner.

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

a) Mouth washes

b) Antioxidants as cosmeceuticals

c) Hair coloring systems

d) Hair tonics

Total No. of Questions : 6]

SEAT No. :

P878

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# [5854]-83

## 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 sheet.***
3) ***Write Neat labelled diagrame wherever necessary.***
4) ***Figures to the right indicate full marks.***

### SECTION - I

***Q1)*** Discuss Principle Instrumentation application of Ion exchange Chromatography. **[10]**

OR

Explain the basic theory of 1-HNMR. Discuss Instrumentation and application of NMR spectroscopy.

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

a) Discuss stationary phases used in ion exchnage chromatography.
b) Explain n + 1 rule with suitable example.
c) Why TMS is used as internal standard in NMR spectroscopy.
d) What is shielding-de shielding in NMR.
e) Explain significance of J values in 1-H NMR.
f) Explain Hypersplitting is ESR.
g) Write theory of Ion exchange chromatography.

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

a) Double resonance.
b) Compare between 1-H NMR and 13-CNMR
c) Chemical and magnetic equivalence
d) Spin - Spin Splitting

***P.T.O.***

## SECTION - II

***Q4)*** Classify ionization sources in MS. Discuss chemical ionization sources and enlist advantages and disadvantages. **[10]**

OR

Discuss principle of LC-MS. Add a note on interfaces used in LC-MS.

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

a) Give principle of mass spectrophotomer.

b) Draw neat labelled diagram of single focusing mass analyzer.

c) Write application of flash chromatography.

d) What is resolution in mass spectroscopy?

e) Explain in brief application of flow injection analysis.

f) Enlist types of mass analyzer. Explain any one.

g) Explain fragmentation pattern of alkanes in mass spectroscopy.

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

a) Nitrogen rule and ring rule in mass spectroscopy.

b) Discuss principle of Double focusing mass Analyzer.

c) Explain MC-Laffery rearrangement with suitable example.

d) MALDI

Total No. of Questions : 6]

SEAT No. :

P879

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# [5854]-84

## Final Year B. Pharmacy

## MEDICINAL CHEMISTRY - IV

## (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 sheet.***
3) ***Figures to the right indicate full marks.***



### SECTION - I

***Q1)*** What are Narcotics? Give chemical classification of Narcotic agents with example and mechanism of action. **[10]**

OR

What are proton pump Inhibitors. Give chemical classification of proton pump inhibitors with example and mechanism of action.

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

a) Sketch synthetic route for Dextromethorphan.
b) Explain with examples role of Antipyretics.
c) Sketch synthetic route for Diclofenac.
d) Explain Mechanism of action of $H_2$ - blockers.
e) Sketch synthetic route for promethazine.
f) Give brief account on Analgesics with structure of drugs.
g) Sketch synthetic route for proponyphen.

***Q3)*** Attempt any two questions : **[8]**

a) Explain the chemistry of prostaglandin & their analogues.
b) Explain with examples opioid antagonists.
c) Write a note on Analgesics.
d) Write a note on leucobiene antagonists.

***P.T.O.***

## SECTION - II

***Q4)*** Write elaborative note on various diagnostic agents along with examples. **[10]**

OR

Classify oral hypoglycemic agents along with examples. Discuss structure activity relationship of sulphonyl urea oral hypoglycemic agents.

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

a) Draw schemes of reactions involved in the synthesis of malformin.

b) Explain serotonergic agents.

c) Note on anti-thyroid agents.

d) Write note on steroidal anti-inflammatory agents.

e) Draw schemes of reactions involved in the synthesis of tolbutamide.

f) Explain chemistry of hormone insulin.

g) Write short note on thyroid hormone.

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

a) Note on synthetic analogues of sex hormones.

b) Along with suitable examples of drugs explain SAR of Thiazolidinediones.

c) Write note on non-steroidatestrogens.

d) Write note on oral constraceptives.

Total No. of Questions : 6]

SEAT No. :

P880

[Total No. of Pages : 2

# [5854]-85

## F.Y. B.Pharmacy

## PHARMACOLOGY - V (Including Biostatistics)

## (2015 Pattern) (Semester - VIII)

*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.***



### SECTION - I

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

a) Define and classify Drug-Drug interaction. Explain the mechanism of drug interaction affecting pharmacokinetics with appropriate examples.

OR

b) What is Patient Noncompliance? Describe the methods for its assessment and strategies to improve patient compliance.

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

a) Explain scope and responsibilities of hospital pharmacist.
b) Define and classify adverse drug reactions.
c) Define Safety pharmacology and explain objectives of safety pharmacology.
d) Explain the factors responsible for ADR.
e) Write a note on Serious Adverse Reaction.
f) Write the reasons of patient Non compliance.
g) "Tetracycline can be taken with milk" state True/false. Justify your answer.

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

a) Rational drug therapy.
b) PVPI
c) Food-Drug interaction
d) Reporting of ADR

***P.T.O.***

## SECTION - II

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

a) What are ethical and regulatory issues in clinical trials as per GCP? Add note on Declaration on Helsinki.

OR

b) Define Clinical research. Write and explain phases of clinical research.

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

a) What is Cross over study design?

b) Write importance of protocol in clinical trials.

c) Discuss role of CRO in clinical trials.

d) Write composition and responsibilities of IRB.

e) What is Clinical Trial Monitoring?

f) Write role of clinical trial in new drug development.

g) Write importance of Belmont report.

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

a) Role and responsibilities of CDM Personnel.

b) Informed Consent Form.

c) Role of Sponsor in Clinical trials.

d) Clinical Trial Audits

Total No. of Questions : 6]

SEAT No. :

P881

[Total No. of Pages : 2

# [5854]-86

## Fourth Year B. Pharmacy

## NATURAL PRODUCTS : COMMERCE, INDUSTRY & REGULATIONS

## (2015 Pattern) (Semester - VIII) (486)

*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)*** Solve any one of the following : **[10]**

Discuss about current trends in herbal drug industry, highlight on future requirements of the same.

OR

What is IPR? Explain in detail Farmers & Breeders right.

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

a) Describe the global market trade of herbal cosmetics.
b) Explain various funding schemes for herbal drug development.
c) Comment on import and export of natural products.
d) Enlist and explain documents required for licensing of natural drug manufacturing.
e) Describe importance of hygiene in Herbal industry.
f) Comment on biopyracy.
g) Write objectives of GMP in herbal drug industry.

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

a) Describe the trade market of spice and condiments.
b) Explain infrastructure requirements of herbal drug storage.
c) Discuss about challenges to face in herbal drug industry.
d) Brief about essential oil industry.

***P.T.O.***

## SECTION - II

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

Define and classify allergens, explain primary exposure. Describe inhalant and injectant allergens.

OR

Describe aim, objectives, operations and challenges in Pharmacovigilance.

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

a) Write down food and drug interactions of garlic.

b) Describe the need of Pharmacovigilance.

c) Focus on infestant allergens.

d) Explain the plants causing idiosyncracy.

e) Describe side effects and interactions of Amla.

f) Describe Pharmacovigilance reporting system.

g) Write applications of allergenic extracts.

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

a) Describe methods of diagnosis of allergy.

b) Explain working policy of upsalla monitoring centre.

c) Write toxicity and interaction profile of cinchona.

d) Describe plants causing allergy and bay fever.

**Total No. of Questions : 6]** **SEAT No. :**

**P882** **[Total No. of Pages : 2**

# [5854]-87
# Final 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)*** Define calibration. Explain in detail about the calibration of dissolution test apparatus. **[10]**

OR

Explain in detail about quality management system.

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

a) Write on Good Laboratory Practices.

b) What are OQ and PQ of equipment?

c) Write on quality risk management.

d) Write on the responsibilities of QA department.

e) Explain the responsibility and frequency of calibration.

f) How do you calibrate pH meter?

g) Explain the components of QA.

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

a) MPCR

b) Good Documentation Practices

c) URS and DQ of equipment

d) IPQC

***P.T.O.***

## SECTION - II

***Q4)*** Define validation. Write in detail about types of process validation. **[10]**

OR

Enlist various regulatory agencies imparting quality standards. Explain in detail about ICH.

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

a) Explain the significance of Quality by Design (QbD).

b) Discuss WHO guidelines on inspection of pharmaceutical manufacturing facilities.

c) Enlist the scope of validation.

d) Which is the regulatory body governing medicine in Australia? Elaborate its role.

e) Write on objectives and activities of MHRA.

f) Explain the functions of WHO.

g) Explain need and objective of validation.

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

a) USFDA

b) Steps involved in QbD

c) Validation Master Plan

d) Cleaning Validation