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

**SEAT No. :**

**P-806**

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

# [6019]-51

# T.Y. B. Pharmacy

# 351T : Industrial Phamacy - I

# (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.***
3) ***Draw well labelled diagram wherever necessory.***
4) ***Do not write anything on question paper except seat number.***

## SECTION - I

***Q1)*** Solve any 1 : **[10]**

a) Define tablet. Explain official & non official test for evaluation of tablet.

b) Discuss Biopharmaceutical, therapeutic & drug related consideration for dosage form design.

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

a) Give schedule M requirements

b) Discuss disintegration test of tablets

c) Explain in detail coprocessed excipients

d) Discuss lapping & lamination defect in tablet manufacturing

e) Explain mouth dissolving tablet formulation

f) Discuss force volume relationship in tablet manufacturing

g) Give weight variation test in tablet evaluation.

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

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

a) Formulation of chewable tablets

b) Evaluation of granules

c) Preparation of effervescent tablet

d) Extrusion & spheronization

## SECTION - II

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

a) Enlist various materials used in capsule shell manufacture. Discuss in detail the process of manufacturing & quality control tests of soft gelatin capsules.

b) Give an account of methods of coating of tablets. Explain the process of sugar coating & its pharmaceutical applications.

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

a) Distinguish between hard & soft gelatin capsules.

b) Discuss the various polymers used in enteric coating.

c) Give a note on base adsorption factor.

d) Discuss the various types of gelatin.

e) Discuss the concept of compression coating.

f) Discuss the various manufacture defects of hard gelatin capsules.

g) Discuss the auger filling principle of cupsules.

***Q6)*** Write short notes (Any two) : **[8]**

a) Discuss the common details associated with tablet coating.

b) Dissolution test of capsules.

c) Manufacture process of hard gelatin capsule shells.

d) Problem in capsule filling & remedies.

⌘⌘⌘

Total No. of Questions : 6]

SEAT No. :

P-807

[Total No. of Pages : 2

# [6019]-52

# T.Y. B. Pharmacy

## 352 : Pharmaceutical Analysis - III

## (2015 Pattern) (Semester - V)

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

***Instructions to the candidates :***

1) ***Attempt all questions.***

2) ***Figure to the right indicate full marks.***

## SECTION - I

***Q1)*** State and derive Beer-Lambert's law? Explain its different deviations and limitations. **[10]**

OR

Explain in detail the principle, instrumentation and applications of flame photometry.

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

a) What is absorption maximum?

b) What is scattering of radiation?

c) What is atomic and molecular spectroscopy?

d) Explain simultaneous equation method.

e) What are steps in atomization in flame photometry?

f) Draw a neat and labelled diagram of single beam UV spectrophotometer.

g) What is diffraction?

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

a) Deviation of Beer-lambert's law

b) Woodward rule

c) Flame photometer

d) Optimum conditions for spectrophotometric measurement

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

## SECTION - II

***Q4)*** What is electromagnetic spectrum? Give classification of different instrumental methods of analysis. **[10]**

OR

Explain in detail principle, instrumentation and applications of atomic absorption spectroscopy.

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

a) What is line broadening?

b) What is Doppler effect?

c) What is excitation and emission spectra?

d) What is photometry?

e) What is spectrophotometry?

f) Explain spectrophotometric titrations.

g) Explain synchronous fluorescence.

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

a) Interferences types and corrections in AAS.

b) Fluorescence quenching

c) Phosphorimetry

d) Atomic emission spectroscopy instrumentation

⌘⌘⌘

Total No. of Questions : 6]

SEAT No. :

**P808**

[Total No. of Pages : 2

# [6019]- 53
# T. Y. B. Pharmacy
# 353 (T) : 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 answer sheets.***
3) ***Write neat structures and diagrams wherever necessary.***
4) ***Figures to the right 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

What are antihypertensive agents? Classify them giving the structure and IUPAC of at least one drug belonging to each class. Discuss in detail the calcium channel blockers. **[10]**

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

a) Give the scheme of synthesis for Atenolol.

b) Write structure and uses of:

i) Guanethidine

ii) Salbutamol

c) Comment on protein binding of drugs.

d) Write the structure, MOA and uses of reserpine.

e) Write a note on neuromuscular blocking agents.

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

g) Explain the signal transduction.

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

a) Give SAR and MOA of thiazide diuretics.

b) Outline the biosynthetic pathway for adrenergic neurotransmitters.

c) Discuss in detail the irreversible AchE inhibitors.

d) Write a note on Cardiotonic drugs.

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

## 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 the various types of receptors? Discuss each type in detail with the help of examples and neat diagrams. **[10]**

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

a) Write about isosterism and its effect on biological activity.

b) Write the scheme of synthesis for Captopril.

c) Write structures along with IUPAC nomenclature of

i) Methyldopa

ii) Terbutaline

d) Write a note on potassium sparing diuretics.

e) Differentiate passive and active transport.

f) Discuss any one adrenergic receptor blocking agent.

g) Give an account of blood brain barrier.

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

a) Write a note on antiarrythmic agents.

b) Discuss various theories proposed to explain drug receptor interaction.

c) Explain the chemistry and MOA of organic nitrates as antianginal agents.

d) Write the structure and uses of carbonic anhydrase inhibitors.

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

**SEAT No. :**

**P-809**

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

# [6019]-54
# T.Y.B.Pharmacy
# 354: Pharmacology - II
# (Semester-V) (2015 Pattern)

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

***Instructions to the candidates :***

1) ***All questions are compulsory***
2) ***Neat labelled diagram must be drawn wherever necessary***
3) ***Figures to the right indicate full marks.***

## SECTION - I

***Q1)*** **Attempt any one of me following** **[10]**

a) Classify adrenergic drugs with suitable examples the basis of their therapeutic uses.Explain the mechanism of action, therapeutic uses and adverse effects of adrenaline.

OR

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

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

a) Classify anticholinergic drugs with suitable examples.

b) Write the symptoms and treatment of organophosphate poisoning.

c) Therapeutic uses of atropine

d) Classify skeletal muscle relaxant and write therapeutic uses of baclofen.

e) Give adrenergic receptor subtypes and with their location.

f) Enlist various cholinergic receptor with their locations.

g) Write a note on signal transduction mechanism.

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

a) Write a note on ganglionic blockers

b) Pharmacotherapy of myasthenia gravis

c) Write a note on indirectly acting sympathomimetic agents

d) Write a note on any one parasympatholytic agents

***P. T. O***

## SECTION - II

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

a) Define and classify angina pectoris, Discuss mechanism of action, Pharmacological actions, therapeutic uses and adverse effects of atenolol.

OR

b) Define and classify heart failure, Explain treatment of heart failure in details.

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

a) Explain mechanism of action of spironolactone.

b) Explain role of mast cell stabilizers in asthma.

c) Write a note on digitalis toxicity

d) Explain the role of $\beta_2$ agonists in the treatment of asthma

e) Write a detailed note on ACE inhibitors

f) Define osmotic diuretics. Enlist their therapeutic uses.

g) Classify calcium channel blockers with suitable examples.

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

a) Write pharmacotherapy of the atherosclerosis

b) Explain the mode of action and therapeutic uses of anti diuretic hormone.

c) Explain goals of treatment of heart failure.

d) Write a note on propanolol.

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

**SEAT No. :** ____

**P-810**

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

# [6019]-55

## T.Y. B. Pharmacy

## 355 : Analytical Pharmacognosy & Extraction Technology

## (2015 Pattern) (Semester - V)

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

***Instructions to the candidates :***

1) ***Attempt all questions.***
2) ***Figure to the right indicate full marks.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Answers to the two sections should be written in separate books.***

### SECTION - I

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

a) Enlist the different Non-chromatographic separation techniques and Explain in details Froth Flotation technique.

OR

b) Write in details principle and applications of supercritical fluid extraction.

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

a) Explain in details percolation technique.

b) Explain need and types of herbal drug analysis.

c) Write source, properties & tests of diosgenine.

d) Describe extraction of pyrethrins by supercritical fluids.

e) Explain Enfleurage method with suitable example.

f) Write source, properties and isolation for taxol.

g) Describe principle and procedure of extration of isoflavones of soy by ultrasound assisted extraction.

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

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

a) Fractional Distillation

b) Chemical derivatization

c) Extraction of peppermint oil by steam distillation

d) Microwave assisted water extraction of poly phenols of green tea.

## SECTION - II

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

a) Describe in details principle, procedure and significance of swelling index and foaming index as per WHO.

OR

b) Enlist the different quality control (safety) parameters of herbal drugs and explain principle, procedure involved in pesticide residue.

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

a) Explain principle and significance of determination of moisture content.

b) Explain in details principle of centrifugation.

c) Describe different methods of sampling techniques.

d) Describe principle & significance of determination of radioactive contamination in herbal drugs.

e) Explain properties, isolation and tests for menthol.

f) Write principle and applications of column chromatography for plant derived products.

g) Write source, properties and tests of atropine

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

a) Explain principle and procedure of determination of microorganisms.

b) Elaborate in details different types of adulteration with suitable examples.

c) Explain principle, procedure involved in determination of foreign matter as per WHO.

d) Describe meaning of identity, purity, potency and safety in herbal drugs.

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

**SEAT No. :** ____

**P811**

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

**[6019]-56**

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

## SECTION-I

***Q1)*** How you justify that decision making is important in management. **[10]**

OR

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

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

a) "Is marketing & selling are similar" justify it.

b) Explain the role of manager.

c) Give advantages and disadvantages of line & staff organization.

d) Define objective and give its types.

e) Classify hospitals.

f) What are advantages & disadvantages of MBO.

g) Give the classification of materials.

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

a) Network techniques.

b) Objective and principles of purchasing.

c) Contribution of Peter Drucker in Modern Management.

d) Budget as control technique.

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

## SECTION II

***Q4)*** Explain in details about marketing research. **[10]**

OR

What does one mean by sales promotion and give various techniques of sales promotion.

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

a) Give various qualities of leadership.

b) What do you mean by Disaster management.

c) Describe in brief about equity or social comparison theory.

d) Explain various types of prices.

e) What is disaster preparedness plant?

f) What do you mean by various types of communication?

g) Explain the concept of Maslow's theory.

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

a) Disaster Management cycle.

b) Performance Appraisal.

c) EICS.

d) Herzberg's two Factor Theory.

● ● ●

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

**SEAT No. :** ____

**P812**

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

# [6019]- 57
# T.Y. B.Pharmacy
# 357: ACTIVE PHARMACEUTICAL INGREDIENTS TECHNOLOGY
# (2015 Pattern) (Semester - V)

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

***Instructions to the candidates:***

1) ***All questions all compulsary.***
2) ***Answer to the Two sections should be written in seperate answer books.***
3) ***Figures to the right indicate full marks.***

## SECTION - I

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

What is hydrolysis? Discuss its types. Discuss in detail mfg. process of dextrose.

OR

What is esterification? Give details types of esterification. Give manufacturing process of ethyl acetate.

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

a) Give details of chemical reaction system with emphasis on Reaction of liquid with solid.

b) Describe unit process of oxidation.

c) Give chemical factors effecting on chemical process.

d) Give properties of ideal reagents for API synthesis.

e) Give details of dryers used in API mfg. unit.

f) Give details of fine chemical industry.

g) Draw flow chart of Diosgenin.

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

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

a) Centrifgue used in API mfg. unit.

b) Give details of unit process of nitration.

c) Condensers used in API mfg. unit.

d) Explain dehydrating value of sulphuric acid.

## SECTION - II

***Q4)*** Discuss process variable in API manufacturing and their effects on product quality and yield. **[10]**

OR

What are IPCs in API mfg? Discuss imp. of IPC's.

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

a) Give properties of reagents used in API preparation.

b) What is work up in API mfg.

c) Discuss any two tools for purification and product isolation.

d) Discuss health hazards in API mfg.

e) Give a symmetric synthesis of (s) metoprolol.

f) Explain content of MSDS.

g) What is green synthesis approach.

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

a) Explain any two methods of identifying polymorphism.

b) Give brief overlew ICH Q 7 guideline.

c) Explain approaches for selection of most appropriate synthetic route.

d) Specific guidance for API manufacturing as per Q 7 guidelines.

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

**SEAT No. :**

**P-813**

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

# [6019]-61

# 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 : **[1 × 10 = 10]**

a) Define and classify emulsions. To obtain a stable emulsion. Discuss selection criteria for an appropriate emulsifier.

b) Describe different theories of emulsification.

***Q2)*** Answer the following (Any Four) : **[4 × 3 = 12]**

a) Explain stokes law in formulation of suspension.

b) Explain steric stability of dispersions.

c) Discuss significance of cloud point in emulsion.

d) Define HLB. Give its applications and limitations.

e) Describe stepwise procedure to formulate flocculated suspension in structured vehicle.

f) Explain mechanism of emulsion protection from microbial contamination.

g) Discuss antacid suspensions.

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

a) Structured vehicle

b) Oriented wedge theory

c) Factors affecting preservative efficacy in emulsion.

d) Evaluation tests for suspension.

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

## SECTION - II

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

a) Describe layout and designing of manufacturing facility for semisolid dosage form as per schedule M.

b) Describe layout and designing of manufacturing facility for suspension and emulsion as per schedule M.

***Q5)*** Answer the following (Any Four) : **[4 × 3 = 12]**

a) Differentiate between ointment and paste.

b) Describe any two manufacturing equipment for emulsion.

c) Explain vehicle related factors affecting on percutaneous absorption.

d) Discuss selection criteria for ointment bases.

e) Discuss concept of scale up and technology transfer for dispersed system.

f) Describe medicament related factors affecting on percutaneous absorption.

g) Describe advantages of water soluble ointment bases.

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

a) Manufacturing methods for ointment.

b) Applications of cream

c) HET cam Test

d) Draize Test

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

**SEAT No. :** ____

**P814**

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

**[6019]-62**

# T.Y.B.Pharmacy

# PHARMACEUTICAL ANALYSIS-IV

## (2015 Pattern) (Semester-VI) (362)

***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 chromatographic techniques. Explain rate and plate theory. Discuss column packing techniques. **[10]**

OR

b) Explain the theory of TLC technique. Discus the advantages and detection system in TLC.

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

a) Write advantages and limitations of HPTLC technique.

b) Discuss various detection systems used in HPTLC.

c) Discuss applications of column chromatography.

d) Explain the principle of Electrophoresis.

e) Explain the instrumentation of electophoresis.

f) Explain the different types of paper chromatography.

g) Discuss applications of paper chromatography.

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

a) Various types of Developments of Electrophoresis.

b) Applications of Electrophoresis.

c) Paper chromatography.

d) “system suitability parameters” in chromatography.

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

## SECTION-II

***Q4)*** a) Describe the properties of particles emitted during radioactive decay. **[10]**

OR

b) Discuss schematically the instrumentation of X-ray diffraction methods.

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

a) Explain calculations of Limit of Quantitation and Limit of Detection?

b) Write principle of Thermogravimetry.

c) Write any three applications of DTA.

d) Discuss factors affecting TGA results.

e) State the principle of DTA.

f) What are the methods of determination of precision?

g) What are the analytical method validation parameters?

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

a) Robustness and Ruggedness.

b) Applications of X-ray diffraction methods.

c) Instrumentation of DSC.

d) Pharmaceutical Applications of Radiochemical Methods.

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

**SEAT No. :** ____

**P815**

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

# [6019]-63

# T.Y. B. Pharmacy

## 363 : MEDICINAL CHEMISTRY-II

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

***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 diagrams and structures wherever necessary.***

## SECTION-I

***Q1)*** Discuss phase-I and phase-II drug metabolism with suitable examples. **[10]**

OR

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

***Q2)*** Answer any FOUR. **[12]**

a) Define and classify local anesthetic with suitable examples.

b) Define and classify general anesthetic with suitable examples.

c) Outline the synthesis of procaine.

d) Outline the synthesis of diazepam.

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

f) Discuss inhalation type of general anesthetics.

g) Give the structure, IUPAC name of thiopental sodium and metformin?

***Q3)*** Answer any TWO. **[8]**

a) Explain SAR and MOA of barbiturates.

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

c) Write a note on intravenous general anesthetic.

d) Discuss ester-based local anesthetic agents.

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

## SECTION-II

***Q4)*** Define and classify antipsychotic agents, Discuss chemistry, SAR and MOA of butyrophenone class of antipsychotic agents. **[10]**

OR

Define and classify CMS stimulants, classify them with suitable examples, Add a note on methylxanthines class of CMS stimulants. **[10]**

***Q5)*** Answer any FOUR. **[12]**

a) Define and classify antidepressant agents with suitable examples.

b) Define and classify anxiolytic agents with suitable examples.

c) Discuss chemistry and MOA of Phenothiazines class of antipsychotic agents.

d) Outline the synthesis of amitriptyline.

e) Outline the synthesis of chloropromazine.

f) Discuss chemistry and SAR of tricyclic antidepressants.

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

***Q6)*** Write notes on any TWO. **[8]**

a) Blood anti-coagulants.

b) Drug used in the treatment of Alzheimer's disease.

c) MAO inhibitors.

d) Benzodiazepines class of sedative and hypnotic agents.

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

**SEAT No. :**

**P-816**

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

# [6019]-64

# Third Year B. Pharmacy

# PHARMACOLOGY - III

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

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

***Instructions to the candidates:***

1) ***Neat diagrams must be drawn wherever necessary.***
2) ***Figures to the right indicate full marks.***

## SECTION - I

***Q1)*** Classify sedatives, Hypnotics. Explain the pharmacological action, adverse effect and therapeutic uses of benzodiazepines. **[10]**

OR

Classify antidepressant. Discuss mechanism of action, pharmacological action, adverse effect and therapeutic uses of fluoxetine.

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

a) Write the note on stages of General Anaesthesia.

b) Give the note on management of chronic alcoholism.

c) Classify local Anaesthetics.

d) Write adverse effect and therapeutic uses of tricyclic antidepressant.

e) Give reason why levodoper always used in combination with carbidopa.

f) Write an account on inhalation anaesthetics

g) Give a note on atypical anxiolytics.

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

a) Drug used in treatment of epilepsy.

b) Antipsychotic drugs.

c) Pharmacotherapy of parkinson's disease.

d) Anti anxiety drugs

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

## SECTION - II

***Q4)*** Define Asthma discuss mechanism of action pharmacological actions therapeutic uses and adverse effects of salbutanol. **[10]**

OR

Classify opioid analgesics. Explain the pharmacological effect, adverse effect & therapeutic uses of morphine.

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

a) Pharmacotherapy of osteoarthritis.

b) Explain mechanism of action and therapeutic uses of Aspirin.

c) Write a short note on pharmacotherapy of constipation

d) Explain cox-2 inhibitors.

e) Pharmacotherapy of cough

f) Write MOA and adverse effect of omeprazole.

g) Pharmacotherapy of emesis.

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

a) Salicylate poisoning

b) Pharmacotherapy of diarrhoea

c) Non systemic antacids in case of peptic ulcer.

d) Pharmacotherapy of govt.

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

**SEAT No. :** ____

**P817**

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

**[6019]-65**

# Third Year B.Pharmacy

# 365 : NATURAL PRODUCT CHEMISTRY

## (2015 Pattern) (Semester-VI)

***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) ***Draw neat and well labelled diagram wherever necessary.***
4) ***Figures to the right indicate full marks.***

## SECTION-I

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

a) Elaborate role of natural products in new drug discovery.

b) Define tracer technique. Describe steps involved in tracer technique.

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

a) Write biological source, chemical constituents & uses of Henna.

b) Define dye & mordant & write properties of dyes.

c) Explain serendipity berry as natural sweetner.

d) Write note on anticancer agents from marine source.

e) Write a note on natural polymers.

f) Write a note on isolated organs & tissue, cells for biosynthetic studies.

g) Write biological source, chemical constituent & uses of carrageenan.

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

a) Marine drugs used in cardiovascular disease

b) Natural sweetners.

c) Suitability of natural product Katemfe as sweetner.

d) Grafts & Mutant strains in biosynthetic studies.

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

## SECTION II

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

a) Describe various methods of pest control. provide a role of Rotenone as natural pesticide.

b) What do you mean by oral bioavailability enhancers discuss in detail the natural products as oral bioavailability enhancers.

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

a) Write a role of Piperine in Bioavailability enhancement.

b) Write a note on bio fuel.

c) What are carotenoids & Give its applications.

d) Write pharmacognostic account of pyrethrum.

e) Comment on inorganic mineral supplements.

f) Give the importance of digestive enzymes.

g) Explain sunscreens.

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

a) Give a role of omega-3 fatty acids & proanthocyanidins as herbal dietary supplements.

b) Describe natural drugs as radiation protection agents.

c) Explain the role of dietary fibers as dietary supplements.

d) What are types of wound? Explain role of Hyaluronic acid in management of wound.

Total No. of Questions : 6]

SEAT No. :

**P818**

[Total No. of Pages : 2

**[6019]-66**

# T.Y.B. Pharmacy

## 366 : BIO ORGANIC CHEMISTRY AND DRUG DESIGN

## (2015 Pattern) (Semester - VI)

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

***Instructions to the candidates:***

1) ***All questions are compulsory.***
2) ***Answer to the two sections should be writen in separate answer sheet.***
3) ***Figures to the right indicate full marks.***

## SECTION-I

***Q1)*** Give classification of enzymes. Explain in detail role of DHFR in human and bacteria. Add a note on DHFR inhibitors. **[10]**

OR

What is molecular adaptation? Explain the proximity effect with examples.

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

a) Explain biochemical role of HMG CoA reductase and its relevance in drug design.

b) Give a note on molecular recognition.

c) Give a note on antisense therapy.

d) Write a note on chain terminators in DMA strand breaking.

e) Write a note on adenosine receptors.

f) Write a note on tyrosine kinase inhibitors.

g) Elaborate on into enzymes and its antagonist.

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

a) Explain physiological role of enzyme reverse transcriptase. Explain inhibitors of enzyme reverse transcriptase.

b) Discuss 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 an hydrase with applications.

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

## SECTION-II

***Q4)*** Explain various QSAR approaches in drug design and give detailed account of 3D-QSAR approach. **[10]**

OR

How molecular modeling is useful in new drug discovery and development.

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

a) Write about comfa.

b) Write a note on mechanism based drug design.

c) Explain concept and applications of QSAR.

d) Explain Free. Wilson method in QSAR.

e) What are basic objectives of producing design and explain need of developing producing.

f) Explain ligand - protein interactions observed in molecular docking.

g) Write a note on Hansch analysis.

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

a) Give detailed account on types of producing design with suitable examples.

b) Write about success stories of structure based drug design.

c) Write the physico chemical parameters of QSAR.

d) Discuss different approaches to the rational design of enzyme inhibitors.

✡ ✡ ✡

Total No. of Questions : 6]

SEAT No. :

P-819

[Total No. of Pages : 2

# [6019]-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) ***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)*** Explain in detail nucleic acid blotting. **[10]**

OR

What is r.DNA technology? Explain various enzymes acting on DNA.

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

a) Draw a well labeled diagram of shuttle vector.
b) Write the applications of Biotechnology.
c) Explain characteristics of cloning vector.
d) What is cDNA library?
e) Explain structural features of pBR322.
f) Discuss in short various methods for isolation of DNA.
g) What is RFLP?

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

a) Ti plasmid and its importance.
b) DNA fingerprinting.
c) Gel electrophoresis - Principle.
d) Expression vector - Importance.

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

## SECTION - II

***Q4)*** Describe in detail production of any one antibiotic by fermentation technology. **[10]**

OR

What is enzyme immobilization? Describe methods of immobilization of enzymes along with its applications.

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

a) Discuss in brief production of interferon.

b) Write a note on hybridoma technology.

c) Give method of production of any one vitamin.

d) Give structural aspects of airlift fermenter.

e) Draw neat and labeled diagram of typical fermenter.

f) Write applications of transgenic animals.

g) Define and classify different types of fermenters.

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

a) Insulin production by r-DNA.

b) Human gene therapy.

c) Monoclonal antibodies - production and applications.

d) Down stream processing.

▽▽▽▽

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

**SEAT No. :** ____

**P-820**

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

# [6019]-71

# Fourth.Y. B. Pharmacy

# PHARMACEUTICS

## 471 : Sterile Products

## (2015 Pattern) (Semester - VII)

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

***Instructions to the candidates:***

1) ***Answer to the two sections should be written in separate answer books.***
2) ***Draw a neat labelled diagram 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 (SUPs). **[10]**

OR

Give the type of glass and plastics used in packaging of sterile parenteral products. Write on elaborate account of rubber closures for vials as per I.P.

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

a) Discuss blow fill seal technique.

b) Write significance of HUAC system in manufacturing of sterile products.

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

d) Give the principle of working of HEPA and laminar flow.

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

f) What are membrane filters? Write its applications in sterile product manufacture.

g) Explain in brief tonicity adjustments in parenterals.

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

***Q3)*** Write Note on (Any two) : **[8]**

a) Prefilled syringes

b) Aseptic technique for manufacture of sterile products.

c) Quality control tests for SVPs

d) Sterile reconstituted products.

## SECTION - II

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

OR

Explain in detail types and formulation of LVPs (Large Volume Parenterals).

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

a) Define the following terms :

i) Sutures

ii) Ligatures

iii) Lyophilization

b) Define and classify ophthalmic products.

c) What are syringes? Explain in short different types of syringes.

d) Explain about importance of primary drying in lyophilization.

e) Add a note on stabilization of LVPs.

f) What are intravenous admixture? Explain.

g) Write the ideal properties of plasma volume expander.

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

a) Quality control of blood products.

b) Parenteral devices

c) Quality control of sutures and ligatures

d) Contact Lens

□□□

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

**SEAT No. :** ____

**P821**

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

**[6019]-72**

# Fourth year B. Pharmacy
# 472 : 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 section. should be written in separate Answer books.***
3) ***Figures to the right indicate full makrs.***

## SECTION-I

***Q1)*** a) Write characteristic of ideal detector. Give a detailed account on detectors used in Gas. Chromatography. **[10]**

OR

b) Write instrumentation and advantages of FT-IR.

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

a) Describe functional group region in IR spectroscopy.

b) Explain vibrational coupling.

c) Describe external standard method in gas chromatography.

d) Explain IR spectral features of carboxylic acid and nitrite

e) Describe the working of flame ionization detector.

f) Describe various types of columns used in GC.

g) Write solid sample handling techniques used in IR.

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

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

a) Need of derivatization and its techniques used in GC.

b) Functional group analysis using Mid-IR.

c) Von Deemter equation.

d) Thermal detectors used in IR Spectroscopy.

## SECTION-II

***Q4)*** a) Write difference between transmission and scanning electron microscopy. **[10]**

OR

b) Draw black diagram of HPLC giving function of each part. Describe pumps. Sample introduction technique and mobile phase preparation.

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

a) Write uv detector used in HPLC.

b) Describe system suitability parameters used in HPLC.

c) What is extra-column band broadening? How will you minimize it?

d) Write a difference between NIR & Mid IR.

e) What is resolving power of the microscope? How it is improved in electron microscopy.

f) Describe Tubings used in HPLC.

g) Explain RI. detectors used in HPLC.

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

a) Stationary phases used in HPLC & UPLC.

b) Theory of Raman spectroscopy.

c) Sample illumination system used in Raman spectroscopy.

d) Trouble shooting in HPLC.

● ● ●

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

**SEAT No. :** ____

**P822**

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

# [6019]- 73
# Fourth Year B. Pharm.
# 473 : MEDICINAL CHEMISTRY - III
# (2015 Pattern) (Semester - VII)

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

***Instructions to the candidates:***

1) ***Answer to the Two section should be written in separate books.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***

## SECTION - I

***Q1)*** Solve any one of the following. **[1×10=10]**

a) Give the life cycle of cancer cell. Classify anticancer durgs based on MOA with examples. Add a note on Actinomyc in antibiotics.

OR

b) Discuss the chemistry of Tetracycline antibiotics elaborate SAR, MOA and uses of the tetracycline derivatives. Outline synthesis of chloram built.

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

a) Write in brief about Beta Lactomase enzyme inhibitors with examples.

b) Give the structure, SAR of Chloramphenicol.

c) Give examples of any three Cephalosporin analogs with their structure and therapeutic uses.

d) Discuss chemistry of Gentamicin and its uses.

e) Elaborate on MOA of

i) Cyclophosphamide

ii) Methotrexate

f) Explain the chemistry and MOA of Macrolide antibiotics.

g) Outline the synthesis of Anwxjallin

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

***Q3)*** Solve any two of the following. **[4×2=8]**

a) Beta lactum antibiotics.

b) Polypeptide antibiotics.

c) Anti metabolites.

d) Monoclonal antibodies.

## SECTION- II

***Q4)*** Classify antiviral agents; Explain antiretroviral agents including protease inhibitors, outline the synthesis of sequinavir. **[10]**

OR

Classify antitubercular agents; Explain SAR & mechanism of action for first line agents for tuberculosis; out line the synthesis of ethambutol. **[10]**

***Q5)*** Solve any four. **[4×3=12]**

a) Discuss in brief about anthelmintics.

b) Write in short about treatment of trypanosomiasis.

c) Outline the synthesis of ciproflonacin.

d) Give SAR of 4-amino quinolines as antimalarial agents.

e) Give structure, MOA & therapeutic use of.

i) Amodiaquine

ii) Halofantrine

f) Outline the synthesis of clotrimazole.

g) Give the role of $p^ka$ in the development of sulfonamides.

***Q6)*** Write a short notes on. **[4×2=8]**

a) Antimalarial agents.

b) Fluoroquinolones.

c) Antifungal agents.

d) Antileprotics.

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

**SEAT No. :**

**P-823**

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

# [6019]-74

# Final Year B. Pharmacy

# PHARMACOLOGY - IV

## (2015 Pattern) (Semester - VII) (4.7.4T)

***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)*** Enlist fluroquinolone antibiotics and explain mechanism of action, antibacterial spectrum, mechanism of bacterial resistance, adverse effects and clinical uses of it. **[10]**

OR

Classify antimalarials with examples. Explain in detail mode of action, adverse effects and therapeutic uses of chloroquine and primaquine.

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

a) Classify cephalosporin antibiotics.

b) Explain mechanism of action & therapeutic uses of cotrimoxazole.

c) Classify antifungal agents with example.

d) Explain mechanism of action and therapeutic uses of Isoniazid.

e) Discuss β-lactomase inhibitors.

f) Explain mechanism of action and therapeutic uses of chloramphenicol.

g) Enlist the urinary antiseptic drugs and give their mechanism of action.

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

a) Explain mechanism of action, anti-bacterial spectrum, adverse effects & clinical uses of macrolid antibiotics.

b) Write a note on Aminoglycoside antibiotics.

c) Explain the mechanisms of drug (Antibiotic) Resistance.

d) Discuss antimetabolites used in Cancer Therapy.

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

## SECTION - II

***Q4)*** Discuss mechanism and pharmacological actions of insulin. Add a note on different types of insulin preparations. **[10]**

OR

Explain biosynthesis, storage, release, metabolism, mode of action, pharmacological actions & therapeutic uses of thyroid hormones.

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

a) Describe relationship between hypothalamus a pituitary gland.

b) Explain therapeutic uses and adverse effects of progestin.

c) Describe the clinical significance of tocolytics.

d) Explain mechanism of action and therapeutic uses of vasopressin.

e) Discuss pharmacological actions of glucagon.

f) Describe in brief pharmacology of gonadotropins.

g) Explain therapeutic use growth hormone.

***Q6)*** Solve Any Two : **[8]**

a) Explain mechanism of action and therapeutic uses of glucocorticoids.

b) Discuss drugs regulating calcium homeostasis.

c) Write a note on anti-thyroid agents.

d) Explain mechanism of action and therapeutic uses of parathyroid hormones.

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

**SEAT No. :**

**P824**

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

**[6019]-75**

# Fourth Year B.Pharmacy

## 475 : NATURAL DRUG TECHNOLOGY

## (2015 Pattern) (Semester-VII)

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

***Instructions to the candidates:***

1) ***All question are compulsory.***
2) ***Neat labeled diagram must be drawn wherever necessary.***

## SECTION-I

***Q1)*** Write note on WHO guidelines for Agricultural and collection practices (GACP) **[10]**

OR

Write method of preparation and evaluation of Asava and Bhasma. **[10]**

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

a) Explain principle and procedure of Brime Shrimp lethality Assay

b) Composition of culture media

c) Describe in brief secondary factors affecting deterioration of crude drugs

d) Describe in brief Callus culture

e) Write note on embryogenesis

f) Composition of culture media

g) Explain diagnosis in Ayurvedic system of medicine

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

a) Write note on COX-I & COX-II anti-inflammatory assay

b) Write note on important principles Homeopathic system of medicine

c) Write note on transgenic plants with examples

d) Write note on elicitors

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

## SECTION II

***Q4)*** Write note on Novel vasicular herbal formulations. **[10]**

OR

Explain principle and applications of Mass spectrometry method of natural products characterization. **[10]**

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

a) Describe structural elucidation of Caffeine by spectroscopic methods

b) Describe structural elucidation of Taxol by spectroscopic methods

c) Write in detail herbs used in skin care cosmetics

d) Write note on applications of nanoparticles

e) Classify herbal cosmetics with example

f) Write note on elemental analysis

g) Write note on liposome

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

a) Describe physical methods of characterization

b) Explain chromatographic methods of characterization

c) Write note on Vanishing cream

d) Write note on Cold cream

Total No. of Questions : 6]

SEAT No. :

**P825**

[Total No. of Pages : 2

**[6019]-76**

# Fourth Year. B. Pharmacy

# 476 : BIOPHARMACEUTICS AND PHARMACOKINETICS

## (2015 Pattern) (Semester - VII)

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

***Instructions to the candidates:***

1) ***Figures to right indicates mark assigned.***
2) ***Write each section in separate answer book.***
3) ***All questions are compulsory.***

## SECTION-I

***Q1)*** Define Drug distribution. Discuss in detail factors affecting distribution of drugs. **[10]**

OR

What is compartment modelling? Give comparison of features of compartment and Physiological Models.

***Q2)*** Answer Any four. **[12]**

a) Differentiate passive & Active transport.

b) What is pH partition hypothesis?

c) Explain Film theory of drug dissolution.

d) What are non-renal routes of excretion of drugs?

e) Justify processing variables affecting drug dissolution.

f) Mention objectives of drug metabolizing Enzymes.

g) Give concept of clearance.

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

a) Salivary Excretion of drugs.

b) Perfusion Rate.

c) Bioactivation & Tissue Toxicity.

d) Ion-pair transport.

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

## SECTION-II

***Q4)*** Solve any one out of two. **[10]**

a) Define bioavailability. Discuss different methods for the measurement of bioavailability.

b) Explain USP dissolution test apparatus.

***Q5)*** Solve any Four out of Seven. **[12]**

a) Give the significance of Noyes-Whitney equation.

b) Mention the significance of area under the curve.

c) Discuss in brief the different mathematical models.

d) Discuss Latin square design in Bioequivalent study.

e) Explain theories of dissolution.

f) What are the objectives and approaches in developing in vitro-in vivo correlation?

g) Explain mean residence time.

***Q6)*** Solve any two out of four. **[8]**

a) Explain Michaelis -Menten equation in determining non-linearity.

b) Discuss BCS classification of drugs.

c) Enumerate different methods to enhance dissolution of poorly soluble drugs.

d) Explain the double reciprocal plot for calculation of Michaelis-Menten constant and maximum metabolic rate. What are its drawback.

✡ ✡ ✡

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

**SEAT No. :**

**P-826**

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

# [6019]-77

## F.Y. B. Pharmacy

## 477 : 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)*** Give the constitution and functions of pharmacy council of India. According to pharmacy Act 1948. **[10]**

OR

Give the constitution and functions of drug technical advisory board.

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

a) Comment on joint state pharmacy council.

b) What is shedule Y and G.

c) Give formula to calculate retail prise.

d) Explain magic remedies with example.

e) What are the penalties under import of drugs under the drugs and cosmetic Act.

f) What is food safety and standards Act 2011.

g) What are objectives of prevention of cruelty to animal Act 1960.

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

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

a) Loan Licenses.

b) Marcotic and psychotropic substances Act 1985 and illicit traffic under it.

c) Functions of central consumer protection Act 1986

d) Duties of drug inspector under drugs and cosmetic Act.

## SECTION - II

***Q4)*** What is intellectual property right? Differentiate between product and process. **[10]**

OR

What is the procedure to filing of an indian patent explained under Indian patent Act 1970.

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

a) What is ANDA & its filing.

b) Comment on central drug standard central organisation.

c) What is orange book.

d) Oppositions to the grant of patent comment.

e) What is patent infringament? Explain with example.

f) What are exclutive marketing rights.

g) Advantage of hatch waxman to the generic pharma companies.

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

a) T.G.A.

b) Geographical Indicution.

c) Copy right.

d) Compulsory Licencing.

▽▽▽▽

Total No. of Questions : 6]

SEAT No. :

**P827**

[Total No. of Pages : 2

# [6019]-81
# Fourth Year B. Pharmacy
# 481 : ADVANCED DRUG DELIVERY SYSTEM
# (2015 Pattern) (Semester - VIII)

*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 wherver necessary.***
4) ***Figures to the right indicate full marks.***

## SECTION-I

***Q1)*** Discuss the different approaches for designing and fabricating controlled release Drug Delivery Systems. **[10]**

OR

Classify Rate controlled Drug Delivery Systems and explain in detail rate preprogramed drug delivery systems.

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

a) State the fundamentals of controlled drug delivery.

b) Classification of modified release delivery systems and their potential advantages.

c) Design and fabrication of elementary osmotic pumps.

d) Application of polysaccharides based polymers in pharmacy.

e) Role of biological properties in controlled release of drugs.

f) Advantages, disadvantages of sonophoretic drug delivery systems.

g) Prebiotics and probiotics.

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

a) Discuss the concepts and evaluation of mucosal drug delivery systems.

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

c) Describe basic component of transdermal drug delivery systems.

d) Explain different approaches adopted for gastric retention of drugs through drug delivery systems.

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

## SECTION-II

***Q4)*** Explain in detail optimization techniques with suitable example. **[10]**

OR

Differentiate between metered dose inhalers and dry powder inhalers. Write a note on advances in pharmaceutical aerosols.

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

a) Explain the various propellants used in pharmaceutical aerosols.

b) What are the advantages and disadvantages of inhalation aerosols?

c) What are the different types of containers used for aerosol preparation?

d) Describe the coacervation method for micro encapsulation.

e) Explain the methods of evaluation of microcapsules.

f) Elaborate on the significance of optimization.

g) Explain the fundamental concept of microencapsulation.

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

a) Write about the principle behind the mode of operation of aerosols containing liquefied gases.

b) Write in detail about the manufacturing techniques for inhalation aerosols.

c) Describe the pharmaceutical applications of microencapsulation.

d) Explain the variables of DOE and their effect.

✡ ✡ ✡

Total No. of Questions : 6]

SEAT No. :

P-828

[Total No. of Pages : 2

# [6019]-82

## Fourth Year B. Pharmacy

## 4.8.2 T : 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) ***Figures to the right indicate full marks.***

### SECTION - I

***Q1)*** Define and classify cosmetics. Discuss in detail about anatomy, composition and functions of the skin. **[10]**

OR

Discuss in detail about formulation development, manufacturing and evaluation of Lipsticks.

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

a) Describe in brief about the formulation of after shave lotion.

b) Explain about packaging of cosmetics.

c) Explain the role of surfactants in cosmetics.

d) Describe the formulation aspects of moisturizing cream.

e) Write in brief about face packs.

f) Describe in brief about bath soaps.

g) Discuss in brief about quality of water in cosmetic industry.

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

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

a) Antiperspirants and Deodorants

b) Powder compacts

c) After bath preparations

d) Microbial control in cosmetic manufacturing

## SECTION - II

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

OR

What are eye makeup preparations? Explain in detail about eye mascara and eye shadow.

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

a) Write about baby shampoos.

b) Explain hair tonics in detail.

c) Discuss the formulation aspects of depilatories.

d) Discuss in brief about evaluation tests for manicure preparations.

e) Write in brief about composition of mouthwashes.

f) Discuss in brief about importance of hydroxyl acids as cosmeceuticals.

g) Discuss in detail about nail bleach.

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

a) Baby talcum powder

b) Antioxidants as cosmeceuticals

c) Semi-permanent hair colorants

d) Nail lacquer

⌘⌘⌘

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

**SEAT No. :**

**P830**

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

# [6019]-84
# Fourth Year B. Pharm.
# MEDICINAL CHEMISTRY-IV
# (2015 Pattern) (Semester-VIII) (484)

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

## SECTION-I

***Q1)*** What are Proton pump inhibitors? Give chemical classification of proton pump inhibitors with example & mechanism of action. **[10]**

OR

What are NSAIDs? Give chemical classification of NSAIDs with example & mechanism of action. **[10]**

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

a) Sketch synthetic route for methadone.

b) Give brief account on Leucotriene antagonists.

c) Sketch synthetic route for chlorpheniramine.

d) Explain mechanism of action of NSAIDs.

e) Sketch synthetic route for Nambutone.

f) Explain with examples role of Antipyretics.

g) Sketch synthetic route for Fentanyl citrate.

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

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

a) Write a note on Prostaglandins

b) Explain SAR of Salicylates & Anthranillic acid

c) Write a note on Analgesics

d) Write a note on Narcotic agents

## SECTION-II

***Q4)*** Define antidiabetic agents. Comment on chemistry & mode of action of antidiabetic agents. Explain chemistry of human insulin. **[10]**

OR

What are diagnostic agents. Explain different diagnostic agents used along with examples. Comment on agents used for organ function tests. **[10]**

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

a) Non-Steroidal estrogens

b) Draw schemes of reactions involved in the synthesis of metformin

c) Explain chemistry of steroids

d) Synthetic analogues of sex hormones

e) Outline schemes of reactions used in synthesis of tolbutamide

f) Explain serotonergic agents

g) Note on antifertility agents.

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

a) Write note on Insulin

b) Explain structure activity relationship of sulphanylureas hypoglycemic agents

c) Explain steroidal anti-inflammatory drugs

d) Note on antithyroid agents.

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

**SEAT No. :**

**P-831**

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

# [6019]-85

# Fourth Year B. Pharmacy

# PHARMACOLOGY - V (Including Biostatistics)

# (2015 Pattern) (Semester - VIII) (4.8.5.T)

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

***Instructions to the candidates:***

1) ***Answer to the Two sections should be written on 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 Hospital Pharmacy. Explain its organization and write a note on Hospital formulary.

OR

b) Define and classify Drug-Drug interaction. Explain the mechanisms of drug interaction with pharmacodynamic effect with appropriate examples.

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

a) Justify why aspirin should not be coadministered with warfarin?

b) Classify ADR with examples.

c) What are food drug interactions.

d) What is patient "non compliance" Explain its causes?

e) Write a note on serious adverse Event.

f) Explain "ADR Monitoring".

g) Explain pharmacokinetic drug interaction affecting "absorption" of drugs.

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

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

a) Pharmacovigilance programme of India.

b) Safety pharmacology.

c) Role of Hospital Pharmacist.

d) Factors affecting patient compliance.

## SECTION - II

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

a) Write a brief note on ICH-GCP guidelines for conducting clinical trials.

OR

b) Define clinical research. Explain the types of clinical research designs or studies.

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

a) What is importance of "Belmont Report"?

b) What is clinical trial monitoring?

c) What is informed consent?

d) Explain "Placebo effect".

e) What are responsibilities of clinical data management team?

f) What are responsibilities of sponsor in clinical trials.

g) Explain the significance of palliative care.

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

a) Nurember g code

b) IRB

c) Clinical trial Audits

d) Clinical Data Management

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

**SEAT No. :**

**P-832**

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

# [6019]-86

## Final Year. B. Pharmacy

## 486 - Natural Procucts : Commerce, Industry & Regulations

## (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.***

### SECTION - I

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

Describe in detail the global and domestic market size of Herbal cosmetics.

OR

Highlight on various funding schemes for development of herbal drug industry.

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

a) Discuss about the domestic and global market of nutraceuticals.

b) Describe requirements for licensing for herbal drug production.

c) Brief about volatile oil industry in India.

d) Describe objectives of GMP in herbal drug industry.

e) Explain future requirements of herbal drug industry.

f) Focus on the domestic market of spices and condiments.

g) Discuss about OTC products of herbal drug industry.

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

a) Describe working space required for herbal drug mfg.

b) Explain market demand of biofuel.

c) Describe infrastructure required for storage of herbal drugs.

d) Explain about farmers and breeders right.

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

## SECTION - II

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

Define and classify Allergens. Ellaborate on inhalant allergens.

OR

Explain WHO guidelines for safety monitoring of herbal drugs in pharmacovigilance system.

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

a) Discuss drug interactions of ephedra.

b) Write method of preperations of allergenic extracts.

c) Describe meaning and importance of pharmacovigilance.

d) Brief on toxicity profile of turmeric.

e) Discuss about injectant allergens.

f) Write on interactions of garlic.

g) Note on plants causing allergy.

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

a) Note on diagnasis of allergy.

b) Write about infectant allergens.

c) Describe interactions and side effects of digitalis.

d) Explain working of world pharmacovigilance centre.

Total No. of Questions : 6]

SEAT No. :

**P833**

[Total No. of Pages : 2

# [6019]-87
# Fourth Year (B. Pharmacy)
# 487 : QUALITY ASSURANCE TECHNIQUES
# (2015 Pattern) (Semester - VIII) (487T)

*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) ***Figure to the right indicate full marks.***

## SECTION-I

***Q1)*** Define calibration. Write in detail about calibration of dissolution test apparatus. **[10]**

OR

Write a detailed note on "Quality Management System".

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

a) Write on the responsibilities of QA department.

b) Explain the responsibility and frequency of calibration.

c) Write on Good Laboratory Practices.

d) What are OQ and PQ of equipment?

e) Write on quality risk management.

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) IQ and DQ of equipment

b) IPQC

c) MPCR

d) Good Documentation Practices

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

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

c) Enlis the scope of validation.

d) Write on objectives and activities of MHRA.

e) Explain need and objective of validation.

f) Explain the functions of WHO.

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

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

a) TGA

b) USFDA

c) Validation Master Plan

d) Cleaning Validation