Total No. of Questions : 4]

SEAT No. :

P3693

[Total No. of Pages : 1

[4850]-1001
M.Pharmacy
ADVANCED ANALYTICAL TECHNIQUES
(2013 Pattern) (Semester - I)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Question number one is compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Draw well labeled diagrams wherever necessary.***

Q1) Give principle of IR spectroscope and discuss about different types of vibrations and factors affecting vibration modes. **[10]**

Q2) Attempt any three questions from following. **[15]**

a) Discuss Chromophores in UV spectroscopy.

b) Explain Shielding and deshielding effects in NMR spectroscopy.

c) Give an account of Travelling Electron Microscopy.

d) Explain 2D NMR technique in spectral analysis.

Q3) Write short notes on (any three) **[15]**

a) DEPT Techniques.

b) MALDI as ionization technique.

c) Column and its Packing in HPLC.

d) Detectors used in Gas Chromatography.

Q4) Deduce the structure of compound having molecular formula $C_9H_{10}O_2$ **[10]**

UV =λmax 268 nm, 264 nm, 262 nm, 257 nm

IR =1745cm^{-1} (s),1225 cm^{-1} (br,s) 749cm^{-1},697 cm^{-1}(s)

NMR =δ 1.96 (3H, singlet), δ 5.00 (2H, singlet) δ 7.22 (5H singlet)

OR

Give theory and applications of Supercritical Fluid Chromatography. **[10]**

X X X

Total No. of Questions : 4]

SEAT No. :

P3694

[Total No. of Pages : 1

[4850]-1002
M.Pharmacy
RESEARCH METHODOLOGY
(2013 Pattern) (Semester - I)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Question number one is compulsory.***
2) ***Figure to the right indicate full marks.***
3) ***Draw well labeled diagrams wherever necessary.***

Q1) Describe techniques and importance of Documentation. Add a note on uses of computer packages in documentation. **[10]**

Q2) Attempt any three: **[3×5=15]**

a) Sources of procurement of research grants.
b) Explain objectives and types of research.
c) Use of statistics in research.
d) Explain factorial design as research type of design.

Q3) Short notes (Any three) **[3×5=15]**

a) Format model for oral presentation.
b) DRDO Research funding.
c) Bioavailability / bioequivalence studies.
d) Continuous variables and discrete variables.

Q4) Explain in detail parametric and non-parametric test of statistics. **[10]**

OR

Enlist the different research organizations in India. Add a note on criteria for research funding and functions of DST.

x x x

Total No. of Questions :4]

SEAT No. :

P3695

[Total No. of Pages :1

[4850]-1003

M.Pharm.

ADVANCED PHARMACEUTICS

(2013 Pattern) (Semester - I)

Time : 3 Hours] *[Max. Marks :50*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Draw well labeled diagram wherever necessary.***
3) ***Figures to the right side indicate full marks.***

Q1) Explain concept and importance of Preformulation. Discuss preformulation parameters for conventional dosage from. **[10]**

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

a) Define and explain in short validation and validation methdos.

b) Explain methods of microencapsulation.

c) Describe pathways of chemical degradation of drug.

d) Write in short about various biodegradable polymers used in pharmacy.

Q3) Write short notes on (any three): **[15]**

a) Drug excipients compatibility studies.

b) Optimization techniques used in formulation development.

c) Explain various super disintegrating agents used in pharmacy.

d) Importance of quality control and quality assurance.

Q4) Discuss the importance and methodology of stability testing of pharmaceutical dosage forms. **[10]**

OR

Describe various classes of optimization techniques. Explain in detail factorial design approach.

EEE

Total No. of Questions : 4]

P3696

SEAT No. :

[Total No. of Pages : 2

[4850]-1004
M.Pharmacy
(Spl.Pharmaceutical Chemistry)
ADVANCED PHARMACEUTICAL CHEMISTRY
(2013 Pattern) (Semester - I)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Question number one is compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Draw well labeled diagrams wherever necessary.***

Q1) What is Synthone approach of designing drug synthesis. Develop synthetic route for any two drugs using synthone approach. **[10]**

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

a) Explain importance of Chiral synthesis with examples.

b) Explain mechanism of Hoffman rearrangement.

c) Explain environmental protection and effluent treatment aspects related to synthetic chemistry.

d) Explain Wolff Rearrangement.

Q3) Write short note on (Any three) **[15]**

a) Brich reduction.

b) Solid phase synthesis.

c) Water as solvent.

d) Pinacol-Pinacolone rearrangement.

P.T.O.

Q4) Discuss the mechanism, stereochemistry and applications of Witting Reaction. **[10]**

OR

Explain use of diazomethane and peracids in synthesis.

Total No. of Questions : 4]

SEAT No. :

P3697

[Total No. of Pages : 1

[4850]-1005
M.Pharm.
ADVANCED PHARMACOLOGY - I
(Preclinical Evaluation of Drugs)
(2013 Pattern) (Semester - I)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Question number one is compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Draw neat labeled diagrams wherever necessary.***

Q1) Discuss the preclinical evaluation of antiulcer agents. **[10]**

Q2) Answer (any three): **[3 × 5 = 15]**

a) Explain the OECD guidelines for acute oral toxicity studies.

b) What are Animal cell lines and their applications.

c) Discuss the preclinical evaluation of antidepressants.

d) Discuss the preclinical evaluation of cardiac glycosides.

Q3) Write short notes on (any three): **[3 × 5 = 15]**

a) Stem cell research.

b) Screening of antithyroid agents.

c) ELISA.

d) Screening of central analgesic activity.

Q4) Discuss the preclinical evaluation of hypoglycemic drugs. **[10]**

OR

Discuss the methods for evaluation of anti-inflammatory drugs.

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Total No. of Questions : 4]

P3698

SEAT No. :

[Total No. of Pages : 2

[4850]-1006
M.Pharmacy
ADVANCED PHARMACOGNOSY
(2013 Pattern) (Semester - I)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Neat diagrams must be drawn wherever necessary.***
2) ***Figures to the right indicate full marks.***
3) ***Question No.1 is compulsory.***

Q1) Elaborate a detail account of building blocks derived from primary metabolites for secondary metabolites. **[10]**

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

a) Explain in detail phenolic oxidative coupling.

b) Explain Allelopathic and phytoanticipin compounds.

c) Explain merits of Ethnobotanical approach to drug discovery.

d) Explain sample avilability and selection strategies for HTS.

Q3) Short notes (Any three) **[15]**

a) C-Alkylation reactions.

b) General Biosynthetic pathway for saturated Fatty acids.

c) Vinca alkaloids.

d) Difficulties in preparation of Herbal formulations.

P.T.O.

Q4) a) Elaborate a detail account for Biosynthesis pathway for coumarins. **[10]**

OR

b) Explain , How chemical diversity and drug likeness and receptor binding properties makes natural products an appropriate material in discovering new drugs.

Total No. of Questions :4]

SEAT No. :

P3699

[Total No. of Pages :1

[4850]-1007

M.Pharmacy

ADVANCED QUALITY ASSURANCE TECHNIQUES -I

(cGMP and Documentation)

(2013 Pattern) (Semester - I)

Time : 3 Hours] *[Max. Marks :50*

Instructions to the candidates:

1) ***Questions number 1 is compulsory.***
2) ***Figures to the right indicate full marks.***

Q1) Discuss general GMP requirements regarding equipments in pharmaceutical manufacturing unit. **[10]**

Q2) Attempt any three questions from the following: **[15]**

a) Discuss IPQC tests for tablets.

b) Write any five components of Q.A activities in pharmaceutical organization.

c) Master Production and Control Record.

d) Explain the importance of yield calculation at various stages in manufacture.

Q3) Write short notes on (Any Three): **[15]**

a) Analytical outsourcing.

b) Handling of rejected materials.

c) Printed packaging materials.

d) Components of GMP.

Q4) Elaborate on HACCP methodology. **[10]**

OR

Discuss phases of CAPA.

EEE

Total No. of Questions : 4]

SEAT No. :

P3700

[Total No. of Pages : 1

[4850]-2001
M.Pharmacy
(M.2.1) DRUG REGULATORY AFFAIRS
(2013 Pattern) (Semester - II)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

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

Q1) Explain the different sections of NDA. **[10]**

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

a) Write the ICH Guidelines for stability testing of pharmaceuticals.

b) Explain the guidelines of GMP audit inspection.

c) Explain the role of IP laws in pharma industry growth.

d) Explain the Trademark filing procedure.

e) Write case study of Neem (Azadiracta indica) plant under Intellectual Property Rights and Patent.

Q3) Write short notes on (any three): **[15]**

a) Patent system in Europe.

b) GATT.

c) India patent Act 1970.

d) Quality Assurance as a part of GMP.

e) Water systems in pharmaceutical plant.

Q4) Explain the Schedule-M requirements related to premises, sanitation & hygiene in pharmaceutical plant. **[10]**

OR

Explain provisions of the act for import license for testing of drugs and API's.

Total No. of Questions :4]

SEAT No. :

P3701

[Total No. of Pages :1

[4850]-2002

M.Pharmacy

FORMULATIONS AND DEVELOPMENT

(2013 Pattern) (Credit System) (Semester - II)

Time : 3 Hours] *[Max. Marks :50*

Instructions to the candidates:

1) ***Question number one is compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Draw well labeled diagrams wherever necessary.***

Q1) Discuss in detail different approaches for taste masking. **[10]**

Q2) Attempt ANY THREE from following: **[15]**

a) Explain pharmaceutical aspects of solubilisation in nonaqueous systems.

b) Explain in detail about formulation of Emulgel.

c) Give quality control & regulatory aspects of veterinary dosage form.

d) Discuss on Metered Dose Inhalers.

Q3) Short note on (ANY THREE): **[15]**

a) ICH Q8 (R2) guidelines for pharmaceutical development.

b) Concept of Quality by Design.

c) Propellants.

d) Self emulsified drug delivery.

Q4) Discuss indetail on Nutraceuticals. **[10]**

OR

Discuss regulatory perspective of selection and evaluation of pharmaceutical packaging materials for novel drug delivery systems.

EEE

Total No. of Questions : 04]

SEAT No. :

P3702

[Total No. of Pages : 1

[4850] -2003
M. Pharm.
NOVEL DRUG DELIVERY SYSTEMS
(2013 Pattern) (Semester-II)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Question number one is compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Draw well labeled diagrams wherever necessary.***

Q1) Explain various theories for formation of microemulsion. Write a note on ternary phase diagram. **[10]**

Q2) Attempt any three. **[3×5=15]**

a) Describe general methods for dendrimer synthesis.

b) Describe methods for formulation of solid lipid nanoparticles.

c) Write a note on method of preparation of resealed erythrocytes.

d) Write a note on long acting contraceptives.

e) Write a brief note on biowavers for bioequivalence studies.

Q3) Short notes (any three) **[3×5=15]**

a) Active and passive drug targeting.

b) Clinical relevance of pulsatile drug delivery system.

c) Biochemistry and stability of protein drug

d) Analysis of proteins and peptides.

e) Monoclonal antibodies and their applications.

Q4) Explain formulation of ophthalmic products covering drug candidate selection, and product design. **[10]**

OR

Explain various approaches for colon targeting.

Total No. of Questions :4]

SEAT No. :

P3703

[Total No. of Pages :2

[4850]-2004

M.Pharmacy (Pharmaceutical Chemistry)

ADVANCED MEDICINAL CHEMISTRY (M-II-3)

(2013 Pattern) (Theory) (Semester - II)

Time : 3 Hours] *[Max. Marks :50*

Instructions to the candidates:

1) ***Q.No. 1 is compulsory.***
2) ***Figures to the right side indicate full marks.***

Q1) Explain the applications of microorganisms in biotransformation of steroids with suitable examples. **[10]**

Q2) Attempt any three questions from following: **[15]**

a) Add a detail on different types of polymer supports in solid phase synthesis.

b) Add a note on monoclonal antibodies.

c) Write a brief note on scope and application of Enzyme immobilization techniques.

d) What are the different types of receptors? Explain the dopamine receptors.

Q3) Write short notes on (any three): **[15]**

a) Anti-HIV drugs.

b) Gene therapy.

c) Anti-cancer agents.

d) Antiarrhythmic agents.

P.T.O.

Q4) Write detail mechanism and strategies involved in synthesis of following drugs (Any Two): **[10]**

a) Fexophenadine

b) Cetrizine

c) Linezolid

OR

Write a brief note on strategies of library synthesis.

EEE

Total No. of Questions : 4]

SEAT No :

P3704

[Total No. of Pages : 1

[4850] - 2005
M.PHARMACY
(SPL. PHARMACEUTICAL CHEMISTRY)
(M. 2. 7): Drug Design
(2013Pattern) (Semester -II)

Time : 3Hours] *[Max. Marks : 50*

Instructions to the candidates:

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

Q1) Enlist various approaches of drug design. Explain in detail Craig plot & Tipliss tree. **[10]**

Q2) Attempt any Three: **[15]**

a) Three dimensional QSAR.
b) Drug metabolism based drug design.
c) Proteomics in drug discovery.
d) Receptor based approach in drug design,

Q3) Write in short (Any Three): **[15]**

a) Ligand based drug design,
b) Enzyme inhibition in drug design.
c) Role of drug design in drug discovery.
d) Computer Aided Drug Design.

Q4) Write in detail about drug design based on antagonism **[10]**

OR

Q4) Explain in brief about QSAR with its advantage and its application. Discuss Hansch's Model.

Total No. of Questions : 4]

P3705

SEAT No. :

[Total No. of Pages : 2

[4850]-2006
M.Pharm
CLINICAL PHARMACOLOGY
(2013 Pattern) (Semester - II)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Figure to the right indicates full marks.***
2) ***Draw well labelled diagrams wherever necessary.***
3) ***Question No.1 is compulsory.***

Q1) Justify need of renal transplantation and explain the post transplantation drug dose adjustment. **[10]**

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

a) Therapeutic utility of calcium channel blockers in hypertension.

b) Describe therapeutic drug monitoring.

c) Write about reverse transcriptase inhibitors.

d) Rational use of antibiotics.

Q3) Write short notes (Any three) **[15]**

a) Oral hypoglycemic agents

b) Cardiac glycosides.

c) Poly (ADP - Ribose) Polymerase.

d) Liver cirrhosis

P.T.O.

Q4) Give a detailed account on management of angina pectoris. **[10]**

OR

Explain in detail clinical practice guidelines of tuberculosis.

Total No. of Questions : 4]

SEAT No. :

P3706

[Total No. of Pages : 1

[4850]-2007
M. Pharmacy
(Spl. Pharmacology)
MOLECULAR PHARMACOLOGY
(2013 Pattern) (Semester-II) (M-III-4)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Question number one is compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Draw well labeled diagrams wherever necessary.***

Q1) Define Immunopharmacology and explain cellular cytotoxicity. **[10]**

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

a) Discuss implications of Chronopharmacology to drug therapy.

b) Explain the therapeutic applications of antioxidants.

c) Discuss on modulators of serotonin receptor.

d) Explain cardiac and vascular remodeling with its therapeutic implications.

Q3) Write a note on following (any three) **[15]**

a) Cytokines.

b) Calcium and calcium binding proteins.

c) GABA receptors & modulators.

d) Nitric oxide and endothelin modulators.

Q4) What are various techniques used in molecular pharmacology? Explain the Radioimmunoassays. **[10]**

OR

Discuss the implications of Human Genome Mapping in Drug research.

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Total No. of Questions : 4]

SEAT No. :

P3707

[Total No. of Pages : 1

[4850]-2008
M.Pharm.
(Spl. Pharmacognosy)
PHYTOCHEMISTRY AND PHYTOPHARMACEUTICALS
(2013 Pattern) (Semester - II)

Time : 3 Hours] *[Max. Marks : 50*

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.***

Q1) State pharmacological importance of Ergot alkaloids. Give procedure for isolation and structural elucidation of ergometrine. **[10]**

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

a) Describe extraction and isolation methods for Taxol.
b) Elaborate on extraction of Resveratrol by Supercritical fluid extraction technique.
c) Give structural elucidation of Nicotine by spectroscopic data.
d) Write a note on microwave assisted extraction technique.

Q3) Solve any three questions from the following: **[15]**

a) Describe Froth Flotation Technique along with its applications.
b) Illustrate how HPLC plays a major role in isolation of curcumin.
c) Give details of spectroscopic analysis for characterization of piperine.
d) Mention various flavonoids present in green tea. Describe their method of isolation.

Q4) Enlist various parameters recommended by WHO for standardization of herbal drugs. Elaborate on determination of **[10]**

a) Pesticide Residue.
b) Haemolytic Index.

OR

Describe in details various methods for screening of Anti-cancer Drugs. **[10]**

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Total No. of Questions : 4]

SEAT No. :

P3708

[Total No. of Pages : 1

[4850]-2009
M.Pharm.
INDUSTRIAL PHARMACOGNOSY (M - IV - 4)
(2013 Pattern) (Semester - II)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

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

Q1) Discuss in brief Major herbs exported from India. **[10]**

Q2) What are requirements for national drug safety monitoring system in order to widen scope of herbal medicines? **[10]**

Q3) Discuss important plants used in Indigenous system of medicine. **[10]**

OR

What are functions of National Pharmacovigilance center in monitoring of herbal medicines.

Q4) Write notes on (Any four) **[20]**

a) Ways leading to toxicity of herbal preparation.

b) Methods of stabilization of Herbal formulations.

c) Strengths and weakness of Natural products.

d) Patents and their types.

e) Conditions of licences for manufacturing of Ayurvedic and Unani drugs.

Total No. of Questions : 4]

P3709

SEAT No. :

[Total No. of Pages : 2

[4850]-2010
M.Pharmacy
(Spl.Quality Assurance Techniques)
PHARMACEUTICAL VALIDATION
(2013 Pattern) (Semester - II)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

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

Q1) Discuss analytical method validation in detail. **[10]**

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

a) Explain validation of dissolution test apparatus.

b) Explain calibration master plan.

c) OQ and PQ of Tablet Compression machine.

d) Explain approches to process validation.

Q3) Write a short note on Any three **[15]**

a) Computer system validation.

b) Cleaning validation of equipment.

c) Vendor Qualification.

d) Validation master plan.

P.T.O.

Q4) a) Explain OQ and PQ for FBD. **[10]**

OR

b) Explain validation of integrated line by media fill test.

Total No. of Questions : 4]

SEAT No. :

P3710

[Total No. of Pages : 1

[4850]-2011
M.Pharmacy
QUALITY PLANNING AND ANALYSIS
(2013 Pattern) (Semester-II)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Question 1 is compulsory.***
2) ***Figures to the right indicate full marks.***

Q1) Discuss relationship between Quality, Productivity, cost, cycle time and value. **[10]**

Q2) Attempt any three questions from the following. **[15]**

a) What is 'project-by-project' approach to act on chronic problems?

b) Define 'Control' and list universal sequence of steps to achieve control.

c) State Maslow's list of human needs and associated forms of motivation for quality.

d) What are different phases of six sigma approach?

Q3) Write short notes on (Any Three) **[15]**

a) Troubleshooting.

b) Quality culture.

c) Criteria for self inspection.

d) Inspection Accuracy.

Q4) Discuss various types of sampling plans. **[10]**

OR

Write characteristics of a good acceptance plan.

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Total No. of Questions :4]

SEAT No. :

P3711

[Total No. of Pages : 1

[4850]-2012
M.Pharmacy
QUALITY CONTROL AND ASSURANCE OF PHARMACEUTICALS
(2013Pattern) (Semester - I)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Question number 1 is compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Draw well labeled diagrams wherever necessary.***

Q1) Provide typical MPCR for empty hard gelatin capsule formulation. **[10]**

Q2) Answer any three of the following **[15]**

a) Provide your view on requirements of pharmaceutical premises and relevant documentation to comply GMP /regulatory requirements.

b) Provide contents of typical site master file.

c) Give in brief contents of SOP on SOP.

d) Discuss in process materials management issues.

Q3) Write note on (any three) **[15]**

a) Present your views on developing quality culture.

b) Liquid Injectable filling /sealing area GMP requirements compliance.

c) Provide typical specification format used for bulk API and Finished dosage form release.

d) Internal quality audit.

Q4) What are the process validation options ? Describe in detail concurrent process validation. **[10]**

OR

Q4) How will you manage process deviation in compliance to cGMP?

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Total No. of Questions : 4]

SEAT No. :

P3712

[Total No. of Pages : 1

[4850]-2013
M.Pharmacy
PHARMACEUTICAL PLANT DESIGN AND OPERATIONS
(2013 Pattern Credit system) (Semester - I&II)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Question number one is compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Draw well labeled diagrams wherever necessary.***

Q1) Discuss in detail design and operation of Q.C. Laboratory **[10]**

Q2) Attempt ANY THREE from following. **[15]**

a) Design and operational facilities for Capsule.

b) Explain design and operational facilities for Tablet.

c) What is effluent? Write importance of effluent treatment.

d) Discuss on design of compressed air.

Q3) Short Note (ANY THREE) **[15]**

a) Revised schedule M and Factory Act.

b) Design, layout for Ointment.

c) Support services : security office, vehicle parking, fuel storage, canteen and cooking, garden and horticulture.

d) Effluent treatment plant

Q4) Discuss the design, layout and operational facilities for sterile powder ready for reconstitution. **[10]**

OR

Explain design of water and steam system.

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Total No. of Questions : 4]

SEAT No. :

P3713

[Total No. of Pages : 1

[4850] - 2014
M.Pharmacy
BIOPHARMACEUTICS AND PHARMACOKINETICS
(2013 Pattern) (Semester - I & II) (Elective)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

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

Q1) What is IVIVC? Explain the need and various levels of IVIVC. **[10]**

Q2) Attempt any 3: **[15]**

a) What are various measures of bioavailability?

b) Write on methods to study permeability of drug.

c) pGp transporter system and BBB.

d) When individualization of therapy is essential?

Q3) Write short notes on any 3: **[15]**

a) Applications of pharmacokinetics in new drug development.

b) Noyes Whitney's dissolution rate law.

c) Michaelis Menten equation.

d) Trapezoid rule.

Q4) Discuss approaches to improve the dissolution of the drug. **[10]**

OR

Describe various methods for estimation of number of binding sites (kinetics of protein binding).

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Total No. of Questions : 4]

SEAT No. :

P3714

[Total No. of Pages : 1

[4850]-2015
M.Pharm.
STERILE PRODUCTS FORMULATION AND TECHNOLOGY
(2013 Pattern) (Semester - I & II)

Time :3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Question no.1 is compulsory.***
2) ***Figures to the right indicate full marks.***

Q1) Explain in detail manufacturing and applications of liposomes. **[10]**

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

a) Importance of buffering agents and toxicity adjustment in parenterals.
b) Vehicle used in the manufacturing of parenterals.
c) Glass as packaging component.
d) Particulate matter and liposomal ocular drug delivery.

Q3) Write a short note on any three: **[15]**

a) AHU unit
b) Parenteral Implants.
c) BFS and FFS technology.
d) Ocular inserts.

Q4) Discuss in detail overview of GMP Guideline for manufacturing of parenteral product. **[10]**

OR

Explain validation of membrane filter.

Total No. of Questions : 4]

SEAT No. :

P3715

[Total No. of Pages : 1

[4850] - 2016
M.Pharmacy
ACTIVE PHARMACEUTICAL INGREDIENTS (APIS)
Manufacturing Technology
(2013 Pattern) (Semester - I & II)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Question number One is compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Draw well labeled diagrams wherever necessary.***

Q1) Discuss about Biochemical Process in synthesis with examples. **[10]**

Q2) Attempt any three questions from following: **[15]**

a) Give an account of Drug Intermediates.

b) Discuss Oxidation and Reduction process in manufacturing technology.

c) Write an account of Chemical Mixtures.

d) Comment on Noise Measuring Instruments.

Q3) Write short notes on (Any three): **[15]**

a) Unit Process in Synthesis.

b) Eye Protection Equipments.

c) Acylation Process.

d) Heavy Chemicals.

Q4) Describe in detail Manufacturing Process of Rifampicin and Pentothal sodium. **[10]**

OR

Give a detail account of Radiation hazards, its prevention in Chemical Manufacturing Unit. **[10]**

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Total No. of Questions : 4]

SEAT No. :

P3716

[Total No. of Pages : 1

[4850] - 2017
M.Pharmacy
CHEMISTRY OF MEDICINAL NATURAL PRODUCTS
(2013 Pattern) (Semester - I & II)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Question number one is compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Draw well labeled diagrams wherever necessary.***

Q1) Give biosynthetic pathway and essential data to prove structure of Atropine. **[10]**

Q2) Solve the following (any three): **[3 × 5 = 15]**

a) Describe enflurage and Eculle methods for extraction of essential oils.

b) Classify Ergot alkaloids, give method for extraction of ergot alkaloids.

c) Write the classification and chemistry of carbohydrates.

d) Explain role of primary and secondary metabolites in plants.

Q3) Short Notes (any three): **[3 × 5 = 15]**

a) General methods of extraction Glycosides.

b) Biogenesis of Tyrosine and ornothin derived alkaloids.

c) Role of flavonoids in plants and animals.

d) Analysis of Diosgenine.

Q4) Define and classify Terpenoids, give method for extraction and isolation of Euginol. **[10]**

OR

Write in detail chemistry of plant pigments and their roll in plants.

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Total No. of Questions : 4]

SEAT No. :

P3717

[Total No. of Pages : 1

[4850] - 2018

M.Pharmacy

TRADITIONAL SYSTEM OF MEDICINE AND AYURVEDIC FORMULATIONS

(2013 Pattern) (Credit System) (Semester - I)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Question number one is compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Draw well labeled diagrams wherever necessary.***

Q1) Explain Ayurvedic system of medicine. Give the theory and basic concept and add a brief note on Diagnosis and treatment of Ayurvedic system of medicine. **[10]**

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

a) Explain the theory and basic concept of Unani system of medicine.

b) Explain the preparation and evaluation methods of Churna.

c) Explain the role and importance of serial dilutions in homeopathic system of medicine.

d) Give an account of diagnosis and treatment of chinese system of medicine.

Q3) Write Short notes (Any Three): **[15]**

a) Vati.

b) Arka.

c) Taila.

d) Asava.

Q4) Explain in detail modern drug discovery using Ethnopharmacognosy. **[10]**

OR

Explain the standardization of Ayurvedic drugs using Physical and Chemical methods.

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Total No. of Questions : 4]

SEAT No. :

P3718

[Total No. of Pages : 1

[4850]-2019
M.Pharmacy
MEDICINAL PLANT BIOTECHNOLOGY
(2013 Pattern) (Semester I & II)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Question No. 1 is compulsory.***
2) ***Draw well labeled diagram wherever necessary.***
3) ***Enter the question number clearly in the margin of the answer book beside each of your answer.***
4) ***Figures to the right indicate full marks.***

Q1) What is an Immobilized Enzyme? What are its commercial uses? What are different ways by which one can immobilize an enzyms. **[10]**

Q2) Solve Any three. **[3 × 5]**

a) What is a mutation? What are the causes of Mutagenesis? What is the Classification of mutation types?

b) Write a note on Polyploidy in plants by giving Examples of polyploid crops.

c) What are Plasmids? Write a brief note on Plasmid as vectors. What is Horizontal & Vertical gene transfer mechanism?

d) What is nucleic acid hybridization technique? What is In situ hybridization?

e) What is the molecular structure of ctDNA, or cpDNA?

Q3) Short Notes (any three) **[3 × 5]**

a) Hairy roots, their multiple applications.

b) Cryopreservation & the risks in Cryopreservation.

c) Bromelain.

d) Electroporation & Gene electrotransfer.

e) Somatic embryogenesis.

Q4) What is Cell signaling? Describe Plasmodesmata. **[10]**

OR

What is RNA? How chemical structure of RNA does differ from DNA? Explain the structure of RNA.

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Total No. of Questions : 4]

SEAT No. :

P3719

[Total No. of Pages : 1

[4850] - 2020
M.Pharmacy
NATURAL PRODUCT MANAGEMENT
(2013 Pattern) (Semester - I & II)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Question number one is compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Draw well labeled diagrams wherever necessary.***

Q1) What are preoritized medicinal plants? Explain the requirements for cultivation and conservation for the same. **[10]**

Q2) Solve the following (any three): **[3 × 5 = 15]**

a) Explain the methods of oil seed extraction.

b) Write note on factors affecting storage of natural products.

c) Highlight on applications of research in farming.

d) Write on legal requirements for import and export of natural medicines.

Q3) Write Short Notes (any three): **[3 × 5 = 15]**

a) IPR of medicinal herbs.

b) Modernization of natural products market.

c) Quality control of preoritized medicinal plants.

d) National schemes for development of medicinal plants.

Q4) Explain various needs for establishment of herbal extraction unit. **[10]**

OR

Write a review on phytoconstituents trading in international market.

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Total No. of Questions :4]

SEAT No :

P3720

[Total No. of Pages : 1

[4850] - 2021
M. PHARM
QUALITY ASSURANCE TECHNIQUES IN HERBAL PRODUCTS
(2013 Pattern) (Semester -II)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Question no. one is compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Draw well labeled diagrams wherever necessary.***

Q1) Write GMP requirements for herbal medicinal products. Enlist various parameters recommended by WHO for evaluation of herbal drugs. **[10]**

Q2) Attempt any THREE questions of following: **[15]**

a) Elaborate Safety issues related to herbal products.
b) Discuss Pharmacovigilance for herbal products.
c) Explain Packaging development.
d) Discuss Stability guidelines for studies related to herbal extracts.

Q3) Write short note on (Any THREE): **[15]**

a) Analytical method development guideline.
b) Outsourcing.
c) Cleaning and sanitization of plant and equipment.
d) Quality Audit.

Q4) Explain different components of Quality Assurance. Discuss various regulatory bodies governing manufacturing of herbal products. **[10]**

OR

Discuss equipment URS and qualification. Explain Building and Facility-Design for processing of herbal products. **[10]**

Total No. of Questions : 4]

SEAT No. :

P3721

[Total No. of Pages : 2

[4850]-2022

M. Pharmacy

TOXICOLOGY

(2013 Pattern) (Semester - I & II) (Elective)

Time : 3 Hours] *[Max. Marks : 50*

Instruction to the candidates:

1) ***Q No.. 1 is compulsory.***
2) ***Figures to right indicate full marks.***

Q1) Discuss the principles of Good laboratory Practices (GLP) as per OECD guidelines for conducting preclinical toxicity studies. **[10]**

Q2) Solve the following (Any Three) : **[15]**

a) Explain the Idiosynoratic reaction produced by xenobiotics.

b) Write the different mechanism of hepatic toxicity.

c) Discuss the organ toxicity caused by Industrial chemicals.

d) Write the factors Influencing on single dose & repeat dose toxicity study.

Q3) Write short notes (Any three) : **[15]**

a) Academic and Industrial application of toxicalogy.

b) CDNA and Genomic liberaries.

c) Male reproductive toxicity.

d) Oculor toxicity

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Q4) Discuss in brief invivo studies for determining dermal toxicity. **[10]**

OR

Explain in details the preclinical toxicalogical requirements for biological products.

Total No. of Questions : 4]

SEAT No. :

P3722

[Total No. of Pages : 1

[4850] - 2023
M.Pharmacy
SAFETY PHARMACOLOGY
(2013 Pattern) (Semester - I & II)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Que. 1 is compulsory.***
2) ***Figure to right indicates full marks.***

Q1) Discuss in brief the regulatory requirements of ICH for the new drug safety assessment. **[10]**

Q2) Solve the following (Any 3): **[15]**

a) Explain the study design for repeat dose toxicity.
b) Write the process of reporting adverse event in clinical trial.
c) Discuss the safety assessment of dermatological products.
d) Discuss the Ames test for mutagenicity.

Q3) Write Short notes (Any 3): **[15]**

a) Post marketing surveillance.
b) OECD guidelines for acute oral toxicity study.
c) Applications of in vitro techniques in drug safety assessment.
d) Ocular toxicity testing.

Q4) Write in brief about the study design and importance of reproductive toxicity studies. **[10]**

OR

Discuss in brief about periodic safety update report for marketed drugs. **[10]**

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Total No. of Questions : 4]

SEAT No. :

P3723

[Total No. of Pages : 1

[4850] - 2024
M.Pharm.
CLINICAL TRIALS
(Credit System) (2013 Pattern) (Semester - I)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Question No. 1 is compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Draw well labeled diagrams wherever necessary.***

Q1) What is new drug development process? Explain in detail different phases of clinical trials. **[10]**

Q2) Solve any three: **[3 × 5 = 15]**

a) Write highlights of Belmont report.

b) Explain monitoring of serious adverse events reports.

c) Explain special issues and applications of therapeutic drug mentoring.

d) Explain concept and importance of ICH-GCP guidelines.

Q3) Short Notes (any three): **[3 × 5 = 15]**

a) Clinical trial designs.

b) Computer applications in data analysis.

c) NDA and ANDA.

d) Stakeholders of clinical trials.

Q4) Discuss role of FDA in various countries in new drug development. **[10]**

OR

Justify role of informed consent and institutional review board in ethical conduct of clinical trials. **[10]**

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Total No. of Questions : 4]

SEAT No. :

P3724

[Total No. of Pages : 1

[4850]-2025
M.Pharmacy
CLINICAL PHARMACOKINETICS AND PHARMACODYNAMICS
(2013 Pattern) (Semester-I & II)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Question number one is compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Draw well labeled diagrams wherever necessary.***

Q1) What are drug displacement interactions due to protein binding? Explain with suitable examples. **[10]**

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

a) Explain the significance of Half life of drug in elimination.

b) What is individualization? Explain dosage adjustment in Hepatic failure.

c) Explain One compartment model.

d) Define Clearance . What are advantages of expressing clearance at an individual organ level?

Q3) Write a note on following (any three) : **[15]**

a) Multiple drug regimen.

b) Determination and significance of 'Area under Curve'.

c) Factors affecting distribution.

d) Wagner - Nelson method.

Q4) What is non linearity in kinetics? How it is detected? **[10]**

OR

Explain the implications of drug metabolism on it's response. **[10]**

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Total No. of Questions : 4]

SEAT No. :

P3726

[Total No. of Pages : 1

[4850]-2027

M.Pharmacy

INDUSTRIAL PHARMACY A ND PRODUCTION MANAGEMENT

(2013 Pattern) (Semester-I)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Question number one is compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Draw well labeled diagrams wherever necessary.***

Q1) Explain in detail optimization in pharmaceutical industry. Discuss the different optimization techniques with suitable examples. **[10]**

Q2) Answer any three. **[15]**

a) What are the salient features of ISO 9000?

b) Explain pharmaceutical process validation.

c) Describe with examples production planning.

d) How will you do plant site selection and organization for a pharmaceutical industry?

Q3) Write short notes (Any three) : **[15]**

a) Flexible manufacturing system.

b) Computer control systems.

c) Effluent Testing and Treatment in pharmaceutical industry..

d) Typical models for solid and liquid manufacturing.

Q4) Explain requirements related to manufacture and sale of drugs according to Drugs and Cosmetics Act. **[10]**

OR

Give introduction to mechanical, electrical and electronic parts of pharmaceutical machinery, equipment. Explain how material handling for various pharmaceutical products is important.

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Total No. of Questions : 4]

SEAT No. :

P3727

[Total No. of Pages : 1

[4850]-2028

M.Pharmacy

FERMENTATION TECHNOLOGY

(2013 Pattern) (Semester-I & II)(Elective)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

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

Q1) Explain in detail the operation of a bioreactor by considering following points. **[10]**

a) Media formulation.

b) Aeration and agitation.

c) Control systems.

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

a) What is protoplast fusion? Explain.

b) Explain different techniques used for purification and preservation of industrial microbes.

c) Write different food ingredients and additives prepared by process of fermentation.

d) Explain methods used for immobilization of enzymes.

Q3) Write a note on (Any three) : **[15]**

a) Michaelis- Menten Kinetics.

b) Biopesticides.

c) Factors affecting microbial growth.

d) Protease in food processing.

Q4) What is surface fermentation? Explain. **[10]**

OR

What is primery metabolites? Explain.

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Total No. of Questions : 4]

SEAT No. :

P3728

[Total No. of Pages : 1

[4850]-2029

M. Pharmacy

PROJECT MANAGEMENT

(2013 Pattern) (Semester - I and II)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Question number one is compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Draw well labeled diagrams wherever necessary.***

Q1) Explain the importance of project management; give suitable cases from pharmaceutical projects for manufacturing on small scale. **[10]**

Q2) Write comments on (Attempt any three) **[15]**

a) Role of project Manager

b) Schedule of project

c) Project planning process

d) Reporting of project objective during execution of project.

Q3) Short Notes (any three) **[15]**

a) Optimum utilization of resources and execution of project

b) Significance of effective communication by team leader.

c) Management of conflict of interest

d) Project team development

Q4) Explain the concept of risk management during project planning and development. **[10]**

OR

How to evaluate/determine/manage the project performance with special reference to team decision.

Total No. of Questions : 4]

SEAT No. :

P3729

[Total No. of Pages : 1

[4850]-2030

M. Pharmacy

PHARMACEUTICALADMINISTRATION
(Credit System) (Common for Semester I & II)
(2013 Pattern) (Elective)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

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

Q1) Explain the concept of objectives and focus on MBO. **[10]**

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

a) Explain the concept of span of control.

b) What is direct control and preventive control?

c) Give the barriers of communication.

d) How to make organizations effective and why developing positive organization culture is important?

Q3) Write short notes on the following (any three) **[15]**

a) Communication process in organizations.

b) Leadership - a human factor in developing.

c) Functions of management.

d) Line and staff concept in organizing.

Q4) Explain human motivation theories of Abraham Maslow and McClellands need's theory. **[10]**

OR

Give types of plans and steps in planning .Explain planning process, strategic planning process and also process of decision making.

Total No. of Questions : 4]

SEAT No. : ____

P3730

[Total No. of Pages : 1

[4850]-2031
M.Pharmacy
COSMETICOLOGY
(2013 Pattern) (Semester-I&II)

Time : 3 Hours] ***[Max. Marks : 50***

Instructions to the candidates:

1) ***Question number one is compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Draw well labeled diagrams wherever necessary.***

Q1) Enlist the various cosmetic products available in aerosol form and explain formulation. **[10]**

Q2) Attempt any three **[15]**

a) Discuss regulatory requirements for cosmetic products.

b) Describe rheological additives in cosmetics?

c) Discuss various ways to boost SPF of sunscreens.

d) Discuss permanent hair colours.

Q3) short Notes (any three) **[15]**

a) Evaluation of sunscreen.

b) Packaging of cosmetics.

c) Factors affecting preservatives efficacy in cosmetics.

d) Antiperspirants and deodorants.

Q4) Give an account of colloidal carriers in cosmetic preparations and their utility. **[10]**

OR

What are components of sunrays responsible for skin damage? Describe formulation and Evaluation parameters for sunscreens.

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