Total No. of Questions : 6]

SEAT No. :

P3664

[Total No. of Pages : 2

[4850]-101
M.Pharmacy
ADVANCED ANALYTICAL TECHNIQUES
(2008 Pattern) (Semester - I)

Time : 3 Hours] *[Max. Marks : 80*

Instructions to the candidates:

1) ***Question 1 and 4 are compulsory.***
2) ***Attempt any one question from the remaining in Section I and any one from the remaining question of Section II.***
3) ***Answer to the two sections should be written on the separate books.***
4) ***Draw diagram whenever necessary.***
5) ***Figures to the right indicate full marks.***

SECTION-I

Q1) a) Elucidate the structure of compound from following data

Mol mass is 130;

IR = 3082-2860cm^{-1}, 1825cm^{-1}, 1755cm^{-1}, 1455cm^{-1}

NMR = 8.7τ Triplet (7.3 squares) and 7.8τ quartet (4.9 squares) **[10]**

b) Discuss various factors affecting vibration modes in IR spectroscopy. **[8]**

c) Write Bathochromic and Hypsochromic shift in UV Spectroscopy. **[2]**

Q2) a) Give principle, instrumentation and applications of LCMS. **[8]**

b) Discuss about Ion exchange Chromatography. **[8]**

c) Write note on DEPT. **[4]**

Q3) a) Discuss principle and application of GC-MS. **[8]**

b) Write about Principle and applications of Super critical Fluid chromatography. **[8]**

c) Write note on Size Exclusion Chromatography. **[4]**

P.T.O.

SECTION-II

Q4) a) Explain principle, instrumentation, and applications of Thermogravimetric analysis. **[10]**

b) Write about Differential Scanning Calorimetry in detail. **[10]**

Q5) a) Give an detail account of LC-MS technique. **[10]**

b) Discuss the principle and applications of HPTLC. **[10]**

Q6) a) Explain Principle and applications of Mass spectroscopy. **[10]**

b) Write a note on Detectors used in Gas Chromatography. **[10]**

ζ ζ ζ

Total No. of Questions : 6]

SEAT No. :

P3665

[Total No. of Pages : 1

[4850]-102
M.Pharm.
RESEARCH METHODOLOGY
(2008 Pattern) (Semester - I)

Time : 3 Hours] *[Max. Marks : 80*

Instructions to the candidates:

1) ***Question 1 and 4 are compulsory.***
2) ***Attempt any one question from the remaining in section I and any one question from the remaining questions of section II.***
3) ***Answers to the two sections should be written in separate books.***

SECTION-I

Q1) What is the purpose of research? Enlist the different types of research. Give the elaborated account of historical, descriptive and patent oriented research**.** **[20]**

Q2) a) Give an account of sources for survey of literature. **[10]**

b) Explain process of making a research proposal. **[10]**

Q3) What is documentation. Discuss the different types of documentation. Add a note on importance of literature survey in research. **[20]**

SECTION-II

Q4) What is the meaning of hypothesis. Describe the various sources of hypothesis. Add a note on role of hypothesis in research. **[20]**

Q5) Give the salient features of techniques involved in oral presentation of research outcome. **[20]**

Q6) Write notes on any two of the following: **[20]**

a) Use of bibliography in research.

b) Correlation data.

c) Use of visual aids in oral presentation.

x x x

Total No. of Questions :6]

SEAT No. :

P3666

[Total No. of Pages :2

[4850]-103

M.Pharm.

ADVANCED PHARMACEUTICS

(2008Pattern) (Semester - I)

Time : 3 Hours] *[Max. Marks :80*

Instructions to the candidates:

1) ***Attempt any 2 questions from each section.***
2) ***Draw well labeled diagam wherever necessary.***
3) ***Figures to the right side indicate full marks.***

SECTION-I

Q1) Explain the significance of preformulation concept in formulation development with detailed discussion on study parameters for development of a tablet formulation. **[20]**

Q2) Explain different mechanisms responsible for degradation of drug along with suitable examples. Add a note on stability testing of pharmaceutical formulation **[20]**

Q3) Write short notes on (any Two): **[20]**

a) Importance of quality assurance and quality control.

b) Standardization of excipients.

c) Biodegradable polymers.

P.T.O.

SECTION-II

Q4) Explain the theory and methods of preparation of microencapsulation. Write a note on drug release kinetics from microcapsules. **[20]**

Q5) Discuss the need and advantages of optimization techniques. Explain in detail any one technique used in optimization of a tablet formulation. **[20]**

Q6) Write short notes on (any Two): **[20]**

a) Model dependent methods in dissolution.

b) Importance of Diffusion Coefficient.

c) Validation of pharmaceutical process.

EEE

Total No. of Questions :8]

P3667

SEAT No. :

[Total No. of Pages : 2

[4850]-104
M.Pharmacy
(Spl.Pharmaceutical Chemistry)
ADVANCED PHARMACEUTICAL CHEMISTRY
(2008Pattern) (Semester - I)

Time : 3 Hours] *[Max. Marks : 80*

Instructions to the candidates:

1) ***Question number one and five are compulsory. Out of remaining attempt any 2 questions from each Section I and Section II***
2) ***Figures to the right indicate full marks.***
3) ***Draw well labelled diagrams wherever necessary.***

SECTION - I

Q1) What is Pinacole pinacolone rearrangement, explain along with reaction mechanism , stereochemistry and applications. **[10]**

Q2) What is synthon approach? Give synthetic route for Ibuprofen and Losartan, **[15]**

Q3) Explain mechanism, stereochemistry and applications of Grignard reaction. **[15]**

Q4) Write note on any Two. **[15]**

a) Stereospecificity and Stereoselectivity.

b) Oppennauer oxidation.

c) Wolf kishner reduction.

SECTION - II

Q5) Explain Sharpless oxidation. **[10]**

Q6) Explain reduction with metallic hydrides. **[15]**

P.T.O.

Q7) Explain Allilyic Bromination and Heck reaction. **[15]**

Q8) Write note on any Two **[15]**

a) Suzuki coupling.

b) Hydrogenation.

c) Green chemistry.

Total No. of Questions : 6]

SEAT No. :

P3668

[Total No. of Pages : 1

[4850]-105
M.Pharm.
ADVANCED PHARMACOLOGY - I
(Preclinical Evaluation of Drugs)
(2008 Pattern) (Semester - I)

Time : 3 Hours] *[Max. Marks : 80*

Instructions to the candidates:

1) ***Answers to each section should be written in separate answer-books.***
2) ***Solve any two questions from each section.***

SECTION - I

Q1) Discuss the preclinical evaluation of antiulcer agents. **[20]**

Q2) Discuss the preclinical evaluation of antihypertensives. **[20]**

Q3) Write notes on (any two): **[20]**

a) Animal cell lines.

b) Preparation of research protocol as per Form B.

c) High throughput screening.

SECTION - II

Q4) Discuss the preclinical evaluation of sedatives and hypnotics. **[20]**

Q5) Discuss the preclinical evaluation of hypoglycemic drugs. **[20]**

Q6) Write notes on (any two): **[20]**

a) Screening of anti-inflammatory agents.

b) Screening of muscle relaxants.

c) Safety assessment tests.

Total No. of Questions : 8]

P3669

SEAT No. :

[Total No. of Pages : 2

[4850]-106
M.Pharmacy
ADVANCED PHARMACOGNOSY
(2008 Pattern) (Semester - I)

Time : 3 Hours] *[Max. Marks : 80*

Instructions to the candidates:

1) ***Question Nos. 1 and 5 are compulsory. Out of the remaining attempt 2 questions from Section I and 2 questions from section II.***
2) ***Answer to the two sections should be written in separate books.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Figures to the right indicate full marks.***

SECTION - I

Q1) Explain how Biotechnology can be used to enhance secondary metabolite production. **[10]**

Q2) a) Explain applications of chemotexonomy along with its Advantages and limitations over other methods of classifications. **[7]**

b) Describe "Alkaloid" as chemotaxonomic marker with suitable examples. **[8]**

Q3) What are the characteristics of natural products that make them an appropriate material in discovering new drugs? Describe role of morphine as a lead compound in discovering new drugs. **[15]**

Q4) Write note on following (Any Three) **[15]**

a) Biotic and Abiotic Elicitors.

b) Flavouring agents derived from plants.

c) Applications of Biopolymers.

d) Anthraquinones as dying agents.

P.T.O.

SECTION - II

Q5) Explain in detail Applications of Tracer Techniques in evaluation of Biogenetic pathways of secondary metabolites. **[10]**

Q6) a) Explain Anti - cancer activity of Vinca - alkaloids. **[7]**

b) Review the plants having immunomodulatory activity. **[8]**

Q7) Write various in vitro and invivo models used in evaluation of antidiabetic activity. Explain various mechanisms through which phytochemicals mediate antidiabetic activity. **[15]**

Q8) Write note on following (Any Three). **[15]**

a) Flavonoids as anti - inflammatory agents.

b) Irridoid glycosides as a Hepatoprotective agents.

c) Biodiesel.

d) High Throughput screening (HTS).

Total No. of Questions :6]

SEAT No. :

P3670

[Total No. of Pages :1

[4850]-107

M.Pharmacy

ADVANCED QUALITY ASSURANCE TECHNIQUES

(cGMP and Documentation)

(2008 Pattern) (Semester - I)

Time : 3 Hours] *[Max. Marks :80*

Instructions to the candidates:

1) ***Answers to the two sections should be written in separate answer books.***
2) ***Question 1 and 4 are compulsory.***
3) ***Out of the remaining, attempt any one question from each section.***
4) ***Figures to the right side indicate full marks.***

SECTION-I

Q1) What are product recalls? How are the rejected materials handled? **[20]**

Q2) Explain the importance of yield calculation at various stages in manufacture. **[20]**

Q3) Discuss the role of I.P.Q.C in pharmaceutical industry. **[20]**

SECTION-II

Q4) a) Write components of GMP. **[10]**

b) Add a note on HVAC system. **[10]**

Q5) Discuss contents and importance of "Master Production and Control Record". **[20]**

Q6) a) Explain maintenance of reference (reserve) samples. **[10]**

b) What is analytical outsourcing? **[10]**

EEE

Total No. of Questions :6]

SEAT No. :

P3671

[Total No. of Pages :1

[4850]-108
M.Pharmacy
QUALITY CONTROL AND ASSURANCE OF PHARMACEUTICALS
(2008Pattern) (Semester - I)

Time : 3 Hours] *[Max. Marks : 80*

Instructions to the candidates:

1) ***Question number 1 and 4 are compulsory. Out of remaining solve any one question from Section I and Section II***
2) ***Answer to the two sections should be written in separate answer book.***
3) ***Draw well labeled diagrams wherever necessary.***

SECTION - I

Q1) Describe in details validation master plan for typical pharmaceutical manufacturing facility. **[20]**

Q2) a) Provide your views on management of printed and non printed packaging materials used in manufacturing facility in compliance to GMP. **[10]**

b) What is quality assurance audit ? Provide audit questionnaire for HR and purchase dept. **[10]**

Q3) Write short note on

a) Role of Quality assurance in sterilization methods validation. **[20]**

b) Media fill test and its importance.

SECTION - II

Q4) Provide detailed master production control record for typical 5 ml injectable vial batch. **[20]**

Q5) a) Describe in details format and contents of employee training manual used by typical pharmaceutical manufacturing facility. **[10]**

b) Discuss equipment qualification /validation issues. **[10]**

Q6) Write note on **[20]**

a) Discuss post manufacturing materials management issues.

b) Change control SOP and document distribution.

Total No. of Questions : 6]

SEAT No. :

P3672

[Total No. of Pages : 1

[4850]-109
M.Pharmacy
PHARMACEUTICAL PLANT DESIGN AND OPERATIONS
(2008 Pattern) (Semester-I)

Time : 3 Hours] *[Max. Marks : 80*

Instructions to the candidates:

1) ***Answer 2 Questions from Section-I and 2 questions from Section-II.***
2) ***Answer to the two sections should be written in separate answer books.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Figures to the right indicate full marks.***

SECTION-I

Q1) Discuss the design, layout and operational facilities for sterile powder ready for reconstitution. **[20]**

Q2) Explain design and operation of Q.C. laboratory. **[20]**

Q3) Explain revised schedule M and factory act. **[20]**

SECTION-II

Q4) Discuss design of Pharmaceutical plant support services like security office, scrap yard,garden and horticulture, training centre, administrative block, toilet facilities. **[20]**

Q5) What are utility services? Explain design of Compressed air and other air as utility services. **[20]**

Q6) Elaborate design of effluent treatment plant. **[20]**

x x x

Total No. of Questions : 6]

SEAT No. :

P3673

[Total No. of Pages :1

[4850]-110
M.Pharmacy
BIOPHARMACEUTICS & PHARMACOKINETICS
(2008 Pattern) (Semester - I & II) (Elective)

Time :3 Hours] *[Max. Marks : 80*

Instructions to the candidates:

1) ***Answer any 2 questions from each section.***
2) ***Answers to the two sections should be written in separate books.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***All Questions Carry equal marks.***

SECTION - I

Q1) Discuss various approaches to improve dissolution of poorly soluble drugs.

Q2) What are measures of bioavailability? How are they useful in bioequivalence studies?

Q3) Write notes on any two

a) Biological models for determination of permeability studies.
b) In vitro dissolution testing models.
c) Multidrug resistance transporters.

SECTION - II

Q4) Discuss the concept of compartment modeling. Differentiate one and two compartment models on the basis of distribution pattern. Add a note on advantages and limitations to compartment modeling.

Q5) Calculate $AVC_{(0-12)}$ from the following data:

Time(hr)	0	1	2	4	6	8	10	12
Conc(µg/ml)	72	67	59	41	27	18	13	5.7

Q6) Write notes on any two:

a) Estimation of V_{max} and Km.
b) Apparent volume of distribution and protein binding.
c) Indivisualization of drug therapy.

Total No. of Questions :8]

P3674

SEAT No. :

[Total No. of Pages : 2

[4850]-111

M.Pharm.

STERILE PRODUCTS FORMULATION AND TECHNOLOGY

(2008Pattern) (Semester - I & II)

Time : 3 Hours] *[Max. Marks : 80*

Instructions to the candidates:

1) ***Question number 1 and 5 are compulsory. Out of the remaining attempt any 2 questions from Section I and two questions from Section II***
2) ***Answer to the two sections should be written in separate books.***
3) ***Draw a neat and labeled diagrams wherever necessary.***
4) ***Figures to the right indicate full marks.***

SECTION - I

Q1) Explain physicochemical properties of the drug studied during preformulation of the parenteral product. **[12]**

Q2) Explain in detail manufacturing techniques and applications of nanoparticles.**[14]**

Q3) Explain in detail ocular inserts and particulate drug delivery for ophthalmic application. **[14]**

Q4) Write a short note on (any Two) **[14]**

a) Tonicity adjusting agents and buffering agents.

b) Implantable drug delivery.

c) Loaded Erythrocytes.

SECTION - II

Q5) Explain in detail components of HEPA Filter and Testing of HEPA Filter.**[12]**

Q6) Explain in detail different large scale sterilization process and validation of membrane filter. **[14]**

P.T.O.

Q7) Write a note on GMP and regulatory guidelines for manufacturing of parenteral product. **[14]**

Q8) Write a short note on (Any Two) **[14]**

a) BFS and FFS Technology.

b) Hazards associated with parenteral therapy.

c) Parenteral devices-Syringe and catheter.

Total No. of Questions : 8]

SEAT No. :

P3675

[Total No. of Pages : 1

[4850] - 112
M.Pharm.
CHEMISTRY OF MEDICINAL NATURAL PRODUCTS
(2008 Pattern) (Semester - I & II)

Time : 3 Hours] *[Max. Marks : 80*

Instructions to the candidates:

1) ***Q.No. 1 and 5 are compulsory. Out of remaining solve any two from Section I and any two from Section II.***
2) ***Answers to the two sections should be written on separate answer books.***
3) ***Figures to the right indicate full marks.***

SECTION - I

Q1) Define glycosides and classify glycosides. Give method for extraction and isolation of Perpuria glycosides. **[10]**

Q2) Write a detail note on primary and secondary metabolites. **[15]**

Q3) Give chemical classification of Alkaloids. Explain chemistry of Alkaloids. **[15]**

Q4) Elucidate the spectral data for structure of Morphene. **[15]**

SECTION - II

Q5) Classify flavonoids. Write on Ginkgo biloba. **[10]**

Q6) Write a detail note on Oligosacharides. **[15]**

Q7) Classify terpenoids. Write various methods of extraction of volatile oils. **[15]**

Q8) Write note on plant pigments. **[15]**

☛ ☛ ☛

Total No. of Questions : 8]

SEAT No. :

P3676

[Total No. of Pages : 2

[4850] - 113
M.Pharmacy
ACTIVE PHARMACEUTICAL INGREDIENTS (APIS)
Manufacturing Technology
(2008 Pattern) (Semester - I & II) (Theory)

Time : 3 Hours] *[Max. Marks : 80*

Instructions to the candidates:

1) ***Question number 1 and Question number 5 are compulsory. Out of remaining Questions solve any two questions from Section I and any two questions from Section II.***
2) ***Section I and Section II should be answered in separate Answer books.***
3) ***Draw well labeled diagrams wherever necessary.***

SECTION - I

Q1) Define basic terminology used in chemical process industry and write about biochemical process in synthesis. **[12]**

Q2) Give a detail account of manufacturing methods, flow charts for Pentothal sodium and Sulphamethoxazole. **[14]**

Q3) Discuss about technology in the manufacturing of API in detail. Comment on Industrial centrifuges. **[14]**

Q4) Write short notes on (Any two): **[14]**

a) Acylation.

b) Oxidation.

c) Reduction.

SECTION - II

Q5) Discuss about Eye protection and various eye protection equipments in chemical manufacturing industry. **[12]**

Q6) Write in detail about Atmospheric contaminants in manufacturing facility and measure for its prevention. **[14]**

P.T.O.

Q7) Write about Radiation hazards its detection and measurement in chemical manufacturing unit. **[14]**

Q8) Write short notes on (Any two): **[14]**

a) Environmental protection laws.

b) Finger and Arm protection law.

c) Detection and sampling techniques.

Total No. of Questions : 8]

SEAT No. :

P3677

[Total No. of Pages : 1

[4850]-114
M.Pharm.
CLINICAL TRIALS
(2008 Pattern) (Semester-I)

Time : 3 Hours] *[Max. Marks : 80*

Instructions to the candidates:

1) ***Question No.1 and 5 are compulsory.Solve any two questions from the remaining in section 1 and section 2.***
2) ***Write answers for section -1 and section 2 in separate answer sheets.***
3) ***Figures to the right indicate full marks.***
4) ***Draw well labeled diagrams wherever necessary.***

SECTION-I

Q1) Discuss composition, role and responsibility of Institutional Review Board. **[10]**

Q2) Explain new drug development process. **[15]**

Q3) Discuss various components involved in clinical trial design. **[15]**

Q4) Write Short Notes on (any two): **[15]**

a) Informed consent.

b) Role of FDA in clinical trial.

c) The Belmont Report.

SECTION-II

Q5) Explain role and responsibility of various stakeholders of clinical trials. **[10]**

Q6) Discuss bioavailability, bioequivalence and therapeutic drug monitoring. **[15]**

Q7) Enlist and explain in detail the elements of a typical clinical trial protocol. **[15]**

Q8) Write short Notes on (any two): **[15]**

a) Importance of ICH-GCP guidelines.

b) Computer applications in data analysis.

c) Case report forms.

X X X

Total No. of Questions : 8]

SEAT No. :

P3678

[Total No. of Pages : 2

[4850] - 115
M.Pharmacy
SAFETY PHARMACOLOGY
(2008 Pattern) (Semester - I & II)

Time : 3 Hours] *[Max. Marks : 80*

Instructions to the candidates:

1) ***Q. 1 and 5 are compulsory. Out of remaining attempt any 2 from Sec - I and 2 from Sec - II.***
2) ***Separate answer book should be used for separate sections.***
3) ***Figure to right indicate full marks.***

SECTION - I

Q1) Explain the single dose and repeat dose toxicity studies as per OECD guideline. **[10]**

Q2) Write in details the method of collection and reporting of pharmacovigilance data. **[15]**

Q3) Discuss in detail the study design and importance of carcinogenicity. **[15]**

Q4) Write notes on: **[15]**

a) Male reproductive toxicity.

b) Occular toxicity testing.

SECTION - II

Q5) Write the regulatory requirement of ICH for the new drug safety assessment. **[10]**

Q6) Discuss in brief the safety assessment of dermatological products. **[15]**

P.T.O.

Q7) Discuss periodic safety update report for marketed drugs. **[15]**

Q8) Write notes on: **[15]**

a) Risk benefit assessment.

b) Guinea pig sensitization assay.

Total No. of Questions : 8]

SEAT No. :

P3679

[Total No. of Pages : 2

[4850] - 116
M.Pharmacy
TRADITIONAL SYSTEM OF MEDICINE AND AYURVEDIC FORMULATIONS
(2008 Pattern) (Semester - I)

Time : 3 Hours] *[Max. Marks : 80*

Instructions to the candidates:

1) ***Question No. 01 and 5 are compulsory.***
2) ***Out of the remaining attempt any two questions from Section I and any two questions from Section - II.***
3) ***Answers to the Two sections should be written in separate books.***
4) ***Figures to right indicates full marks.***

SECTION - I

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

Q2) a) Write down the differences between Ayurvedic medicine and Homeopathic system of medicine with respect to Principle, Diagnosis and treatment.**[8]**

b) What is Unani system of medicine? Write a brief note on diagnosis and treatment in unani system of medicine. **[7]**

Q3) Give an account of Ethnopharmacognosy in modern drug discovery. **[15]**

Q4) Write Short notes (Any Three): **[15]**

a) Charak Samhita.

b) Principle of Chinese system of medicine.

c) Panchakarma.

d) Pishti.

SECTION - II

Q5) Write in detail about preparation of Bhasma in Ayurveda. Give the characteristics, evaluation parameters and storage conditions of Bhasmas.**[10]**

P.T.O.

Q6) Define Heavy metals and explain the safety aspects of their determination in preparation of ayurvedic formulations. **[15]**

Q7) Define standardization and explain in detail Physical, Chemical and Microscopical methods of evaluation of herbal drugs. **[15]**

Q8) Write Short Notes (Any Three): **[15]**

a) Guggul.

b) Asava and Arishta.

c) Lepa and Kvatha.

d) Ghruta.

Total No. of Questions : 8]

SEAT No. :

P3680

[Total No. of Pages : 1

[4850] - 117
M.Pharm.
NATURAL PRODUCT MANAGEMENT
(2008 Pattern) (Semester - I & II)

Time : 3 Hours] *[Max. Marks : 80*

Instructions to the candidates:

1) ***Q.No. 1 and 5 are compulsory. Out of remaining solve any two from Section I and any two from Section II.***
2) ***Answers to the two sections should be written in separate answer books.***
3) ***Figures to the right indicate full marks.***

SECTION - I

Q1) Discuss the programme for modernization of natural product market. **[10]**

Q2) Focus on planning for medicinal plant farming. Add on required budget for same. **[15]**

Q3) Explain how natural habitat of various states is helpful to develop preoritize medicinal plants. **[15]**

Q4) Write note on various schemes planned by Indian government for development of medicinal plants. **[15]**

SECTION - II

Q5) Write basic needs and its importance for establishment of herbal extraction unit. **[10]**

Q6) Discuss about the essential steps for export of herbal cosmetics. **[15]**

Q7) Write on an important aspects for international trading of natural health products. **[15]**

Q8) Review on patenting of herbal products. **[15]**

☛ ☛ ☛

Total No. of Questions : 10]

SEAT No. :

P3681

[Total No. of Pages : 2

[4850] - 118
M.Pharm.
MEDICINAL PLANT BIOTECHNOLOGY
(2008 Pattern) (Semester - I)

Time : 3 Hours] *[Max. Marks : 80*

Instructions to the candidates:

1) ***This question paper consist two sections, Section - I and Section - II.***
2) ***Use two separate answer books for the Section - I & Section - II.***
3) ***Solve any four questions from section I & Solve any four questions from section II.***
4) ***Enter the question number clearly in the margin of the answer book beside each of your answer.***
5) ***Figures to the right indicate full marks.***

SECTION - I

Q1) What is RNA? How chemical structure of RNA does differ from DNA? Explain the structure of RNA. **[10]**

Q2) What is the Genetic code? What are its salient features? What is start codon? How Alternative start codons are different from the standard AUG codon? What is stop codon? **[10]**

Q3) What is mutation? Write brief note on Mutation caused by impact on protein sequence. **[10]**

Q4) What is an 'Endemic Species'? what is paleoendemism and neoendemism? **[10]**
What is the meaning of *Ex-situ* conservation?
What is the meaning of *In-situ* conservation? What are benefits in *in-situ* conservation?
What are the drawbacks of *Ex-situ* conservation?

Q5) Write notes on (Any two): **[10]**

a) Cellulose & Hemicellulose of Plant cell wall.
b) Plant Growth Regulators & their classification.
c) Advantages & disadvantages of Micropropogation.
d) Synthetic seed concept.

P.T.O.

SECTION - II

Q6) What is Gene Mapping? Explain the technique of Restriction Fragment Length Polymorphism, or RFLP. Write its advantages & disadvantages. **[10]**

Q7) What is nucleic acid hybridization technique? **[10]**
What is In situ hybridization?
What is a hybridization probe?

Q8) What is an Immobilized Enzyme? What are its commercial uses? What are different ways by which one can immobilize an enzyme. **[10]**

Q9) Write a exhaustive note on Electroporation & Gene electrotransfer. **[10]**

Q10) Write a note on *Any two*: **[10]**

a) Papain.
b) Enzyme reactors.
c) Genetically Modified Crops, transgenic plants & their uses.
d) Principle & Basic set up of PCR.

Total No. of Questions : 8]

SEAT No. :

P3682

[Total No. of Pages : 2

[4850]-201
M.Pharmacy
DRUG REGULATORY AFFAIRS
(2008 Pattern) (Semester - II)

Time : 3 Hours] *[Max. Marks : 80*

Instructions to the candidates:

1) ***Q. No. 1& 5 are compulsory, out of remaining attempt two questions from section-1 and two questions from section-II***

2) ***Answer to the two sections should be written in separate books.***

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

SECTION-I

Q1) Write the provisions of the act related to the Loan license manufacturing of pharmaceuticals. **[10]**

Q2) a) State the registration procedure of pharmacist. **[8]**

b) Elaborate the 'Indian Patent Act 1970' **[7]**

Q3) a) Explain the provisions related to Narcotic & Psychotropic Substances Act 1985. **[8]**

b) Explain the provisions related to Pollution and Environment Control Act. **[7]**

Q4) Write short notes on following (any three): **[15]**

a) World Health Organization.

b) Provisions in Consumer Protection Act.

c) Qualification and duties of Drug Inspector.

d) DPCO 1995.

P.T.O.

SECTION-II

Q5) Explain the cGMP requirements related to premises, sanitation & hygiene in pharmaceutical plant. **[10]**

Q6) Write the constitution and composition of the Central & state Pharmacy Councils. **[15]**

Q7) a) Explain provisions of the act related to import of pharmaceuticals. **[8]**

b) Explain different sections of NDA. **[7]**

Q8) Write short notes on following (any three): **[15]**

a) United States Pharmacopeia.

b) Drug Master file.

c) Good Clinical Practices.

d) MSDS preparation.

Total No. of Questions :8]

SEAT No. :

P3683

[Total No. of Pages :2

[4850]-202

M.Pharmacy

FORMULATIONS AND DEVELOPMENT

(2008 Pattern) (Semester - II)

Time : 3 Hours] *[Max. Marks :80*

Instructions to the candidates:

1) ***Question No. 1 and 5 are compulsory. Out of remaining attempt two questions from section -I and two questions from section -II.***
2) ***Answers to the two sections should be written in separate answer books.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Figures to the right indicate full marks.***

SECTION-I

Q1) Explain in detail formulation and development of sublingual formulations. **[12]**

Q2) Discuss in detail Gastro retentive drug delivery systems. **[14]**

Q3) Discuss the regulatory perspective of selection and evaluation of pharmaceutical packaging material. **[14]**

Q4) Write notes on ANY TWO: **[14]**

a) Micro emulsion

b) Mouth dissolving tablet

c) Mucoadhesive drug delivery systems

P.T.O.

SECTION-II

Q5) Discuss in detail quality assurance of Aerosol formulation. **[12]**

Q6) Discuss the quality control & regulatory aspects of veterinary dosage form. Add a note on specialized dose dispensers. **[14]**

Q7) Explain generation and significance of Nanopharmaceuticals. **[14]**

Q8) Write notes on ANY TWO: **[14]**

a) Penetration enhancer in semisolid formulation.

b) Propellants.

c) Semisolid based on Niosomes.

EEE

Total No. of Questions : 08]

SEAT No. :

P3684

[Total No. of Pages : 2

[4850] -203
M.(Pharm)
NOVEL DRUG DELIVERY SYSTEM
(2008 Pattern) (Semester-II)

Time : 3 Hours] *[Max. Marks : 80*

Instructions to the candidates:

1) ***Attempt any two questions each from the section I and section II.***
2) ***Figures to the right indicate full marks.***
3) ***Answers to two sections must be writtern in separate answer books.***

SECTION-I

Q1) Give detailed account of various formulation mechanisms in gastric retentive drug delivery system. **[20]**

Q2) Describe mechanisms of transports of drugs through mucosal routes? Write a note on penetration enhancers. **[20]**

Q3) Explain the influence of routes of administration on the design of sustained release systems. **[20]**

Q4) Write short notes (any two) **[20]**

a) A long acting contraceptive formulation.

b) Pulsatile drug delivery

c) Osmotic drug delivery

SECTION-II

Q5) Describe evaluation of colon targeted drug delivery. **[20]**

Q6) Drug targeting using monoclonal antibodies. **[20]**

Q7) Describe formulation considerations for protein and peptide drugs. **[20]**

P.T.O.

Q8) Write notes on (any two). **[20]**

a) Microbial approach for colon specific drug delivery formulation.

b) Enhanced permeation and retention effect.

c) Evaluation of transdermal drug delivery system.

Total No. of Questions :6]

SEAT No. :

P3685

[Total No. of Pages :2

[4850]-204

M.Pharmacy (Pharmaceutical Chemistry)

ADVANCED MEDICINAL CHEMISTRY (M-II-3)

(2008 Pattern) (Theory) (Semester - II)

Time : 3 Hours] *[Max. Marks :80*

Instructions to the candidates:

1) ***Attempt any two quesitons from section I and any two questions from section II.***
2) ***Write answers to section I and section II in separate answer book.***

SECTION-I

Q1) a) Explain the role of microorganisms in biotransformation of steroids with suitable examples. **[15]**

b) Write nomenclature of prostaglandins. **[5]**

Q2) a) What are the different types of receptors? Explain the opioid receptors. **[15]**

b) Write a brief note on CADD. **[5]**

Q3) a) Write a note on enzyme immobilization techniques. **[10]**

b) Explain applications of gene therapy. **[10]**

SECTION-II

Q4) Write Synthesis of following drugs describing reaction conditions and mechanism (Any Two): **[20]**

a) Linezolide.

b) Dapsone.

c) Diazepam.

d) Diphenhydramine.

P.T.O.

Q5) a) Write a note on QSAR in drug design. **[10]**

b) Draw synthesis scheme with detail mechanism of Ethinyl estradiol. **[10]**

Q6) Write notes on any two: **[20]**

a) Adrenergic Receptors.

b) Enzyme inhibition.

c) Combinatorial chemistry.

ɛɛɛ

Total No. of Questions : 6]

SEAT No :

P3686

[Total No. of Pages : 1

[4850] - 205
M.Pharm.
(Spl. Pharmaceutical Chemistry)
DRUG DESIGN
(2008 Pattern) (Semester -II) (M-II-4)

Time : 3 Hours] *[Max. Marks : 80*

Instructions to the candidates:

1) ***Question Nos. 1 & 4 are compulsory.***
2) ***Answer any one question from section-I and any one question from section-II from the remaining.***
3) ***Answers to the two sections should be written on separate books.***
4) ***Figures to the right indicate full marks.***

SECTION-I

Q1) What is QSAR? Give advantages and disadvantages of QSAR. Explain Hantzsch analysis & Free Wilson analysis. **[20]**

Q2) What is Bioisosterism? Give classification of bioisosters. Write in brief applications of bioisosterism in designing of drug molecules. **[20]**

Q3) a) Drug design based on antagonism. **[10]**

b) Craig plot & Tipliss tree. **[10]**

SECTION -II

Q4) a) What are prodrugs? Write about designing of drug based on metabolism studies with suitable examples. **[15]**

b) Bioprecursor prodrugs. **[5]**

Q5) a) Enlist various physicochemical properties of a drug molecule that affects the biological activity. Explain in brief about effect of ionization and hydrogen bonding on biological activity with suitable examples. **[15]**

b) Significance of A.D.M.E. studies in drug design. **[5]**

Q6) Write a short note on (Any Two): **[20]**

a) Computer Aided Drug Design.

b) Steric features of drug and their effects on the biological activity.

c) Drug design based on Enzyme inhibition.

Total No. of Questions :6]

P3687

SEAT No. :

[Total No. of Pages : 2

[4850]-206
M.Pharm.
CLINICAL PHARMACOLOGY
(2008Pattern) (Semester - II)

Time : 3 Hours] *[Max. Marks : 80*

Instructions to the candidates:

1) ***Q. No.1 Q.No.4 are compulsory.***
2) ***Solve any one question from remaining two for each section.***

SECTION - I

Q1) Give a detailed account on management of cardiac arrhythmia **[20]**

Q2) a) Discuss in detail practice guidelines and management of hypertension. **[10]**

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

Q3) a) Therapeutic utility of beta blockers in myocardial infraction. **[5]**

b) Management of peptic ulcer. **[5]**

c) Clinical practice guidelines for HIV infection. **[5]**

d) Liver cirrhosis. **[5]**

SECTION - II

Q4) Define clinical pharmacology. Describe types of clinical research. Add a note on protocol for clinical trials with suitable examples. **[20]**

P.T.O.

Q5) a) Elaborate on clinical practice guidelines for congestive heart failure. **[10]**

b) Elaborate on pharmacotherapy of hyperlipidemia. **[10]**

Q6) a) Role of invitro tests in immunological investigation with suitable examples. **[5]**

b) General principles of cancer chemotherapy. **[5]**

c) Pharmacotherapy of myocardial infraction. **[5]**

d) Management of coagulation disorders. **[5]**

Total No. of Questions : 6]

SEAT No. :

P3688

[Total No. of Pages : 2

[4850] -207
M.Pharmacy
SPL. PHARMACOLOGY
Molecular Pharmacology
(2008 Pattern) (Semester-II) (M-III-4)

Time : 3 Hours] *[Max. Marks : 80*

Instructions to the candidates:

1) ***Answer any two questions from each section.***
2) ***Answers to the two sections should be written in separate answer books.***
3) ***Neat diagrams must be drawn wherever necessary.***

SECTION-I

Q1) a) What are transgenic animals? Write a note on applications of transgenic mouse in experimental pharmacology. **[10]**

b) Describe role of calcium and potassium channel modulators in molecular pharmacology. **[10]**

Q2) a) What do you mean by adhesion therapy? Explain clinical implications of this therapy. **[10]**

b) Enlist various endogenous bioactive molecules. Discuss role of COX-2 regulators in inflammation. **[10]**

Q3) a) Low molecular weight heparins. **[5]**

b) Cellular signaling mechanisms. **[5]**

c) Therapeutic applications of Antioxidant. **[5]**

d) NMDA receptors. **[5]**

SECTION-II

Q4) a) Explain potential of human genome mapping in drug research. **[10]**

b) Write a note on pharmacological and clinical implications Apoptosis. **[10]**

P.T.O.

Q5) a) Define immunopharmacology with respect to cellular cytotoxicity. **[10]**

b) Discuss the concept of chronopharmacology with its therapeutic implications. **[10]**

Q6) a) Nitric oxide. **[5]**

b) Atrial natriuretic peptide. **[5]**

c) Imidazole receptors. **[5]**

d) Neuropeptide modulators. **[5]**

ζ ζ ζ

Total No. of Questions : 8]

SEAT No. :

P3689

[Total No. of Pages : 2

[4850]-208
M.Pharm.
PHYTOCHEMISTRY & PHYTOPHARMACEUTICALS
(2008 Pattern) (Semester - II)

Time : 3 Hours] *[Max. Marks : 80*

Instructions to the candidates:

1) ***Question Nos. 1 and 5 are compulsory. Out of the remaining attempt 2 questions from Section I and 2 questions from Section II.***
2) ***Answers to the two sections should be written in separate answer books.***
3) ***Neat diagrams must be drawn wherever necessary.***

SECTION - I

Q1) Explain the significance of flavonoids in herbal drug research. Mention the role of spectroscopy & chromatographic techniques in their characterization. Support your answer with two examples. **[10]**

Q2) a) Write method of extraction, characterization & structural elucidation of Taxol. **[7.5]**

b) Write an elaborate account on chemical & pharmacological profile of any one of the following: **[7.5]**

i) Morphine

ii) Diosgenin

Q3) Why is standardization of phytopharmaceuticals required? Describe the protocol for standardization of **[15]**

a) Andrographolides.

b) Gingerol.

Q4) Write note on following (any two): **[15]**

a) Chemical Profile of Curcumin.

b) Importance of Digoxin in pharma industry.

c) Characterization of Atropine.

P.T.O.

SECTION - II

Q5) Why is quality control of herbal drugs necessary? Describe the procedure recommended by WHO for determination of **[10]**

Haermolytic Index

OR

Tannin content.

Q6) a) Describe the equipments required in processing of herbal extracts. **[7.5]**

b) Write a note on preservation of herbal extracts. **[7.5]**

Q7) Describe Invivo & Invitro screening methods for evaluation of **[15]**

a) Hypolipidaemic activity.

b) Anti-inflammatory activity.

Q8) Write note on following (**any two**) **[15]**

a) Evaluation of herbal extracts.

b) Antidiabetic screening.

c) Determination of Bitterness value.

Total No. of Questions : 8]

SEAT No. :

P3690

[Total No. of Pages : 1

[4850]-209
M.Pharm.
INDUSTRIAL PHARMACOGNOSY (M - IV - 4)
(2008 Pattern) (Semester - II)

Time :3 Hours] *[Max. Marks : 80*

Instructions to the candidates:

1) ***Q.No.1 and Q.No.5 are compulsory, Out of remaining solve any two from Section I and Section II.***
2) ***Answer to the two Sections should be written in separate books.***

SECTION - I

Q1) Explain the scope for future economic growth of new plant based drugs. **[10]**

Q2) Describe in brief the export potential for Indian trade in Medicinal and Aromatic Plants. **[15]**

Q3) Discuss the technology involved in production of

i) Vincristine ii) Diosgenin iii) Ergot alkaloids **[15]**

Q4) Express the classification of Medicinal Plants based industries for Medicinal and Aromatic Plants in India. **[15]**

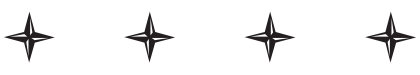
SECTION - II

Q5) Clarify the scope for International trade in Medicinal Plants and derived products. **[10]**

Q6) Give details the Plants and Equipments involved in processing of Herbal Extracts. **[15]**

Q7) Define drug extracts? Explain the classification of Extracts. Write a note on standardization of Extracts. **[15]**

Q8) What are Patents? Classify different types of Patents. Write the salient features of Indian Patent Act. **[15]**



Total No. of Questions :6]

P3691

SEAT No. :

[Total No. of Pages : 2

[4850]-210
M.Pharmacy
(Spl.Quality Assurance Techniques)
PHARMACEUTICAL VALIDATION
(2008Pattern) (Semester - II)

Time : 3 Hours] *[Max. Marks : 80*

Instructions to the candidates:

1) ***Q1 and Q5 are compulsory. Out of remaining solve any 1 from Section I and any 1 from Section II.***
2) ***Figures to the right indicate full marks.***

SECTION - I

Q1) Define validation, explain in detail its scope, importance types and limitations. **[20]**

Q2) a) What is validation master plan, elaborate its contents? **[10]**

b) Explain equipment validation of fluidised bed dryer. **[10]**

Q3) Write short note on: **[20]**

a) Vendor certification.

b) Validation of autoclave.

SECTION - II

Q4) What are the different types of process validation? Elaborate process validation of tablet manufacturing by wet granulation. **[20]**

P.T.O.

Q5) a) Explain cleaning method validation of any one instrument. **[10]**

b) Explain performance qualification of HPLC instrument. **[10]**

Q6) Write short note on **[20]**

a) Computer system validation.

b) Any five parameters of analytical method validation.

Total No. of Questions : 8]

SEAT No. :

P3692

[Total No. of Pages : 2

[4850]-211
M.Pharmacy
QUALITY PLANNING AND ANALYSIS
(2008 Pattern) (Semester-II)

Time : 3 Hours] *[Max. Marks : 80*

Instructions to the candidates:

1) ***Answers to the two sections should be written in separate answer books.***
2) ***Question 1 and 5 are compulsory.***
3) ***Out of the remaining attempt any two questions from each section.***
4) ***Figures to the right side indicate full marks.***

SECTION-I

Q1) Define 'Control' and discuss universal sequence of steps to achieve control. Add a note on 'Self-control'. **[12]**

Q2) Discuss steps in structuring an audit programme. Write a note on audit report. **[14]**

Q3) How is quality measured in manufacturing operations? Comment on 'Qualityculture'. **[14]**

Q4) Write criteria for 'Self Inspection' and comment on inspection accuracy. **[14]**

SECTION-II

Q5) How is quality related to productivity, cost, cycle time and value? **[12]**

Q6) State two quality dimensions .What are the ways to motivate for quality as per Maslow' s theory? **[14]**

P.T.O.

Q7) What criteria must be met while setting operational goal? Highlight advantages of statistical process control. **[14]**

Q8) While developing quality culture, why is it necessary to provide evidence of management leadership ? Explain the concept of 'error-proofing' the process. **[14]**

☼ ☼ ☼