



[4255] – 101

Seat No.	
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**First Year B.Pharmacy Examination, 2012**  
**1.1 : PHARMACEUTICS – I**  
**(2008 Pattern)**

Time : 3 Hours

Max. Marks : 80

- Instructions :** 1) Answer to the **two** Sections should be written in **separate** books.  
2) **Neat** diagrams must be drawn **wherever** necessary.

SECTION – I

1. Define dosage form. Classify dosage form on the basis of route of administration with suitable example. Also explain need to design dosage form. **10**

OR

What are the clinical trials ? Explain phases of clinical trials in detail.

2. Answer the following (**any 5**) : **15**

- a) Briefly write about the types of containers.
- b) Explain any two methods to enhance solubility of poorly water soluble drugs.
- c) Define preformulation and explain bulk density and angle of repose.
- d) Mention applications of Radiopharmaceuticals.
- e) What is Bioavailability and Bioequivalence ?
- f) Explain Sidha and Unani as alternative system of medicine.
- g) What guidelines under the GMP to be followed by the pharmaceutical industry ?

3. Write a short note on (**any three**) : **15**

- a) Steps for new drug application
- b) NDDS
- c) Development of IP
- d) Scope of pharmaceuticals
- e) Glass as packaging material.

P.T.O.



SECTION – II

1. What is need of Granulation ? Explain different methods of granulation. **10**

OR

What is Solution ? Explain in detail the factors affecting rate of solutions.

2. Answer the following (**any 5**) : **15**

- a) What are Elixirs ? Explain two methods of preparation of elixirs.
- b) Define sieve number. What are the different grades of powder as per I.P. ?
- c) What is size reduction ? Mention the factors affecting size reduction.
- d) Explain in brief powder mixing mechanism.
- e) Write in brief about propeller mixer.
- f) Write in brief about the factors which affects rate of filtration
- g) Explain rotary drum dryer.

3. Write a short note on (**any three**) : **15**

- a) Size distribution methods
- b) Dusting powders
- c) Fluid energy mill
- d) Pouch filling machine
- e) Tumbler mixer.



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**First Year B.Pharmacy Examination, 2012**  
**1.3 : PHARMACEUTICAL INORGANIC CHEMISTRY**  
**(2008 Pattern)**

Time : 3 Hours

Max. Marks : 80

- Instructions :** 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

1. Define preservative. Explain role of preservatives as pharmaceutical necessities with examples. 10

OR

1. Give definition and classification of official waters, explain different quality control test for water as per I.P. 10
2. Attempt **any five** of the following : 15
  - a) Give classification of antioxidants.
  - b) Write properties and mode of actions of antacids.
  - c) Assay of Ferrous sulphate as per I.P.
  - d) Explain astringents.
  - e) Physiological role of I<sub>2</sub>.
  - f) Write properties and mode of actions of hydrogen peroxide solution.
  - g) Write the limit test for heavy metals as per I.P.
3. Write notes on **any three** of the following : 15
  - a) Essential and trace ions
  - b) Water for injections
  - c) Pharmaceutical application of electrolytes
  - d) Nitrous oxide gas
  - e) Sodium nitrite as an antidote.

P.T.O.



SECTION – II

4. Define and discuss about acid, base and buffers, explain how it used as pharmaceutical necessities with examples. **10**

OR

4. Give classification of gastrointestinal agents; explain pharmaceutical applications and mechanism actions of acidifying agents. **10**

5. Attempt **any five** of the following : **15**

- a) Quality control test for soft water.
- b) Explain nuclear reaction.
- c) Physiological role of protective agents.
- d) Physiological acid base balance.
- e) Application of bismuth sodium tartarate.
- f) Define antacid; write properties of aluminum hydroxide.
- g) Pharmaceutical advantages of topical preparations.

6. Write notes on **any three** of the following : **15**

- a) Application of radiopharmaceuticals.
  - b) Factors affecting purity of pharmaceuticals.
  - c) Physiological role of sodium ion (Na) and potassium ion (K) as an electrolyte.
  - d) Ammonia gas as an important inorganic gas.
  - e) Dental products.
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Second Year B.Pharmacy Examination, 2012  
(2008 Pattern)  
2.4 : PHARMACEUTICAL ORGANIC CHEMISTRY – II

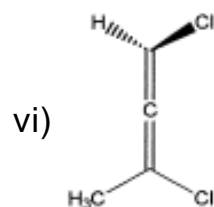
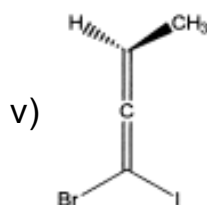
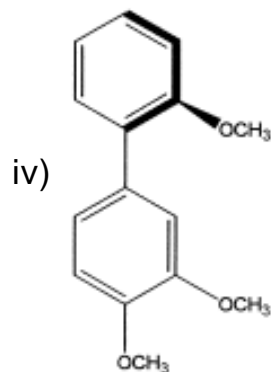
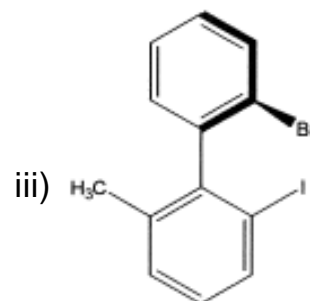
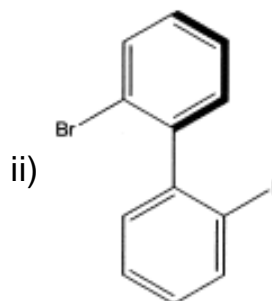
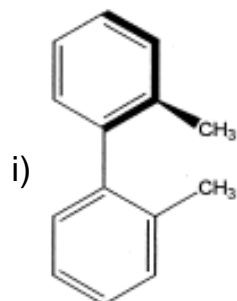
Time : 3 Hours

Max. Marks : 80

**Instructions :** Q. No. 1 and Q. No. 5 are **compulsory**. Out of the remaining attempt **any two** questions from Section – I and **any two** questions from Section II.

SECTION – I

1. a) What is racemic resolution ? Explain with suitable example resolution by diastereoisomer formation. 4
- b) Establish R and S configurations (**any four**) :



6

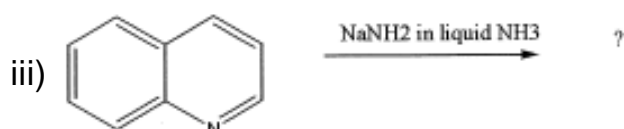
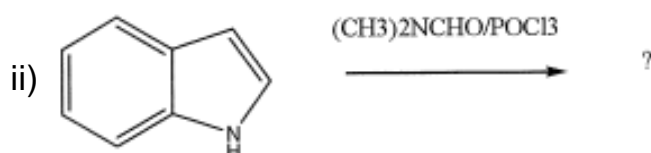
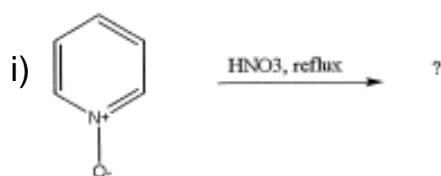
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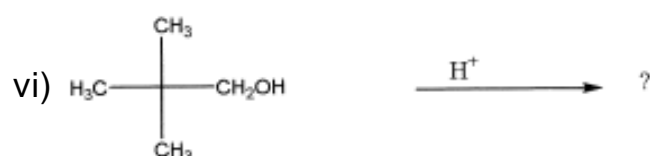
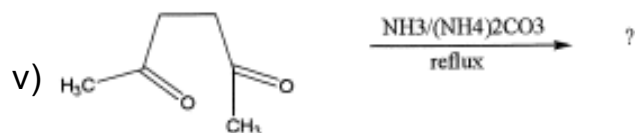
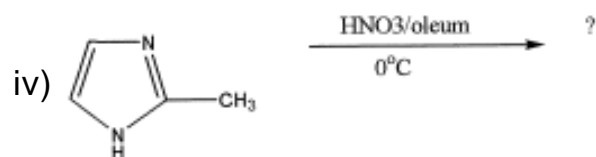


2. a) What is stereospecificity and stereoselectivity ? Explain with suitable examples. **6**  
 b) Write short notes on :  
 i) Curtin Hammet principle.  
 ii) Confirmation isomerism of 1, 2 dialkyl cyclohexanes.  
 iii) Mutarotation. **9**
3. a) Establish general and cyclic structures of D(+) glucose. **10**  
 b) Comment on structure of (+) Maltose. **5**
4. What is peptide synthesis ? Comment on solid supported peptide synthesis.  
 Comment on Tea bag method in combinatorial synthesis. **15**

## SECTION – II

5. Give one synthetic method and two characteristic reactions for the following **(any four)** :  
 i) pyridine  
 ii) isoquinoline  
 iii) furane  
 iv) pyrrole  
 v) indole. **10**
6. Predict the products giving mechanism **(any five)** :





15

7. With suitable evidences establish reaction mechanism of following rearrangements (**any three**) :

15

- i) Beckmann
- ii) Hoffman
- iii) Cope
- iv) Fries
- v) Dakin.

8. Write short notes on the following (**any three**) :

- i) Primary structure of proteins
- ii) Maryfield peptide synthesis
- iii) Structure of (+) sucrose
- iv) Conformational isomerism in cyclohexanes.

15







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**S.Y. B.Pharm. Examination, 2012**  
**2.5 : PHARMACEUTICAL ANALYSIS – I**  
**(2008 Pattern)**

Time : 3 Hours

Max. Marks : 80

- Instructions :** 1) Answers to the **two** Sections should be written in **separate** answer books.  
2) Figure to the **right** indicates **full** marks.

SECTION – I

1. Solve **any one** : **10**
- i) Name different parts of a polarimeter and state function of each part. Discuss applications of polarimetry.
  - ii) What is “Cell constant” of a conductometer ? Explain the terms specific conductance, Equivalent conductance. Discuss the effect of dilution on them.
2. Solve **any five** : **15**
- i) Discuss precipitation from homogenous solution.
  - ii) Explain any one application of redox titrations as per I.P.
  - iii) Enlist precautions to be taken during preparation of 0.1 M Perchloric acid.
  - iv) What is resonance theory of indicator action ?
  - v) Explain the concept of “Masking-Demasking”.
  - vi) What are advantages of organic precipitants in gravimetry ?
3. Write short notes on (**any three**) : **15**
- i) Assay of organically bound iodine
  - ii) Reference electrodes
  - iii) Tests of significance
  - iv) Cotton effect
  - v) Metallochrome indicators.

P.T.O.



SECTION – II

4. Solve **any one** : **10**
- i) What are precipitation titrations ? Discuss Gay Lussacs method.
  - ii) Classify redox indicators. Add a note on Potassium bromate titrations.
5. Solve **any five** : **15**
- i) Write the procedure to determine specific optical rotation.
  - ii) Classify “determinate errors” with suitable examples.
  - iii) Explain applications of conductometry.
  - iv) Discuss methods of determination of organomercurials.
  - v) What is the importance of standard deviation in analytical determinations ?
  - vi) Write the method of standardization of 0.05 M EDTA solution.
6. Write short notes on (**any three**) : **15**
- i) Kjeldahl’s method
  - ii) Fajan’s indicators
  - iii) Normal Hydrogen Electrode
  - iv) Sodium nitrite titration
  - v) Ceriometry.
-



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**Third Year B.Pharmacy Examination, 2012**  
**3.2 : PHARMACEUTICAL BIOTECHNOLOGY**  
**(2008 Pattern)**

Time : 3 Hours

Max. Marks : 80

- Instructions :** 1) Question No. 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** books.
- 3) Neat diagrams must be drawn **wherever** necessary.
- 4) Black figures to the **right** indicate **full** marks.

SECTION – I

1. What are the different types of media used in animal cell culture ? Elaborate on the role of serum in animal cell culture media. **10**
2. Enlist some genetic disorders and recent approaches to treat them. **8**  
Give an account of various cloning vectors used in r-DNA technology. **7**
3. Enumerate various advantages of cell suspension culture over callus culture. **8**  
What is PCR ? Give details of the techniques with its applications. **7**
4. Short notes on **any 3** : **15**
  - a) Applications of plant tissue culture
  - b) Role of Ligases
  - c) Gel Electrophoresis
  - d) DNA finger printing.

P.T.O.



SECTION – II

5. Define fermentation. Enlist the various criteria to be considered in designing of a fermentor. Draw a neat schematic diagram of a fermentor. **10**
6. What is the difference traditional and recombinant vaccines ? Give details of preparation of any one recombinant vaccine. **8**
- Give details of the various parameters used in evaluation of waste and detail on Activated sludge process. **7**
7. Enlist the various methods of microbial strain improvement. **8**
- Give details of the fermentation and down stream processing of tetracycline. **7**
8. Short notes on **any 3**: **15**
- a) Various sterilization techniques used for glass wares
  - b) Various methods of product concentration
  - c) Salvage and denovo pathway
  - d) Edible vaccines.
-



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Third Year B.Pharmacy Examination, 2012  
3.3 : MEDICINAL CHEMISTRY – I  
(2008 Pattern)

Time : 3 Hours

Max. Marks :80

- Note :** 1) *All questions are compulsory.*  
2) *Correct structures and neat diagrams must be drawn wherever necessary.*  
3) *Answers to the two Sections should be written in separate books.*  
4) *Figures to right indicate full marks.*

SECTION – I

I. Solve **any one**

- a) Discuss the SAR, MOA of Cholinesterase enzyme inhibitors with their therapeutic uses. **10**
- b) Classify antihypertensive agents. Discuss the SAR, MOA of Calcium channel blockers. **10**

II. Solve **any five** : **15**

- 1) Discuss the Chemistry, Pharmacological actions of Cardiotonics.
- 2) Outline the synthesis of Furosemide.
- 3) Salicylic acid is an antibacterial agent while p-hydroxy benzoic acid is inactive. Explain.
- 4) Give an account of forces involved in Drug Receptor interactions.
- 5) Outline the synthesis of Salbutamol.
- 6) Discuss the SAR and MOA of Statins as Antihyperlipidemic agents.
- 7) Write the stereochemical aspects of drug action.

P.T.O.



- III. Write short notes (**any three**) : 15
- i) Beta blockers.
  - ii) Anti arrhythmic agents.
  - iii) Neuromuscular blocking agents.
  - iv) Loop diuretics.
  - v) Ferguson principle.

SECTION – II

- IV. Solve **any one** : 10
- a) Discuss the SAR, MOA of tricyclic antipsychotic agents. 10
  - b) Classify anticonvulsants. Discuss the Chemistry, SAR and MOA of any two classes of anticonvulsant agents. 10
- V. Solve **any five** : 15
- 1) Outline the synthesis of Diazepam.
  - 2) Classify oral hypoglycemic agents with example.
  - 3) Outline the synthesis of Imipramine.
  - 4) Discuss the SAR and MOA of Local Anaesthetics.
  - 5) Discuss the Selective Serotonin reuptake inhibitors.
  - 6) Discuss in brief Preanaesthetic medication.
  - 7) Write in brief the Chemistry, MOA of Barbiturates.
- VI. Write short notes (**any three**) : 15
- a) CNS stimulants
  - b) Prodrugs
  - c) Antiparkinsonism agents
  - d) Diagnostic agents
  - e) Insulin therapy.



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**Third Year B.Pharmacy Examination, 2012**  
**3.4 : PHARMACEUTICAL ANALYSIS – II**  
**(2008 Pattern)**

Time : 3 Hours

Max. Marks : 80

- Instructions:** 1) **All** questions are **compulsory**.  
2) Answer to the **two** Sections should be written in **separate** answer books.  
3) **Neat** diagram must be drawn **wherever** necessary.

SECTION – I

1. Describe in detail instrumentation of typical double beam flame spectrophotometer for atomic absorption determination. **10**

OR

Describe in detail various detectors used in UV, V is spectrophotometry and what are the ideal requirements of the detector.

2. Attempt **any five** questions from following : **15**
- What are the specialized atomization techniques ? Describe any one.
  - List out interferences in atomic absorption spectroscopy and describe chemical interfere in detail.
  - Describe laminar flow flame atomizers.
  - Describe different applications of refractometry.
  - Describe various deviations to Beer's Law.
  - Explain with example excitation and emission fluorescence spectra.

3. Write note on **any three** : **15**
- Background correction based on Zeeman effect
  - Comparative aspects of atomic absorption and atomic emission spectroscopy.
  - Advantages and applications of fluorimetry
  - Aspects of fluorescence quenching
  - Specific and molar refraction.

P.T.O.



SECTION – II

4. Classify column chromatographic techniques and describe system suitability parameters and factors affecting column performance. **10**

OR

Classify electroanalytical techniques and describe instrumentation and applications of Amperometry.

5. Attempt **any five** questions from following : **15**

- a) Describe various development techniques used in paper chromatography.
- b) Explain in brief centrifugal TLC and Horizontal TLC.
- c) Explain factors affecting thermo gravimetric analysis.
- d) Describe solvent system used in TLC.
- e) Describe partition column chromatographic techniques.
- f) Describe heat flux DSC technique.
- g) Describe HPTLC instrumentation.

6. Write note on **any three** : **15**

- a) Power compensated DSC
  - b) Coulometric Analysis
  - c) Principle involved in the paper chromatography
  - d) Selection of chromatographic methods of analysis
  - e) Principle of Electrophoresis.
-





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**Final Year B.Pharmacy Examination, 2012**  
**4.7: PHARMACEUTICAL JURISPRUDENCE**  
**(2008 Pattern)**

Time : 3 Hours

Max. Marks : 80

***Instruction : All the questions are compulsory.***

SECTION – I

1. Write administrative bodies under Drug and Cosmetic Act. Discuss functions, constitution of DTAB, CDL and DCC under D and C Act 1940.

OR

1. Write objective of Pharmacy Act. Discuss in detail constitution and functions of PCI. 10
2. Attempt **any five (3 marks each)** : 15
- a) Write importance of DPCO and formula for calculation of retail price of drug.
  - b) Define Adulterated drug.
  - c) What are objectives of Drug and Magic Remedies Act ?
  - d) Enlist advertisement permitted by act.
  - e) What are consumer forums ?
  - f) Write in brief importance of cyber law.
  - g) Write requirements of drug store under D & C Act 1940.

P.T.O.



3. Attempt **any three** (each **5** marks) : **15**
- a) Write GMP requirements for quality control and personnel.
  - b) What are conditions for license for manufacturing of drugs other than Schedule X ?
  - c) What are objectives of Narcotic Drugs and Psychotropic Substances Act 1985 ? Define illicit traffic.
  - d) Write short note on Industrial Development and Regulation Act, 1951.
  - e) Write brief account of Government analyst.

SECTION – II

4. Write salient features of Indian Patents Act, 1970 with latest amendments. **10**
- OR

Elaborate different forms of IPR.

5. Attempt **any five** (3 marks **each**) : **15**
- a) Explain criteria for obtaining patent.
  - b) What is term of patent ?
  - c) What are provisional and complete specifications ?
  - d) Why generic drugs are costlier than innovator drugs ?
  - e) Explain Exclusive Marketing Right.
  - f) Write provisions of compulsory license.
  - g) Enlist criteria for opposition to Grant of Patent.
6. Attempt **any three** (each **5** marks) : **15**
- a) Explain patent infringement.
  - b) What are NDA, ANDA and SNDA ? Explain NDA.
  - c) Write significance and contents of IND.
  - d) Write short note on Therapeutic Goods Administration (TGA).
  - e) Write brief account of ICH.
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**Fourth Year B.Pharmacy Examination, 2012**  
**PHARMACEUTICS – IV**  
**(2004 Pattern)**

Time : 3 Hours

Max. Marks : 80

**Instructions :** 1) Question No. **1**(one) and **5** (five) 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** books.

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

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

SECTION – I

1. Explain in detail the contact lenses and contact lens care products. **10**
2. Explain in detail the preformulation of parenteral drug substances. **15**
3. Define optimization. Discuss the significance of optimization. Explain different optimization techniques. **15**
4. Write short notes on (**any three**) : **15**
  - a) Total Parenteral Nutrition
  - b) Glass as a packaging material
  - c) Types and stages of validation
  - d) Environmental control zones
  - e) Quality control of injections.

P.T.O.



SECTION – II

5. What are aerosols ? Explain in detail components of aerosols. **10**
6. What are controlled release dosage forms ? Explain in detail various types of controlled release dosage forms. **15**
7. Explain collection, processing and storage of whole human blood. Explain concentrated human RBCs. **15**
8. Write short notes on (**any three**) : **15**
- a) Parenteral implants
  - b) Transdermal drug delivery systems
  - c) Quality control of aerosols
  - d) Prerequisites of drug candidates
  - e) Coacervation phase separation.
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**Fourth Year B.Pharmacy Examination, 2012  
PHARMACOLOGY – III (Including Clinical)  
(2004 Pattern)**

Time : 3 Hours

Max. Marks : 80

- Instructions :**
- 1) Question No. 1 and 5 are **compulsory**.
  - 2) Out of remaining attempt **any two** from Section I and **any two** from Section II.
  - 3) Answer to the Section I and Section II should be on **separate** answer book.
  - 4) Draw a neat labeled diagram **wherever** necessary.
  - 5) Figures to the **right** indicates **full** marks.

SECTION – I

1. Classify anti-anginal drugs. Discuss the mechanism of action, pharmacology, adverse effect and uses of nitrates. 10
2. a) Describe the antibacterial spectrum, pharmacological actions, therapeutic uses and adverse effects of benzylpenicillin. 8  
b) Explain in detail the mechanism of action, pharmacology and adverse effects of Methotrexate. 7
3. a) Explain in detail mechanism of action, adverse effects and therapeutic uses of nitrogen mustards. 8  
b) Describe in detail any one antiviral drug used for prophylaxis and treatment of HIV infection. 7
4. Write short note on **any three** : 15
  - a) H<sub>2</sub>-blockers
  - b) Classify antifungal drugs
  - c) Rational approach of cancer treatment
  - d) Bacterial resistance
  - e) Antiemetic drugs.

P.T.O.



SECTION – II

5. Define bioassay. Discuss the types, advantages and disadvantages of various methods of bioassay. **10**
6. a) Discuss in detail prevention and treatment of poisoning. **8**  
b) Discuss the bioassay of acetylcholine and histamine. **7**
7. a) Write a note on ethical issues in clinical trials. **8**  
b) Explain mechanisms of drug-drug interactions with suitable examples. **7**
8. Write short note on **any three** : **15**
- a) Insulin bioassay
  - b) Lead poisoning
  - c) Drug information service
  - d) Mutagenicity and teratogenicity
  - e) Good clinical practice.



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**First Year B.Pharmacy Examination, 2012**  
**1.4 : PHARMACEUTICAL ORGANIC CHEMISTRY – I**  
**(2008 Pattern)**

Time : 3 Hours

Max. Marks : 80

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

SECTION – I

1. Explain in brief about factors affecting electron availability with suitable examples. **10**

OR

Explain the substitution Nucleophilic unimolecular reaction, with mechanism and stereochemistry giving suitable examples. **10**

2. Solve **any five** : **15**

- a) Why chloroacetic acid is stronger acid than acetic acid ?
- b) Define and illustrate resonance effect.
- c) Compare the stability of primary, secondary and tertiary carbanion ion.
- d) Explain Huckel's rule of aromaticity with suitable example.
- e) Explain with example Geometric isomerism.

P.T.O.



f) Draw the structure of following compounds :

i) 4-Amino -3-Chloropentanal

ii) 1-Bromo-2-Methylpropane-2 diol

iii) Methyl Butanoate

g) Comment briefly on the orientation of substitution in substituted benzene derivatives.

3. Answer the following **any three** :

**15**

a) Write a short note on S<sub>N</sub>i reaction.

b) Write a short note on Electrophilic substitution in Napthalene.

c) Write a short note on substitution Nucleophilic aromatic.

d) Starting from benzene or toluene, how will you prepare the following. (give only the reaction equations and conditions)

i) p-toluidine

ii) 1,3, dinitrobenzene

e) Write a note on optical isomerism. Explain it with suitable example.

#### SECTION – II

4. What are elimination reactions ? Discuss the mechanism, stereochemistry, kinetics and orientation involved in elimination reaction.

**10**

OR

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





5. Solve **any five** :

15

- a) Alkynes are less reactive than alkenes for Electrophilic addition reaction. Give reason.
- b) Phenol is more acidic than alcohol. Explain.
- c) Explain hydrogenation reaction with C-C multiple bond.
- d) Arrange the following compounds in order of increasing acidity, (i) Acetic acid (ii) Chloroacetic acid (iii) Formic acid.
- e) Describe how primary, secondary and tertiary amines can be separated ?
- f) What will happen when acetaldehyde reacts with phenyl hydrazine and  $\text{LiAlH}_4$  ?
- g) Give any two methods of synthesis of carboxylic acids.

6. Write short notes on **any three** :

15

- a) Dieckman condensation
- b) Reformatski reaction
- c) Preparation of sulphonic acid
- d) Ozonolysis
- e) Reactions of carboxylic acid derivatives.



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**First Year B.Pharmacy Examination, 2012  
1.5 : HUMAN ANATOMY & PHYSIOLOGY  
(2008 Pattern)**

Time : 3 Hours

Max. Marks : 80

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

SECTION – I

1. Draw a neat labelled diagram of conduction system of heart and explain in detail conduction system of heart. 10

OR

Define internal and external respiration. Explain the gaseous exchange at lung and tissue level. 10

2. Solve **any five** : 15

- a) Discuss structure of plasma membrane.
- b) Explain structure of nervous tissue.
- c) What are different types of WBCs ? Give their function.
- d) Give composition and functions of lymph.
- e) Explain functions of liver.
- f) Enumerate the organs of digestive system and write a note on secretions and functions of stomach.
- g) Explain role of renin – angiotensin system in regulation of blood pressure.

P.T.O.



3. Write short notes **any three**. 15
- a) ABO and Rh system
  - b) ECG
  - c) Lymph node
  - d) Physiology of respiration
  - e) Transfer of materials across plasma membrane.

SECTION – II

4. Explain in detail menstrual cycle. 10

OR

Draw a neat labelled diagram of internal structure of ear and explain physiology of hearing. 10

5. Solve **any five** : 15
- a) Explain structure of nephron.
  - b) Explain structure of spinal cord.
  - c) Enlist endocrine glands. Explain hormones of pituitary gland.
  - d) Explain histology of skeletal muscle tissue.
  - e) Draw a neat labelled diagram of longitudinal section of skin.
  - f) Enumerate cranial nerves with their functions.
  - g) Explain neurotransmission.

6. Write short notes on **any three**. 15
- a) Physiological role of FSH and LH
  - b) Sperm
  - c) Structure and function of kidney
  - d) Internal structure of eye
  - e) Reflex arc.



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Seat No.	
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**First Year B.Pharmacy Examination, 2012  
1.6 : PHARMACEUTICAL ENGINEERING  
(2008 Pattern)**

Time : 3 Hours

Max. Marks :80

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

SECTION – I

1. Explain various modes of heat transfer and derive an equation for heat transfer by conduction. **(10)**

OR

Define evaporation. List different types of evaporators. Discuss multiple effect evaporator in detail.

2. Answer the following (**any 5**) : **(15)**
- Forced circulation evaporators
  - Pan Evaporator
  - Use of humidity chart
  - Scaling in heat exchangers
  - Explain Double Pass Heat Exchanger
  - Horizontal tube evaporator
  - Explain any one theory of crystal growth.

P.T.O.



3. Write short notes on (**any 3**) : **15**
- a) Mier's Theory of Supersaturation.
  - b) Plate Heat Exchanger.
  - c) Any one type of boiler.
  - d) Caking of crystals.
  - e) Falling film evaporator.

SECTION – II

4. What is corrosion ? Enlist various types of corrosion and explain in detail methods to combat corrosion. **(10)**

OR

What is extraction ? Give various types of extraction processes and explain in detail principle construction and working of Basket extractor.

5. Answer the following (**any 5**) : **(15)**
- a) Rotocel extractor's working.
  - b) Pitot tube.
  - c) Rotameter
  - d) Bubble-cap plate column
  - e) Enlist steps in lyophilization.
  - f) Liquid-liquid extraction.
  - g) Orifice meter
6. Write short notes on (**any 3**) : **(15)**
- a) Bernoulli's Theorem
  - b) Inclined manometer
  - c) Theories of Interphase mass transfer
  - d) Fluidized Bed dryer
  - e) McCabe Thiele approach.



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Seat No.	
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**First Year B.Pharmacy Examination, 2012**  
**1.7: COMPUTER APPLICATIONS AND BIO-STATISTICS**  
**(2008 Pattern)**

Time : 3 Hours

Max. Marks : 80

- Instructions:**
- 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

1. A) Note on testing of hypothesis with example. 2
- B) Following data gives age in years in case of child death. Find the average age.

<b>Age in years</b>	10	20	30	40	50	60	70	80
<b>Number of Deaths</b>	65	87	56	76	98	37	82	54

4

- C) From the following data calculate mode

<b>X</b>	1	2	3	4	5	6	7
<b>Y</b>	65	87	56	76	98	63	87

4

OR

1. A) Note on Presentation of data. 2
- B) Find mean and standard deviation from following data. 4

<b>Marks</b>	0-10	10-20	20-30	30-40	40-50
<b>Frequency</b>	45	36	76	87	45

- C) Calculate coefficient of variation from the following data :

X – 46, 37, 28, 65, 34, 46, 98, 36, 73, 88, 56

4

P.T.O.



2. A) A problem in statistics is given to two students for solving. Probability that first student will solve the problem is  $\frac{5}{8}$  and probability that second student will solve the problem is  $\frac{8}{3}$ . Find the probability that 6
- i) Problem will solved
  - ii) Problem will not solved

B) For certain bivariate data the two lines of regression are

$$5x - 6y + 90 = 0$$

and  $15x - 8y - 130 = 0$

Find which line is Y on X and which is X on Y. Find means of  $\bar{X}$  and  $\bar{Y}$  and correlation coefficient 'r'. 5

C) Explain various methods of sampling. 4

3. A) Given the following data –

	X	Y
<b>Arithmetic mean</b>	36	85
<b>Standard deviation</b>	11	8

4

Obtain two lines of regression and estimate value of X when Y = 43.

B) Five medicines for particular disease were ranked by two analysts as follows.

Medicine	1	2	3	4	5
<b>Ranks by 1<sup>st</sup> analyst</b>	2	4	9	3	2
<b>Ranks by 2<sup>nd</sup> analyst</b>	5	6	8	2	1

5

C) Describe different methods for Computation of coefficient of correlation. 6



SECTION – II

4. A) Explain different characteristics of computers. **5**  
B) Note machine language. **2**  
C) Elaborate binary numbers system and its drawback. **3**  
OR
4. A) Explain types of operating system. **5**  
B) Explain compiler and four phases in compilation. **5**
5. A) Give algorithm for calculation and printing of 23, 65, 38, 87 and 37. **6**  
B) Discuss cylinder and ball printer. **4**  
C) Detail about memory in computers. **5**
6. A) Convert  $(001101101)_2$  to decimal and  $(8634)_{10}$  to binary form. **5**  
B) Attempt following : **10**  
a) Differentiate between High level and Low level language.  
b) Explain application of computers in hospital and clinical pharmacy.







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First Year B.Pharmacy Examination, 2012  
PHARMACOGNOSY – I  
(2004 Pattern)

Time : 3 Hours

Max. Marks : 80

- Instructions:** 1) Question No. 1 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** indicate **full** marks.

SECTION – I

- I. a) Define evaluation of crude drug. Describe in detail Microscopical evaluation. 6  
b) Write a note on Stomata. 4
- II. a) Give the advantages of the cultivation of crude drugs and explain the factors affecting the cultivation of medicinal plants. 8  
b) Describe the morphology and anatomy of leaves. 7
- III. a) Define adulteration and explain how faulty collection and faulty processing affects the quality of crude drug. 8  
b) Discuss characterization and uses of cellulose and cellulose derivatives. 7
- IV. Write short notes (**any three**) : 15
- i) Natural sweeteners  
ii) Types of Stomata.  
iii) Asava and Arishta.  
iv) Extractive values.

P.T.O.



SECTION – II

- V. a) Explain the significance of Ash Value, and Foreign organic matter in authentication of crude drugs. **6**
- b) Explain and differentiate between Roots and Rhizomes. **4**
- VI. a) What are various sources of starch and they are manufactured from these sources ? **8**
- b) What are carbohydrates and give their detail classification and chemistry ? **7**
- VII. a) Define Agar. Describe its method of preparation and uses. **9**
- b) Add a exhaustive note and Ergastic cell contents. **6**
- VIII. Write short notes (**any three**) : **15**
- a) Gibberelins.
- b) Auxins.
- c) Methods of determining moisture content.
- d) Ayurvedic formulations.



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Seat No.	
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**Second Year B.Pharmacy Examination, 2012**  
**2.1 : PHYSICAL PHARMACY (2008 Pattern)**

Time : 3 Hours

Max. Marks : 80

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

SECTION – I

1. Explain different binding forces between molecular gaseous state. 10  
OR  
Explain the stabilization of colloidal system. 10
2. Answer **any five (3 marks each)** : 15
- a) What is phase rule ? Define each term in phase rule.
  - b) What is glass transition temperature ? Give its significance.
  - c) What are critical constants ? How are they determined.
  - d) Define and differentiate between sedimentation potential and streaming potential.
  - e) Define and differentiate between specific and equivalent conductance.
  - f) Define and differentiate between kraft point and cloud point.
  - g) What is meant by protective colloid ? Explain with suitable examples.
3. Write short note on **(any three)** : 15
- a) Methods of crystal analysis.
  - b) BCS classification.
  - c) Arrhenius theory of electrolytes.
  - d) Solute-solvent interactions.
  - e) Colligative properties.

P.T.O.



SECTION – II

4. What is the rate determining step in reaction ? Explain using suitable example. **10**

OR

Define specific surface area. Explain method for determining surface area.

5. Answer **any five (3 marks each)** : **15**

- a) Explain the derived properties of powders.
- b) Derive an equation of spreading coefficient and give its significance.
- c) Discuss the factors affecting flow of powders.
- d) Discuss the rheology of disperse systems.
- e) Give pharmaceutical applications of Rheology.
- f) Define and differentiate between first order and pseudo first order reaction with example.
- g) Define energy of activation. Give its significance.

6. Write short note on **(any three)** : **15**

- a) Dissolution Model.
- b) Particle size and particle size distribution.
- c) Adsorption Isotherm.
- d) Thixotropy.
- e) Complex reactions.



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Seat No.	
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**Second Year B.Pharmacy Examination, 2012**  
**2.2 : PHARMACEUTICAL MICROBIOLOGY AND IMMUNOLOGY**  
**(2008 Pattern)**

Time : 3 Hours

Max. Marks : 80

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

SECTION – I

1. Enlist different viruses causes infection to human. Write in detail multiplication and cultivation of human viruses. 10

OR

Why we study physical conditions required for growth of bacteria ? Describe the classification of bacteria depending upon physical requirement. 10

2. Answer the following (**any five**) : 15

- a) State the reason for staining of bacteria.
- b) Discuss the role of Sir Robert Koch in the development of microbiology.
- c) Differentiate between vegetative cell and endospore.
- d) State the reason for using cedar wood oil under 100x objective.
- e) Enlist the media used in MLT for detection of specific microorganisms.
- f) What is the importance of aspergillus ?
- g) Write note on 'Rickettsia'.

3. Write a note on (**any three**) : 15

- a) Spoilage of pharmaceutical products by microorganism.
- b) Actinomycetes
- c) Dermatophytes
- d) Phase contrast microscopy
- e) Identification of bacteria.

P.T.O.



SECTION – II

4. What is sterilization ? Classify the methods of sterilization and give its mode of action. Discuss the working, applications and limitations of autoclave. **10**

OR

What are vaccines ? Describe in detail general method of vaccine production. **10**

5. Answer the following (**any five**) : **15**

- a) Differentiate in between Exotoxin and Endotoxin.
- b) Comment on 'Bacteria are good friends of human being'.
- c) Give the different properties of antigen.
- d) How will you consider disinfectant is ideal.
- e) Write note on 'phagocytosis'.
- f) Enlist different air sampling methods. Explain any one method.
- g) Give the long form of
  - i) ATCC
  - ii) NCIB
  - iii) NCTC

6. Write a note on (**any three**) : **15**

- a) Microbial assay of antibiotics
- b) Type I hypersensitivity
- c) Describe four chain models of antibody and different classes of antibodies.
- d) ELISA
- e) Factors affecting disinfectant action.



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Seat No.	
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**Second Year B.Pharmacy Examination, 2012**  
**2.3 : PHARMACEUTICAL BIOCHEMISTRY**  
**(2008 Pattern)**

Time : 3 Hours

Max. Marks : 80

- Instructions :** 1) Question Nos. **one** and **five** are **compulsory**. Out of the remaining attempt **any two** questions from Section I and **any two** questions from Section II.
- 2) Answers to the **two** Sections should be written in **separate** books.
- 3) Neat diagrams must be drawn **wherever** necessary.
- 4) Black figures to the **right** indicate **full** marks.

SECTION – I

1. What are lipids ? Comment on classification and explain  $\beta$ oxidation of fatty acids. 10
2. Write short notes on **any three** : 15
- a) Biosynthesis of ketone bodies.
  - b) Enzyme classification.
  - c) Transamination.
  - d) TCA cycle and its significance.
  - e) Catabolism of Purines.
3. Explain **any two** : 15
- a) Structure of protein
  - b) Structure and function of Cholesterol.
  - c) Biosynthesis of Pyrimidines.

P.T.O.





4. Comment on **any three** : 15
- a) Enzyme inhibition.
  - b) Oxidative phosphorylation.
  - c) Biochemical functions of Niacin.
  - d) Urea cycle reactions.
  - e) Note on mitochondria.

SECTION – II

5. Write a detail note on Kidney function test. 10
6. Write short note on **any three** : 15
- a) Nutritional diseases.
  - b) Biochemical functions of Riboflavin.
  - c) Marker Enzymes and its diagnostics application.
  - d) ELIZA assay.
  - e) PCR.
7. Explain **any two** : 15
- a) DNA replication.
  - b) HMP shunt and its significance.
  - c) RIA.
8. Comment on **any two** : 15
- a) Genetic disorders of nucleic acid metabolism.
  - b) Transcription and its inhibitor.
  - c) Structure and function of Vitamin D.



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Seat No.	
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**Second Year B.Pharmacy Examination, 2012**  
**2.6 : PHARMACOGNOSY – I**  
**(2008 Pattern)**

Time : 3 Hours

Max. Marks : 80

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

SECTION – I

1. Explain in detail Botanical system of classification with detail account of Natural system of classification. 10  
OR  
Give importance of quality control of crude drugs. Explain preliminary phytochemical screening in detail. 10
2. Answer the following (**any five**) : 15  
a) Write contribution of Charak and Sushruta to the Indian system of medicine.  
b) Define Palisade ratio and Vein Islet no.  
c) Describe various fractures of bark.  
d) Write a note on epidermal trichomes.  
e) Describe the anatomy of seed.  
f) What are vascular bundles ? Give its types.  
g) Write a note on plant growth inhibitor.
3. Write a short note on (**any three**) : 15  
a) Pest and pest control  
b) Ergastic cell content  
c) Moisture content  
d) Methods of cultivation.

P.T.O.



SECTION – II

4. What are Mucilages ? Give pharmacognostic account of Japanese Isinglass. **10**

OR

What are starches ? Describe various types of starch and write the importance of starch in Pharmaceutical industry. **10**

5. Answer the following **(any five)** : **15**

a) Define extraction. Describe continuous hot extraction.

b) Differentiate between Wool and Jute by chemical test.

c) Write a note on primary metabolites.

d) Write syn, B.S., C.C. and uses of Tragacanth.

e) Write syn, B.S., C.C. and uses of Acacia.

f) Melissa as a herbal dietary supplement.

g) Explain method of preparation and uses of inulin.

6. Write a short note on **(any three)** : **15**

a) Pectin

b) Silk as a natural fiber

c) Natural sweeteners

d) Tomato and Spinach.



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Seat No.	
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**Second Year B. Pharmacy Examination, 2012**  
**2.7 : PHARMACOLOGY – I (Including Pathophysiology)**  
**(2008 Pattern)**

Time : 3 Hours

Max. Marks : 80

- Note :** 1) *All questions are compulsory.*  
2) *Answer to the two Sections should be written in separate answer books.*  
3) *Neat labelled diagram must be drawn wherever necessary.*  
4) *Black figures to the right indicate full marks.*

SECTION – I

1. Define hyperlipidaemia, enlist types of hyperlipidaemia and explain drug treatment of it. 10

OR

Discuss in detail process of renal excretion of drugs. Add a note on factors affecting renal excretion of drugs.

2. Solve **any five** of the followings : 15

- i) Explain how enzyme induction and enzyme inhibition can affect drug metabolism.
- ii) Explain clinical significance of half life of drug
- iii) Describe placental barrier
- iv) Classify anti-histaminics with examples
- v) Write a note on essential drugs
- vi) Describe types of adverse drug reactions
- vii) Discuss the drug treatment in pregnancy.

3. Write a note on the following (**any three**) : 15

- i) Clinical Trials
- ii) Synthetic reactions involved in biotransformation of drugs
- iii) Haematinics
- iv) Types of receptors
- v) Patient related factors affecting drug distribution.

P.T.O.



SECTION – II

4. Define asthma. Discuss the pathophysiology of bronchial asthma. 10  
OR  
Discuss the pathophysiology of cardiac arrhythmias.
5. Solve **any five** of the followings : 15
- i) Write types and complications of diabetes mellitus.
  - ii) Discuss the pathophysiology of leprosy.
  - iii) Discuss the clinical features and pathophysiology of schizophrenia.
  - iv) Discuss the pathogenesis of shock.
  - v) Explain pathophysiology of acute inflammation.
  - vi) Discuss etiology and clinical features of epilepsy.
  - vii) Discuss in brief pathophysiology of sexually transmitted diseases.
6. Write a note on the following (**any three**) : 15
- i) Pathophysiology of tuberculosis.
  - ii) Clinical features and causes of chronic renal failure.
  - iii) Types and clinical features of depression.
  - iv) Pathogenesis of congestive heart failure.
  - v) Hepatitis.
-



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Seat No.	
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**Second Year B.Pharmacy Examination, 2012  
PHARMACEUTICAL ENGINEERING  
(2004 Pattern)**

Time : 3 Hours

Max. Marks : 80

- Instructions :**
- 1) Q.No. 1 & 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) Black figures to the **right** indicate **full** marks.

SECTION – I

1. Explain the principle, construction and working of falling film evaporator and forced circulation evaporator. 10
2. Answer the following :
  - a) Explain the construction and working of multiple effect evaporator. 5
  - b) Explain the tubular heat exchangers as heat transfer equipment. 5
  - c) Explain the construction and working of any one type of boiler. 5
3.
  - a) Explain the heat transfer during pool boiling. 5
  - b) Explain the Kirchoff's law. 5
  - c) Explain the construction and working of Swenson-Walker crystallizer. 5
4. Write short notes on (**any three**) : 15
  - a) Water de-ionization
  - b) Mechanical steam trap
  - c) Central air conditioning
  - d) Mier's supersaturation theory.

P.T.O.



SECTION – II

5. Explain the principle of fractional distillation, how plate efficiency is calculated ? **10**
6. Answer the following :
- a) Explain the principle of liquid liquid extraction. **5**
  - b) Explain the principle and working of centrifugal distillation. **5**
  - c) Explain the working of extraction battery. **5**
7. a) Explain the different factors affecting drying of solids, also explain the behavior of solid during drying. **10**
- b) Explain the different factors affecting corrosion. **5**
8. Write short notes on (**any three**) : **15**
- a) Molecular diffusion in gases.
  - b) Triangular diagram
  - c) Bernoulli's theorem
  - d) Rotocel extractor.



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Seat No.	
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**Third Year B.Pharmacy Examination, 2012**  
**3.1 : PHARMACEUTICS – II (2008 Pattern)**

Time : 3 Hours

Max. Marks : 80

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

SECTION – I

1. What are the factors affecting quality of film in film coating ? 10  
OR

Discuss the principles and equipments involved in filling of Hard gelatin capsules.

2. Solve the following (**any five**) : 15
- Discuss the difficulties in filling capsules.
  - Give a comparative account of single punch and rotary tablet compression machine.
  - What are Co-processed diluents ? Explain with example.
  - Define and classify excipients.
  - Write note on disintegrants in tablet.
  - Explain IPQC test for tablets.
  - Explain concept of stability studies.
3. Write short note on (**any three**) : 15
- Preparation of hard gelatin capsule shell, standards and defects.
  - Container-closure compatibility testing.
  - Tablet manufacturing defects, reasons and remedies.
  - Extrusion and spheronization.
  - Selection criteria of excipients.

P.T.O.





SECTION – II

4. Discuss different theories of emulsification in detail. 10

OR

Discuss the formulation and evaluation of shampoos in detail.

5. Solve **any five** : 15

- a) Explain Ostwald ripening.
- b) Differentiate between flocculated and deflocculated system.
- c) Explain the concept of creaming, cracking and coalescence.
- d) Differentiate between cosmetic and drug formulation.
- e) Differentiate between anti perspirants and deodorants.
- f) Explain chemical stability of emulsion with example.
- g) Explain the phenomenon of wetting and sedimentation in suspensions.

6. Write short note on **(any three)** : 15

- a) Lipsticks.
- b) Sunscreen preparation.
- c) Semisolid bases.
- d) Emulsifier and choice of emulsifier.
- e) Cosmeceutical advances.



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Seat No.	
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**Third Year B.Pharmacy Examination, 2012**  
**3.5 :PHARMACOLOGY – II**  
**(2008 Pattern)**

Time : 3 Hours

Max. Marks : 80

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

SECTION – I

1. Classify anti-cholinestrase drugs. Write in detail about Pharmacotherapy of irreversible anti-cholinestrase poisoning. **10**

OR

1. Classify sedative Hypnotics. Write a note on Pharmacology of Benzodiazepines. **10**
2. Answer **any five** : **15**
- 1) Metabolism of Alcohol
  - 2) Classify NSAIDs
  - 3) Explain the properties of an Ideal Anaesthetic
  - 4) Neuropharmacology of epilepsy
  - 5) Classify sympathomimetic drugs
  - 6) Advantages of Benzodiazepines over Barbiturates
  - 7) Brief note on Myasthenia gravis.

P.T.O.



3. Write short notes on **any three** : 15
- 1) Treatment of Parkinsons disease
  - 2) Neuromuscular Blocking agents
  - 3) Dales vasomotor reversal.
  - 4) CNS stimulants and Nootropic drugs.
  - 5) Opoird dependence.

SECTION – II

4. Classify bronchodilator drugs. Give rational approaches of pharmacotherapy of asthma. 10

OR

4. Explain the Physiological and Pharmacological actions of Glucocorticoids. 10

5. Answer **any five** : 15

- 1) Classify anti asthamatics.
- 2) Mode of action of thyroid hormones.
- 3) Physiological actions of Insulin.
- 4) Explain the mechanism of action of local anesthetics.
- 5) Classify anti-ulcer agents.
- 6) Mechanism of action of Allopurinol.
- 7) Classify Anti-tussives.

6. Write short notes on **any three** : 15

- 1) Pharmacotherapy of gout
- 2) Oral contraceptives
- 3) Corticosteroid antagonist
- 4) Pharmacotherapy of cough
- 5) Drugs regulating calcium homeostasis.



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Seat No.	
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Third Year B.Pharmacy Examination, 2012  
3.6 PHARMACOGNOSY – II  
(2008 Pattern)

Time : 3 Hours

Max. Marks : 80

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

SECTION – I

1. Solve **any one** : 10

Explain classification and chemistry of terpenoids. Describe various methods used for extraction of volatile oil.

OR

Discuss in detail Pharmacognosy of Liquorice.

2. Solve **any five** : 15

- i) Explain general method of extraction of Glycoside.
- ii) Write biological source, chemicals and uses of black mustard.
- iii) Explain chemistry and chemical tests of digitalis Glycosides.
- iv) Differentiate Alexandrian senna and Tinnively senna.
- v) Explain preparation of different aloes.
- vi) How cocoa butter is prepared ?
- vii) Explain general biogenetic pathway for terpenoids.

3. Write note on **(any three)** : 15

- I) Tracer technique and its application
- II) Chemistry of saponins
- III) Shikimic acid pathway
- IV) Fixed oils and fats

P.T.O.



SECTION – II

4. Solve **any one** : 10

Explain classification and chemistry of tannin. Describe various methods used for extraction of tannin.

OR

Discuss in detail Pharmacognosy of podophyllum.

5. Solve **any five** : 15

- i) Explain general method or extraction of Resin
- ii) Write biological source, chemicals and uses of myrobalan.
- iii) Explain chemistry and chemical tests of capsicum.
- iv) Differentiate pale catechu with black catechu.
- v) Explain supercritical fluid extraction technique.
- vi) Explain uses and chemistry of streptokinase.
- vii) Explain methods of plant cell immobilization.

6. Write note on **(any three)** : 15

- I) Mutation and polyploidy
- II) Shilajit
- III) Pyrethrum
- IV) Froth Floating Technique.



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Seat No.	
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**Third Year B.Pharmacy Examination, 2012**  
**3.7 : PHARMACEUTICAL BUSINESS MANAGEMENT**  
**(2008 Pattern)**

Time : 3 Hours

Max. Marks : 80

- Instructions :**
- 1) Q. No. 1 and Q. No. 5 are **compulsory**.
  - 2) Solve **any two** questions from Section I and Section II respectively.
  - 3) Figures at **right** indicate **full marks**.

SECTION – I

1. A) Fixed cost Rs. 70,000, variable cost per unit Rs. 200, selling price Rs. 350 per unit actual units produced and sold 1000 units. Calculate **10**
    - a) PV ratio
    - b) BEP in sales
    - c) Sales to earn profit of Rs. 100000
    - d) MOS.
  2. A) Give different principles and various flow charts of organizing. **8**  
B) Define and enlist functions of manager.
- OR
- B) Explain in detail various methods of sales promotion. **7**
  3. A) Explain in detail steps involved in planning and decision making. **8**  
B) Give a brief account on CPM and PERT with suitable examples. **7**
  4. Write short notes on (**any three**) : **15**
    - a) Fayol's principles
    - b) Purchasing and procurement
    - c) Drug discovery process
    - d) Master budget.

P.T.O.



## SECTION – II

5. A) Solve the following case :

6

Let us examine the problem faced by Mr. Rahul, Regional Manager of Alpha Pvt. Ltd. Alpha makes and distributes products from more than 10 international pharmaceutical and health care companies. Mr. Rahul is responsible for managing existing clients and also to get new clients. He manages a number of sales representatives. Important customers have dedicated sales representatives, while other sales representatives try to get new clients.

One day an important customer (Good Health Hospital) called Mr. Rahul and complained that Mr. Bhavan (the sales representative) was ineffective and insisted he be removed, or else they would not give any business.

Here are Mr. Rahul thoughts :

- In an internal enquiry, Mr. Rahul found that the real reason was personal differences between Mr. Bhavan and the hospital superintendent.
- The track record of Mr. Bhavan was good and he was liked within the company. Dismissing him or even transferring him to a new region will affect the morale of the work force.
- Good Health Hospital is a major customer and gives good business. Losing the hospital is not an option. Therefore the demands of the hospital have to be met.

- 1) Which managerial function will support the above case and how ?
- 2) Explain in detail about the function involved.
- 3) If you were Mr. Rahul, how will you solve this issue.

B) Explain the format of profit and loss account and balance sheet with examples.

4

OR

B) Explain various factors affecting price.

4

6. A) Explain different leadership styles and managerial grid.

8

B) What is Product Management ? Explain in detail Product Life Cycle.

7



7. A) What are different techniques of sales promotion ? 8
- B) Explain in detail about various channels of distribution. 7
8. Write short notes on (**any three**) : 15
- a) Interview technique
  - b) Medical representative
  - c) Market research
  - d) Communication cycle.
-







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**Fourth Year B.Pharmacy Examination, 2012**  
**4.1 : PHARMACEUTICS – III**  
**(2008 Pattern)**

Duration : 3 Hours

Max. Marks : 80

- Instructions:** 1) Question No. 1 and 5 are **compulsory**. Out of the **remaining**, attempt **any two** questions from Section I and **two** questions from Section II.
- 2) Answers to the **two** Sections should be written in **separate** books.
- 3) **Neat** diagrams must be drawn **wherever** necessary.
- 4) Black figures to the **right** indicate **full** marks.

SECTION – I

1. Describe the different types of contact lenses and lens-care solutions. 10
2. a) What preformulation testing of a new drug substance is done when it is to be used by parenteral route ? 5  
b) Discuss the formulation of injectable suspensions. 5  
c) Discuss the importance of tonicity adjustment in injections. 5
3. a) What are HEPA filters ? How are they tested ? 5  
b) Write a note on testing of elastomeric closures. 5  
c) Explain the use of sterilisation indicators in assuring the quality of parenteral products. 5
4. Write notes on : 15
  - a) Validation Master Plan
  - b) Limulus Amebocyte Lysate test
  - c) Prefilled syringes.

P.T.O.



SECTION – II

5. Write the pharmaceutical applications of microencapsulation. Describe the principle of any one coacervation method of microencapsulation. **10**
6. a) Give an account of the propellants used in aerosols. **5**
- b) Discuss the aspects of environment safety and user safety with reference to aerosols. **5**
- c) What factors influence the deposition of inhaled aerosol particles in respiratory tract ? **5**
7. a) Explain the concept of iontophoretic drug delivery. **5**
- b) What polymer properties should be considered while selecting a polymer for use in controlled release drug delivery system ? **5**
- c) What are the applications and benefits of optimisation in pharmaceutical product development ? **5**
8. Write notes on : **15**
- a) Intrauterine devices
- b) Transdermal patches
- c) Liposomes.
-



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**Final Year B.Pharmacy Examination, 2012**  
**PHARMACEUTICS – V**  
**4.2 : Biopharmaceutics and Pharmacokinetics**  
**(2008 Pattern)**

Time : 3 Hours

Total Marks : 80

- Instructions :** 1) Question No.1 and 5 are **compulsory**. Out of **remaining** attempt **2** questions from Section-I and **2** questions from Section-II.
- 2) Answers to the **two** Sections should be written in **separate** books.
- 3) **Neat** diagrams must be drawn **wherever** necessary.

SECTION – I

1. Explain in detail pH-partition hypothesis in connection with the absorption of drug. 10
  
2. Describe in detail various mechanisms of drug transport across the biomembrane. Add a note on tissue binding of drug. 15
  
3. Describe in detail perfusion limited drug distribution. Give factors affecting drug distribution. 15
  
4. Write short notes on :
  - 1) Clearance of drug
  - 2) Dissolution theories
  - 3) Enzyme inhibition.

P.T.O.



SECTION – II

5. What is compartmental modeling ? Explain in detail one compartment model for iv bolus drug administration. **10**
6. Explain various pharmacokinetic parameters by using a typical plasma conc.-time profile of drug. Add a note on physiological model. **15**
7. Discuss in detail study protocol for bioavailability bioequivalence studies for a conventional dosage form. **15**
8. Write notes on :
- 1) BCS
  - 2) Noncompartmental model
  - 3) Presystemic metabolism.



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Final Year B.Pharmacy Examination, 2012  
4.3 : MEDICINAL CHEMISTRY II  
(2008 Pattern)

Time : 3 Hours

Max. Marks : 80

- Instructions :**
- 1) **All** questions are **compulsory**.
  - 2) Answers to the **two** Sections should be written on the **separate** answer books.
  - 3) Draw diagram **whenever** necessary.
  - 4) Figures to the **right** indicate **full** marks.

SECTION – I

1. Write structure, chemical name, mode of action and synthesis of 10
    - a) Ciprofloxacin.
    - b) Pyrimethamine.
- OR
1. Classify antifungal agents with suitable example. Discuss chemistry of antifungal azoles. 10
  2. Solve **any five** : 15
    - 1) Highlight advantages of cotrimoxazole with its detail mode of action.
    - 2) Write SAR of quinolone antibacterials.
    - 3) Comment on haloacetamides as antiamebic agents.
    - 4) What is lead ? Write methods for lead search.
    - 5) Write chemistry and SAR of mycolase synthase inhibitors.
    - 6) What are antineoplastic alkylating agents ? Highlight its mode of action.

P.T.O.



3. Solve **any three** : 15
- 1) Highlight various target sites for development of antimalarial agents on the basis of life cycle of malaria parasite with suitable examples.
  - 2) Discuss squalene epoxidase inhibitors as antifungal agents.
  - 3) Comment on reverse transcriptase inhibitors.
  - 4) Discuss the development of antimetabolites as anticancer agents.

SECTION – II

4. Discuss instability of natural penicillin in acidic and alkaline medium. Write about structural modifications made in natural penicillin to improve its acid stability with suitable examples. 10

OR

4. Classify histamine H<sub>1</sub> receptor blockers with suitable example. Highlight minimum structural requirements for H<sub>1</sub> receptor blocker. 10

5. Solve **any five** : 15

- 1) Search route for synthesis of chloramphenicol.
- 2) What is enzyme beta-lactamase ? Write about beta-lactamase inhibitors.
- 3) Write chemistry of steroid nucleus.
- 4) What are opioid analgesic agents ? Comment on opioid receptor.
- 5) Write SAR of salicylates as NSAIDs.
- 6) Write chemistry of lincomycins.

6. Solve **any three** : 15

- 1) Discuss chemistry of tetracycline in light of their Pka values. Write about structural modifications in tetracycline to impart stability in acidic and alkaline medium.
- 2) Write chemistry of prostaglandin and their analogues.
- 3) Describe COX inhibitors.
- 4) Write a note on antithyroidal agents.



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**Final Year B.Pharmacy Examination, 2012**  
**4.4 : PHARMACEUTICAL ANALYSIS – III**  
**(2008 Pattern)**

Time : 3 Hours

Max. Marks : 80

- N.B. :** 1) Write answer to Section I and Section II in **separate** answer book.  
2) Q. No. 1 and Q.No. 5 are **compulsory**.  
3) Write **two** questions from Section I and **two** questions from Section II from the remaining.

SECTION – I

1. Answer **any five**. (two marks each) : **10**
- 1) Toluene does not show splitting of NMR signals
  - 2) Why Symmetric vibration in CO<sub>2</sub> molecule causes no change in dipole moment ?
  - 3) What is the function of detector in infrared spectroscopy ?
  - 4) What is the principle of fluorimetric detection in HPLC ?
  - 5) What is derivatization in HPLC ?
  - 6) How many proton signals are expected in NMR spectrum of CH<sub>3</sub>OCH<sub>2</sub>CH<sub>3</sub> ?
2. A) Explain the basic principle of Mass spectrometry with neat diagram. **10**  
B) Identify the major fragments for Phenyl acetic acid and Triethyl amine. **5**
3. A) What is Atomic absorption ? Explain the principle and working of AAS. **10**  
B) Write about detectors used in Gas chromatography. **5**

P.T.O.





4. Write note on **any three** : 15
- 1) Factors affecting chemical shift
  - 2) Capillary zone electrophoresis
  - 3) HETP
  - 4) Flash chromatography.

SECTION – II

5. Explain the principle of IR spectroscopy. How will you differentiate acetonitrile and acetic anhydride by IR spectroscopy. 10
6. A) What is validation ? Why it is required ? 10
- B) Explain the Validation of Analytical method as per ICH guidelines. 5
7. A) How will you differentiate the following by NMR ? 5
- 1) Ethyl acetate and Methyl acetate
  - 2) Benzaldehyde and Benzophenone
  - 3) Phenol and Aniline
  - 4) Cinnamic acid and 3 – Phenyl propionic acid.
- B) Write about Solvents and shift reagents used in NMR. 10
8. Write note on **any three** : 15
- 1) Supercritical fluid extraction
  - 2) Merits and demerits of HPLC
  - 3) Van Deemter equation
  - 4) Capillary electrophoresis.



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Seat No.	
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**Final Year B.Pharmacy Examination, 2012**  
**4.5 : PHARMACOLOGY – III**  
**(2008 Pattern)**

Time : 3 Hours

Max. Marks : 80

- Instructions :**
- 1) Question No. 1 and 5 are **compulsory**.
  - 2) **Out** of remaining attempt **any two** from Section I and **any two** from Section II.
  - 3) Answer to the Section I and Section II should be on **separate** answer book.
  - 4) **Draw** a neat labelled diagram **wherever** necessary.
  - 5) Figures to the right indicates **full** marks.

SECTION – I

1. Explain in detail pharmacological profile of chloramphenicol. 10  
OR
1. Classify antihypertensive drugs. Explain in detail pharmacology of beta-blockers. 10
2. a) Discuss the mechanism of action, pharmacological actions, therapeutic uses and adverse effects of cardiac glycosides. 8  
b) Classify antimalarial drugs. Add a note on pharmacology of chloroquine. 7
3. a) Classify anticancer drugs and explain the mechanism of action, pharmacology and adverse effects of alkylating agents. 8  
b) Describe the mechanism of action, pharmacology, adverse drug reactions and uses of ciprofloxacin. 7
4. Write a short note on **any three** : 15
  - a) Live attenuated viral vaccines available in India
  - b) Principles of treatment of poisoning
  - c) High ceiling (loop) diuretics
  - d) Cotrimoxazole
  - e) Adverse effects of aminoglycosides.

P.T.O.



SECTION – II

5. Define clinical research. Explain the responsibilities of investigator and sponsor in clinical research. 10
- OR
5. Give the composition of Hospital Committee. Discuss the role of hospital pharmacist in hospital committees and practice of rational drug therapy. 10
6. a) Define drug interactions. Explain the pharmacokinetic drug interaction with suitable examples. 8
- b) Define therapeutic drug monitoring. Discuss the advantages and applications of therapeutic drug monitoring. 7
7. a) Write a note on Declaration of Helsinki. 8
- b) Explain the reasons for patient noncompliance. What are the strategies to improve the compliance ? 7
8. Write short note on **any three** : 15
- a) Satellite pharmacy services.
- b) Reporting of adverse drug reaction.
- c) Define : Adverse drug reaction, double blind clinical trial, placebo, compassionate use of drug, efficacy of drug.
- d) Principles of the Belmont report.
- e) Good clinical practice.



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**Final Year B.Pharmacy Examination, 2012**  
**4.6 : PHARMACOGNOSY – III (2008 Pattern)**

Time : 3 Hours

Max. Marks : 80

- Instructions :** 1) **All** questions are **compulsory**.  
2) Figures to the **right** indicate **full** marks.  
3) Answers for **two** Sections should be written in **two separate** answer sheets.

SECTION – I

1. Describe systematic pharmacognostic study of Ergot. 10  
OR  
Discuss in detail the biosynthetic pathway of Tropane alkaloids. 10
2. Solve **any three** : 15
- 1) Write in detail chemistry of isoquinoline alkaloids.
  - 2) Discuss the following drugs :
    - A) Derris root
    - B) Liquorice
  - 3) Draw neat labeled diagram of T.S. of Cinchona. Discuss its microscopic features.
  - 4) Give classification of plant allergens with examples. Add a note on allergenic extracts.
3. Write short notes on (**any three**) : 15
- 1) Ephedra
  - 2) Shankhapushpi and Madhunashini
  - 3) Anticancer agents of marine sources
  - 4) Green tea.

P.T.O.



SECTION – II

4. Explain how phytochemical investigation is done with special reference to preliminary phytochemical investigation. **10**

OR

Enlist various parameters recommended by WHO for quality control of herbal drugs. Elaborate on moisture content and pesticide residue. **10**

5. Solve **any three** : **15**

- 1) Define herbal drug interaction and explain Cinchona drug interaction.
- 2) Write extraction process and general characterization of Hesperidin.
- 3) Give a brief account of Ayurvedic dosage form and their evaluation.
- 4) Describe structural elucidation of Morphine.

6. Write short notes on (**any three**) : **15**

- 1) Digitalis toxicity and interaction
- 2) Determination of Tannin content by WHO guidelines
- 3) Chromatographic techniques in evaluation of herbal drugs
- 4) Hair care products.



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**Fourth Year B.Pharmacy Examination, 2012**  
**BIOPHARMACEUTICS AND PHARMACOKINETICS**  
**(Pharmaceutics – V) (2004 Pattern)**

Time : 3 Hours

Max. Marks : 80

- Instructions:** 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** books.
- 3) **Neat** diagrams must be drawn **wherever** necessary.
- 4) Black figures to the **right** indicate **full** marks.

SECTION – I

1. Discuss physicochemical and physiological factors affecting drug bioavailability from parenteral routes. **10**
2. Explain the concept and clinical significance of plasma and tissue binding of drugs. Support your answer with examples. **15**
3. Discuss the different modes of drug elimination and their clinical significance. **15**
4. Write short notes on **(any two)** : **15**
  - a) In vitro and in vivo correlation and its significance.
  - b) Basic concept of mucosal drug delivery.
  - c) Blood flow limitation in hepatic clearance.

P.T.O.



SECTION – II

5. Explain the factors affecting dosage regimens. **10**
6. a) Explain in detail pH partition theory and its significance. **15**  
b) What are the different mechanisms of drug transport ?
7. Discuss the methods of estimation of bioavailability and bioequivalence parameters. **15**
8. Write short notes on **(any 2)** : **15**  
a) Central and peripheral compartments.  
b) Plasma drug concentration and therapeutic response.  
c) Individualization of dosage regimens.
-



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**Fourth Year B. Pharmacy Examination, 2012**  
**PHARMACEUTICAL CHEMISTRY – V**  
**(2004 Pattern) (Medicinal)**

Time : 3 Hours

Max. Marks : 80

- Instructions:**
- 1) Q. 1 & Q. 5 are **compulsory**. Solve **any two** from remaining questions from **each** Section.
  - 2) Draw correct structures **wherever** necessary.
  - 3) Figures on **right** indicate **full** marks.

SECTION – I

1. Classify parasympathomimetic agents. Write SAR and uses of choline esters.  
Draw synthesis of carbachol. 10
2. a) Explain SAR, mechanism of action and uses of benzodizepins. 8  
b) What are actions of  $\beta_2$  agonists ? Explain using examples. Draw synthesis of salbutamol. 7
3. a) Classify anti convulsants and add a note on hydantoins. 5  
b) What is Parkinsons disease ? Write a note on dopamine agonists. 5  
c) Discuss phase I reactions with suitable examples. 5
4. Write notes on (**any three**) : 15
  - a) Free Wilson Analysis
  - b) Tricyclic antidepressants
  - c)  $\beta_1$  blockers
  - d) Carbamates as reversible AchE inhibitors.

P.T.O.





SECTION – II

5. Classify NSAIDs with one structure of drug from each class and add a note on SAR, MOA and uses of Indole acetic acid derivatives. **10**
6. a) Classify antihistaminic agents. Write SAR of H<sub>1</sub> blockers. Draw synthesis of chlorpheniramine. **8**
- b) What are diuretics ? Explain SAR, mechanism of action and uses of thiazide diuretics. **7**
7. a) How local anesthetics are different from general anesthetics ? Write a note on ester based local anesthetics. **5**
- b) Classify antihypertensive agents. Add a note on Ca channel blockers. **5**
- c) What are HMG-CoA reductase inhibitors ? Explain any 2 drugs. **5**
8. Write notes on **(any three)** : **15**
- a) Chemistry of morphine
- b) H<sub>2</sub> receptor blockers
- c) Anti estrogens
- d) Class II anti arrhythmic agents.



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**Fourth Year B.Pharmacy Examination, 2012**  
**PHARMACEUTICAL ANALYSIS – III**  
**(2004 Pattern)**

Time : 3 Hours

Max. Marks : 80

- Instructions :**
- 1) Question No. 1 and 5 are **compulsory**.
  - 2) Out of remaining attempt **two** questions from Section I and **two** questions from Section II.
  - 3) Answers to the **two** Sections should be written in **separate** answer books.
  - 4) Figures to the **right** indicate **full** marks.
  - 5) Draw well labelled diagrams **wherever** necessary.

SECTION – I

1. a) Explain spin-spin coupling in NMR. 5  
b) Describe various sampling techniques for solid samples in IR spectrometry. 5
2. a) State different types of mass analyzers in mass spectrometer and explain Quadrupole mass analyzer. 9  
b) Describe interferences in Atomic absorption spectroscopy. 6
3. a) Explain the factors affecting chemical shift. 8  
b) Describe the working of ICP torch with the help of neat labeled diagram. 7
4. Write short notes (**any three**) :
  - i) Raman spectroscopy
  - ii) Instrumentation of flame photometer
  - iii) ESR
  - iv) X-ray diffraction techniques. 15

P.T.O.



SECTION – II

5. a) Explain the terms :  
Isocratic elution  
Gradient elution. 5
- b) Explain flame Ionisation Detector in Gas chromatography. 5
6. a) Describe different quantitation techniques in HPLC. 8
- b) Explain principle and instrumentation of super critical Fluid Extraction. 7
7. a) Explain various types of development in Electrophoresis. 8
- b) Discuss sample handling in Gas chromatography. 7
8. Write short notes (**any three**) : 15
- i) Columns in Gas chromatography
  - ii) Degasing in HPLC
  - iii) Nuclear reactions
  - iv) Applications of HPTLC.



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Seat No.	
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**Fourth Year B.Pharmacy Examination, 2012**  
**PHARMACOGNOSY – III (Industrial)**  
**(2004 Pattern)**

Time : 3 Hours

Max. Marks : 80

- Instructions :** 1) Q. No. 1 and 5 are **compulsory**. Attempt **any two** questions from remaining for Section I and Section II **each**.
- 2) Figures to the **right** indicate **full** marks.
- 3) Answers for **two** Sections should be written in **two separate** answer sheets.

SECTION – I

1. Define alkaloids. Differentiate between true, proto and pseudo alkaloids. Give one example of each along with their structure and source. 10
- OR
- Describe systematic pharmacognostic study of cinchona. 10
2. A) Discuss the anti-inflammatory agent from marine source. 8
- B) Describe shankahpushpi and madhunashini as drugs of traditional system of medicine. 7
3. A) Draw a neat labeled diagram of T.S. of Ephedra. Explain how microscopic features can differentiate four varieties of ephedra. 8
- B) Describe the ring system of tropane alkaloids. Give the chemical account of two drugs containing tropane alkaloids. 7
4. Write notes on **(any three)** : 15
- 1) Plant cell immobilization
  - 2) Plant causing hay fever
  - 3) Cardiovascular marine drugs
  - 4) Hybridization

P.T.O.



SECTION – II

5. Enlist various parameters recommended by WHO for quality control of herbal drugs. Elaborate on moisture content and pesticide residue. **10**

OR

Discuss the application of chromatographic technique in evaluation of herbal drugs. **10**

6. A) What is supercritical fluid extraction ? Describe its principle and instrumentation and explain its importance in isolation of phytoconstituents. **8**  
B) What is the method of preparation of taila ? Enlist its evaluation parameters and marketed preparations. **7**
7. A) Give procedure for extraction and structural elucidation of atropine. **8**  
B) Give brief account of plant based industries. **7**
8. Write short note (**any three**) : **15**
- 1) Tannin content determination as per WHO guidelines.
  - 2) Formulation and evaluation of hair care products.
  - 3) Counter-current extraction
  - 4) Preliminary phytochemical investigation.



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**Fourth Year B.Pharmacy Examination, 2012**  
**PHARMACEUTICAL JURISPRUDENCE AND REGULATORY AFFAIRS**  
**(2004 Pattern)**

Time : 3 Hours

Max. Marks : 80

- Instructions :** 1) Q.1 and 5 are **compulsory**. Out of remaining attempt 2 questions from Section I and 2 questions from Section II.  
2) Answers to the **two** Sections should be written in **separate** books.  
3) Figures to the **right** indicate **full** marks.

SECTION – I

- |   |           |
|---|-----------|
| 1. Discuss in detail Constitution and functions of PCI.   | <b>10</b> |
| 2. A) Discuss the objectives and salient features of prevention of Food Adulteration Act, 1954.                     | <b>7</b>  |
| B) Discuss in detail the Constitution and functions of D.T.A.B. and C.D.L.  | <b>8</b>  |
| 3. A) Discuss in brief the powers of Central Government to permit, control and regulate operations under NDPS 1985. | <b>8</b>  |
| B) Discuss the objectives and salient features of Industrial Development and Regulation Act.                        | <b>7</b>  |
| 4. Write short notes on <b>(any three)</b> :  | <b>15</b> |
| a) Retail price of formulation  |           |
| b) Schedule M   |           |
| c) Consumer Protection Act.   |           |
| d) Cyber law.   |           |

P.T.O.



SECTION – II

- |   |    |
|---|----|
| 5. Discuss in detail Hatch Waxman Act with reference to NDA and ANDA.           | 10 |
| 6. A) Discuss 'Medicine Control Agency'.  | 5  |
| B) Biologics and Licensing Application.   | 5  |
| C) Explain in brief about European Agency for evaluation of Medicinal Products. | 5  |
| 7. A) What are patents ? Discuss Patent Act, 1970.                              | 8  |
| B) Discuss in detail ICH guideline.   | 7  |
| 8. Write a short notes on <b>(any three)</b> :                                  | 15 |
| a) DMF  |    |
| b) Opposition to grant of patent  |    |
| c) Therapeutic Goods Administration   |    |
| d) Investigation New Drug Application.  |    |
-