



[3956] – 105

**First Year B. Pharmacy Examination, 2011  
(2008 Pattern)**

**1.5 : HUMAN ANATOMY AND PHYSIOLOGY**

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. Draw a neat labelled diagram of conduction system of heart. Explain in detail cardiac cycle. 10
- OR
1. Draw a neat labelled diagram of human respiratory system. Explain in detail transport of O<sub>2</sub> and CO<sub>2</sub> during respiration. 10
2. Solve **any three** : 15
- i) Explain mechanism of blood clotting.
  - ii) Draw a neat labelled diagram of cell and explain movement of materials across plasma membrane.
  - iii) Explain structure and functions of lymph node.
  - iv) Enlist organs involved in digestive system and give functions of each organ.
  - v) Explain in detail structure and functions of epithelial tissue.
3. Write short notes on (**any five**) : 15
- i) Nervous tissue
  - ii) Platelet plug formation
  - iii) Blood pressure

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- iv) Spleen
- v) Mechanism of respiration
- vi) ECG
- vii) Functions of liver.

SECTION – II

4. Explain in detail physiology of urine formation. 10
- OR
4. Classify nervous system and explain in detail sympathetic and parasympathetic nervous system. 10
5. Solve **any three** : 15
- i) Explain the physiological role of hormones of anterior pituitary gland.
  - ii) Draw a neat labelled diagram of nephron and explain structure of nephron.
  - iii) Explain menstrual cycle.
  - iv) Describe components of external, middle and internal ear.
  - v) Explain physiology of muscle contraction.
6. Write short notes on (**any five**) : 15
- i) Renin angiotensin aldosterone system
  - ii) Reflex arc
  - iii) Interior of eye ball
  - iv) Functions of skin
  - v) Cerebrum
  - vi) Spermatogenesis
  - vii) Cranial nerves.
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[3956] – 42

**Fourth Year B.Pharm. Examination, 2011**  
**PHARMACOLOGY – III**  
**(Including Clinical)**  
**(2004 Course)**

Time : 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** book.
- 3) Figures to the **right** indicate **full** marks.

SECTION – I

1. Classify antihypertensive agents. Write in detail pharmacology of any one calcium channel antagonists. **12**
2. Write in detail pharmacological classifications of penicillines. Explain in detail pharmacology of antipseudomonal penicilline. **14**
3. Classify and differentiate anti retroviral and non-anti retroviral agents. Explain in detail general principles of anti retroviral therapy. Write in detail pharmacology of any one antinucleoside reverse transcriptase inhibitors. **14**
4. Write a note on **any two** : **14**
  - A) Goals of treatment of heart failure.
  - B) Indications for the clinical use of combinations of antimicrobial agents.
  - C) Platinum coordination complexes.

SECTION – II

5. Classify bioassays. Explain in detail rational approaches, design, indications and limitations of bioassays. Write in detail bioassay of digitalis. **12**

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6. What are the ethical and regulatory issues as per GCP in clinical trials. Explain in detail phase-IV clinical study. **14**
7. A) Discuss the role of drug information services, its types and importance. **14**  
B) Explain the features of good clinical practices in clinical trials.
8. Write a note on **any two** : **14**  
A) Approaches in enhancement of elimination of the poisons.  
B) Observational records in clinical pharmacology.  
C) Treatment of iron poisoning.

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[3956] – 101

**First Year B. Pharmacy Examination, 2011**  
**1.1 : PHARMACEUTICS – I (2008 Pattern)**

Time : 3 Hours

Max. Marks : 80

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

SECTION – I

1. Attempt **any one** : **10**

Define bioavailability and bioequivalence. Discuss absorption and mechanism of absorption.

OR

Discuss in detail concept of physicochemical properties involved in preformulation.

2. Attempt **any five** : **15**

- a) What is pharmacopoeia ? Add a note on national formulary.
- b) Explain ideal characteristics of packaging material.
- c) Mention application of radio pharmaceuticals.
- d) Describe Homoeopathy as system of medicine.
- e) Give schematic representation of development of new drug.
- f) Define dosage form and give its importance.
- g) Explain CGMP as a tool for quality assurance.

3. Write short notes (**any three**) : **15**

- a) Phases of clinical trials
- b) Development of pharmaceutical industry
- c) Drug metabolism
- d) Container and closure
- e) Sustained release and targeted drug delivery.

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SECTION – II

1. Solve **any one** : **10**

What is size reduction ? What are factors that affect size reduction ? Explain in detail principle, construction, working and pharmaceutical application of Ball mill.

OR

What are solutions ? Explain methods of preparation of solutions and factors affecting rate of solution.

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

- a) What are syrups ? How invert syrup is prepared and stored ?
- b) Draw well labelled diagram of rotary drum filter.
- c) Define size separation. Write on standards for powders as per I.P.
- d) Explain various filter medias used for filtration.
- e) Write a note on mouthwashes.
- f) Define viscosity. Explain how determination of viscosity is important in formulation of solution.
- g) Write a note on pouch filling machine.

3. Solve **any three** : **15**

- a) Discuss formulation and evaluation of tooth powder.
- b) Discuss methods used for improvement of solubility.
- c) What are aromatic waters ? How they are preserved ? Differentiate between aromatic and concentrated aromatic water.
- d) Write a note on :
  - i) Impeller
  - ii) Dry syrup.
- e) Explain construction, working and application of hydro extractors.

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**First Year B.Pharmacy Examination, 2011**  
**1.2: MODERN DISPENSING PRACTICES**  
**(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. Define posology. Explain factors affecting dose of drug. What will be the dose of child of 3 yrs; if adult dose is 500 mg ? **10**

OR

1. Define compounding and dispensing of medication. Discuss steps involved in compounding. Give auxiliary labelling conditions for suspensions, Linctuses and lotions. **10**

2. Answer in brief (**any five**) : **(3×5=15)**

- Give the pharmaceutical applications of emulsions.
- Explain formulation of syrups.
- Explain physical stability of suspensions.
- Comment on information to be written on a label.
- Classify suspensions and emulsions.
- Describe in brief good dispensing practices.
- In what proportion should 50% and 90% alcohol mixed so as to make 60% alcohol.

3. Write a short note on (**any three**) : **(5×3=15)**

- Pharmacist as health care provider
- Parts of prescription
- Patient counseling for ENT preparations
- Cracking of emulsions
- Additives in suspensions.

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SECTION – II

4. Explain the concept of unit dose drugs, write its merits and demerits. Write patient counselling for various types of tablets. **10**

OR

4. Write with example medication errors and role of pharmacist in avoiding them. **10**

5. Answer **any five** : **(5×3=15)**

- a) What do you mean by aseptic processing ?
- b) Describe the methods of powder mixing containing special type of drugs.
- c) Write the patient counselling points for dispensing of eye ointments.
- d) Describe the properties of ligatures and sutures.
- e) Describe the water soluble ointment base.
- f) Write the legal requirements and forms to obtain FDA license to open retail pharmacy.
- g) Write patient counselling for oral contraceptives.

6. Write note on **any three** : **(3×5=15)**

- a) Dry syrups
- b) Vaginal gels
- c) Glycero-gelatin suppository base
- d) Rational drug use
- e) Patient counselling for metered dose inhaler.

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**First Year B.Pharmacy Examination, 2011**  
**Paper – 1.4 : PHARMACEUTICAL ORGANIC CHEMISTRY – I**  
**(2008 Pattern)**

Time : 3 Hours

Total. 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 the mechanism involved in Friedel Craft acylation and Nitration of Benzene. **10**

OR

Compare SN<sup>1</sup> and SN<sup>2</sup> Mechanism.

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

- 1) Define and illustrate Tautomerism.
- 2) Compare the stability of primary, sec. and tertiary carbanion ion.
- 3) What is Inductive effect and explain it with suitable example.
- 4) What is difference between nucleophilicity and basicity ?
- 5) Draw as much resonance structure as you can for following :
  - a) Aniline
  - b) Phenol.
- 6) Explain Huckel's rule for aromaticity with suitable example.
- 7) Draw the structure of following compound :
  - a) 2-Methyl N-N di-methyl butanamine
  - b) 4-Amino-3-chloropentanenitrile
  - c) Cyclopropane carboxylic acid.

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3. Answer the following (**any three**) : **15**
- 1) Write a synthesis of following compound starting with benzene and suitable reagent :
    - a) meta nitro toluene
    - b) 1, 3 dinitro benzene.
  - 2) Explain substitution nucleophilic unimolecular reaction mechanism with stereochemistry with suitable examples.
  - 3) What is Hyper conjugation ? Explain with suitable example.
  - 4) Write a note on optical isomerism. Explain it with a suitable example.
  - 5) Define the following terms and give any two suitable examples of each :
    - a) Activating group
    - b) Deactivating group
    - c) Ortho and para director.

SECTION – II

4. A) Explain E-1.E-2 and E-1 (cb) reaction with mechanism. **10**
- OR
- A) Explain why aldehydes are more reactive than ketone for nucleophilic addition reaction and add a note on addition of water to aldehyde and ketone.
5. Answer the following (**any five**) : **15**
- 1) How will you differentiate the following pair of compounds by simple chemical test ?
    - a) Pentanal and Pentanone
    - b) Benzoic acid and alpha-naphthol.
  - 2) Explain hydration reaction with C-C multiple bond.
  - 3) Explain acid catalysed esterification of carboxylic acids.



- 4) Arrange the following compounds in order of increasing reactivity.
    - a) Acetamide
    - b) Acetic anhydride
    - c) Methyl acetate.
  - 5) Write any three chemical reactions of phenols.
  - 6) Ring substitution reaction of aromatic amines.
  - 7) Give any two methods of synthesis of amines.
6. Write note on (**any 3**) : **15**
- 1) Preparation of sulphonic acid
  - 2) Canizarros reaction
  - 3) Ozonolysis
  - 4) Aldol condensation
  - 5) Knoevengel condensation.
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**First Year B. Pharmacy Examination, 2011**  
**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 heat transfer to boiling liquids. 10  
OR  
Describe steps in crystal growth and explain different theories of crystal growth.
2. Answer the following (**any five**) : 15  
a) Thermostatic steam trap.  
b) Different methods of feeding evaporator.  
c) Use of humidity chart.  
d) Sling psychrometer.  
e) Wiped film evaporators.  
f) Define heat exchangers and describe different types of heat exchangers.  
g) Environmental controls in pharmaceutical industry.
3. Write short notes on (**any three**) : 15  
a) Plate Heat exchangers.  
b) Draft Tube Battle (DTB) crystallizer.  
c) Caking of crystals.  
d) Crystal habit.  
e) Fourier's law of heat transfer.

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SECTION – II

4. Describe flow of fluid through packed beds with Poiseulli's and Kozeny's approach. 10

OR

Define drying. Explain theory of drying with drying curves.

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

- a) Pilot tube.
- b) Liquid-liquid extraction and classification of liquid-liquid extractors.
- c) Sieve-plate column.
- d) Energy losses in fluid flow due to friction.
- e) Energy losses in fluid flow due to contraction and enlargement.
- f) Freeze dryer.
- g) Drum dryer.

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

- a) Venturi meter
- b) Rotocel extractor
- c) Podbielniak liquid-liquid extractor
- d) Distillation under reduced pressure
- e) Height Equivalent to Theoretical Plate (HETP).

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**Second Year B.Pharmacy Examination, 2011**  
**2.3 : PHARMACEUTICAL BIOCHEMISTRY**  
**(2008 Pattern)**

Time : 3 Hours

Max. Marks : 80

- Note : 1) Q. 1 and 5 are compulsory. Out of remaining attempt any two questions from each Section.*
- 2) Draw well labeled diagram wherever necessary.*
- 3) Answers to the two Sections should be written in separate books.*
- 4) Figures to right indicate full marks.*

SECTION – I

- I. Define and classify carbohydrate with one structure from each class and explain Glycogen in detail. 10
- II. a) Define and classify vitamins. Write structure and biochemical functions of any two fat soluble vitamins. 8
- b) Explain colour reactions of amino acids. 7
- III. a) Write factors affecting enzyme substrate complex formation. 8
- b) Write in detail about oxidation of fatty acid. 7
- IV. Write short notes on (any three) : 15
- a) Genetic disorders of nucleic acid metabolism
- b) ELISA
- c)  $\alpha$ -Helical structure of protein
- d) Coenzyme and cofactors.

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SECTION – II

- V. Describe reaction and energetics of TCA cycle. **10**
- VI. a) Describe process of transcription and translation. **8**  
b) Explain gene expression in eukaryotes. **7**
- VII. a) Describe liver function test in detail. **8**  
b) Describe cell organelles with their roles. **7**
- VIII. Write short notes on (**any three**) : **15**
- a) Biosensors
  - b) BMR
  - c) Marker enzymes
  - d) Acid-base balance.

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**Second Year B.Pharmacy Examination, 2011  
(2008 Pattern)  
2.3 : PHARMACEUTICAL BIOCHEMISTRY  
(Including Clinical Biochemistry)**

Time : 3 Hours

Max. Marks : 80

- Note :* 1) *All questions are compulsory.*  
2) *Draw well labeled diagram wherever necessary.*  
3) *Answers to the two Sections should be written in separate books.*  
4) *Figures to **right** indicate **full** marks.*

SECTION – I

- I. a) Classify Enzymes with suitable examples and explain competitive and non-competitive enzyme inhibition. **10**
- OR
- a) Define and classify lipids with suitable examples. Give their functions in detail.
- II. Solve **any five** from the following : **15**
- a) Mitochondria
  - b) Gluconeogenesis
  - c)  $\alpha$  -Helical structure of protein
  - d) Blood glucose balance
  - e) Glycogenolysis
  - f) Co-enzymes and co-factors.
- III. Solve **any three** from the following : **15**
- a) Explain colour reactions of amino acids
  - b) TCA cycle
  - c) Deamination and Transamination
  - d) Pyrimidine metabolism.

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SECTION – II

- IV. a) Explain DNA recombination technique with its application. **10**
- OR
- a) What is BMR ? Describe the factors affecting the BMR in detail.
- V. Solve **any five** from the following : **15**
- a) Genetic disorders of carbohydrate metabolism.
- b) Write a note on PCR technique.
- c) Record keeping in pathology laboratory.
- d) Radio immuno assay.
- e) Discuss diagnostic application of lactate dehydrogenase.
- f) Genetic code.
- VI. Solve **any three** from the following : **15**
- a) Liver function test.
- b) Give biochemical functions of fat soluble vitamins.
- c) Acid base balance.
- d) Biosensors.

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

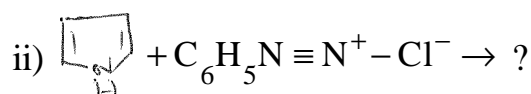
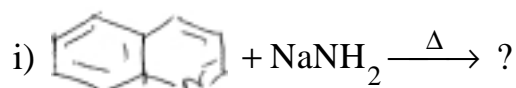
- a) What is isoelectric point ? Give its significance.
- b) What is dihedral angle in stereoisomer and Newman projection formula ?
- c) Write a note on Mutarotation.
- d) What are distereomers ? Explain with suitable examples.
- e) Write in brief conformational analysis of n-Butane.
- f) What are polysaccharides ? Discuss in brief about starch.
- g) Draw the Fischer projection of following :
  - i) Meso 2, 3-dibromobutane
  - ii) 2-Chlorobutane
  - iii) 2R, 3S-2- Chloroethanol.

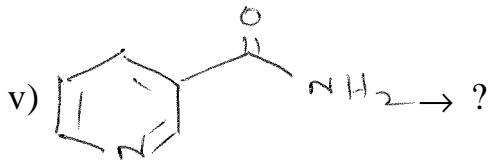
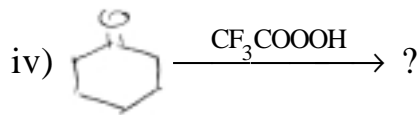
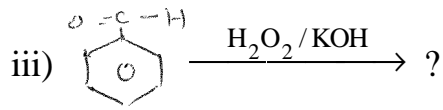
3. Answer the following (**any three**) : 15

- a) What are atropisomerism ? Discuss briefly atropisomerism in Biphenyl compounds.
- b) Discuss stereo selective and stereo specific reaction with suitable examples.
- c) What is racemic resolution ? Explain with suitable examples some important methods used ?
- d) What are peptides ? Discuss briefly the primary and secondary structure of peptides.
- e) What is combinatorial chemistry ? What are the strategies used for solid supported synthesis ?

### SECTION – II

4. a) Write the product of the following reaction. 5





b) What are heterocyclic compounds ? Give the methods of synthesis and reactions of Furan and isoquinoline. 5

OR

4. What is retro-synthesis ? Write some important rules for disconnection. Give retrosynthesis route of the

i) Ibuprofen

ii) Sulfame thaxazole. 10

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

a) Give the mechanism of pinacol-pinacolone rearrangement with suitable example.

b) Give the structure and numbering of the following compounds.

i) Isoquinoline

ii) Indole

iii) Imidazole.

c) Explain why pyridine is less reactive than benzene.

d) Why thiophene is more stable, aromatic than pyrrole ?

e) Give the reaction and mechanism of Knorr-pyrrole synthesis.

f) Predict the product



g) Give the synthesis and reactions of hydantoin, pyrimidine.

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6. Answer the following (**any three**) :

**15**

- a) Write in briefly about electrophilic substitution reaction of five membered monoheterocyclic ring system.
- b) Discuss the rearrangement with mechanism of Favoroski and Benzilic acid rearrangement.
- c) Discuss in brief Bayer-Villiger oxidation.
- d) Explain the mechanism of the Skraup synthesis of quinoline.
- e) Discuss Fischer-indole synthesis and Bischler-Napieralski synthesis.

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**Second Year B. Pharmacy Examination, 2011**  
**2.7 : PHARMACOLOGY – I (Including Pathophysiology)**  
**(2008 Pattern)**

Time : 3 Hours

Max. Marks : 80

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

SECTION – I

1. Explain the term biotransformation. Enlist the various reactions involved in the biotransformation of drugs. Explain in detail synthetic reactions. **10**

OR

1. Define and classify hypolipidemics. Write the pharmacological actions, therapeutic uses and adverse drug reaction of statins.
2. Solve **any five** of the following : **15**
- i) Discuss in detail Side effects.
  - ii) Discuss about intolerance.
  - iii) Discuss the drug treatment of pediatrics.
  - iv) Explain the psychological factor affecting drug action.
  - v) Explain the mechanism of drug action through enzyme inhibition.
  - vi) Discuss the redistribution.
  - vii) Discuss the combined effect of drugs.
3. Write a note on the following (**any three**) : **15**
- i) H<sub>2</sub> receptor antagonists
  - ii) Receptor regulation
  - iii) Warfarin
  - iv) Carcinogenicity and mutagenicity
  - v) Applications of gene therapy in various genetic disorders
  - vi) Advantages and disadvantages of parenteral route.

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SECTION – II

4. Define peptic ulcers. Explain the etiology and pathogenesis and complications of acute and chronic peptic ulcers. **10**

OR

4. Define and classify psychosis. Discuss the pathophysiology of schizophrenia.

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

- i) Discuss the physical carcinogens and radiation carcinogenesis.
- ii) Discuss the pathophysiology of acute renal failure.
- iii) Define angina pectoris and discuss the types of angina pectoris.
- iv) Discuss the pathophysiology of Hepatitis B.
- v) Discuss the clinical manifestations of tuberculosis.
- vi) Discuss the Etiology of bronchial asthma.
- vii) Discuss the pathophysiology of bacillary dysentery.

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

- i) Typhoid fever
- ii) AIDS
- iii) Malaria
- iv) Hypersensitivity
- v) Epilepsy.

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[3956] – 302

**Third Year B. Pharmacy Examination, 2011**  
**3.2 : PHARMACEUTICAL BIOTECHNOLOGY**  
**(2008 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. What do you understand by Gene Cloning ? What are various types of cloning vectors involved in the process ? What is the role of expression vectors in recombinant DNA technology. 10
2. A) What is 'Gel Electrophoresis' ? Describe the principle behind the technique and elaborate on its applications. 8
- B) How are animal cell cultures prepared ? Describe in details the composition of the media used in the process. 7
3. A) What are transgenic plants ? How are they developed ? What are their advantages, explain with suitable examples. 8
- B) Write a note on protoplast culture. What are the applications of protoplast fusion technique ? 7
4. Write notes on **any three** : 15
- a) DNA finger printing
- b) Gene sequencing
- c) RFLP
- d) Gene transfer.

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SECTION – II

5. How are monoclonal antibodies prepared ? What are their applications in immunotechnology. 10
6. A) Write an elaborate account of manufacturing of Vit B<sub>12</sub> via fermentation technology. Support with neat flow chart. 8
- B) Explain the concept of enzyme immobilisation. Comment on its applicability with suitable examples. 7
7. A) Enlist various biotechnologically derived products used in health care management. Write an elaborate note on Human insulin. 8
- B) What are various toxicity studies undertaken in establishing safety and efficacy of biotechnological products. 7
8. Write notes on **any three** : 15
- a) Storage of blood and blood products
  - b) In-vitro fertilisation
  - c) Dextran manufacturing
  - d) ELISA technique.

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[3956] – 304A

**Third Year B.Pharmacy Examination, 2011**  
**3.4 : PHARMACEUTICAL ANALYSIS – II**  
**(2008 Pattern)**

Time : 3 Hours

Max. Marks : 80

*Instructions : 1) Answers to the two questions should be written in separate answer books.*

*2) Neat diagram must be drawn wherever necessary.*

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

*4) All questions are compulsory.*

SECTION – I

1. Explain in detail the principle involved in polarographic technique and explain its instrumentation. 10

OR

With the help of labeled diagram explain the phenomenon of fluorescence. Discuss the factors affecting fluorescence. 10

2. Attempt **any five** questions : 15

- a) Explain in the principle of atomic absorption spectroscopy.
- b) Discuss the factors affecting limiting current.
- c) Write the applications of UV-Vis spectroscopy.
- d) Discuss the different elution procedures used in column chromatography.
- e) Describe the instrumentation of TGA.
- f) Explain the following terms :
  - 1) Chromophore
  - 2) Auxochrome
  - 3) Bathochromic shift.
- g) Write about selection of solvent system in TLC.

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3. Write a note on **any three** : **15**
- a) Factors affecting TGA curve
  - b) Biamprometric titrations
  - c) Dropping mercury electrode
  - d) Applications of Nephelometry and Turbidometry
  - e) Two dimensional TLC.

SECTION – II

4. Explain Van Deemters equation in detail. How it helps to improve column performance ? **10**

OR

Draw a neat labeled diagram of flame photometer. Explain the functioning of each part. Write applications of flame photometry. **10**

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

- a) Explain the factors affecting DTA curve.
- b) Draw a neat labeled diagram of fluorimeter and explain the functioning of each part.
- c) Discuss in detail the various types of transitions involved in UV-Vis Spectrophotometry.
- d) Describe the applications of DSC.
- e) Discuss the various development techniques used in paper chromatography.
- f) Explain in brief about Biamprometric titrations.
- g) Write note on partition column chromatography.

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

- a) HPTLC
- b) Spectrophotometric titrations
- c) Power compensated DSC
- d) Amperostatic Coulometry
- e) Electromagnetic spectrum.

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**Third Year B. Pharmacy Examination, 2011**  
**3.6 : PHARMACOGNOSY – 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. Solve **any one** : **10**  
Discuss in detail pharmacognostically the crude drug-Kalmi-Dalchini.  
OR  
Describe various methods used for extraction of volatile oil. Give chemistry of volatile oil.
2. Solve **any five** : **15**  
i) Differentiate between T.S. of fennel fruit and T.S. of coriander fruit.  
ii) Give biological source, chemical constituents and uses of quassia.  
iii) Draw a well labeled diagram of T.S. of Eucalyptus leaf.  
iv) State inter-relationship between cardiac glycosides of Digitalis purpurea and Digitalis lanata.  
v) How bees wax is prepared ?  
vi) Give chemical tests for the identification of aloes.  
vii) Define glycoside. Classify them with examples.
3. Write notes on (**any three**) : **15**  
i) Adulterants of liquorice  
ii) Yam  
iii) Chemistry of saponins  
iv) Adulterants of Nux moschata  
v) Kokum butter.

P.T.O.

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SECTION – II

1. Solve **any one** : **10**

Define tannins. Describe properties, chemistry and classification of tannins.  
Write a note on Ashoka.

OR

Discuss in detail pharmacognostically the crude drug-capsicum.

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

- i) State the chemical constituents of tobacco.
- ii) Differentiate between pale catechu and black catechu.
- iii) Draw a well labeled diagram of T.S. of podophyllum rhizome.
- iv) Give biological source, chemical constituents and uses of guggul.
- v) State the principle of SFE.
- vi) Explain froth floating technique.
- vii) Describe micropropagation.

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

- i) Mutation
- ii) Calamine
- iii) Transgenic plants
- iv) Derris root
- v) Streptokinase.

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B/I/11/3,600



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**Third Year B.Pharmacy Examination, 2011  
PHARMACEUTICAL BIOTECHNOLOGY  
(2004 Course)**

Time : 3 Hours

Max. Marks : 80

- Instructions :** 1) Question No. 1 and 5 are **compulsory**. Out of the 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 **whenever** necessary.
- 4) Black figures to the **right** indicate **full** marks.

SECTION – I

1. Write about the culture media used in plant tissue culture techniques and requirements to set up the plant tissue culture laboratory. **10**
2. a) Write about direct gene transfer methods in detail. **10**  
b) Enlist the methods for selection of clones. Explain any two of them. **5**
3. a) What are various methods of plant tissue culture ? Explain in detail about the haploid cultures. **10**  
b) What are the different types of animal tissue culture media ? Give advantages and disadvantages of serum containing media. **5**
4. a) Give principle and variants of polymerase chain reactions. **10**  
b) Write a note on scope and potential of Biotechnology. **5**

SECTION – II

5. Write methods and applications of immobilization technology. **10**
6. a) What factors should be considered in design of a fermentor ? Write different means of maintaining aseptic conditions in the fermenter. **10**  
b) Write the principle and method of RIA in immunoassay. **5**

P.T.O.

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7. a) Write different techniques of reducing bioload of waste water. Elaborate on activated sludge process. **10**
- b) Give details of different filtration techniques used in downstream processing. **5**
8. Write short on **any three** : **15**
- a) Somatostatin
  - b) Safety and purity of biotech products
  - c) Advantages of recombinant vaccines
  - d) Monoclonal antibody production.

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**Third Year B.Pharmacy Examination, 2011**  
**PHARMACEUTICAL ANALYSIS – II**  
**(2004 Course)**

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** diagram must be drawn **wherever** necessary.
- 4) **Black** figures to the **right** indicate **full** marks.

SECTION – I

1. A) Explain origin and theory of UV spectra. What are various interaction of EMR with matter. **6**
- B) Explain the following terms : **4**
- a) Chromophore
- b) Cut off wavelength of solvent
- c) Monochromator
- d) Excitation of spectra.
2. A) What is polarogram ? What are factors affecting diffusion current ? **8**
- B) Explain instrumentation of polarography. Write in detail about DME. **7**
3. A) What are the standard electrode and indicator electrode used in potentiometry ? Write construction and working of combined glass electrode used in pH metry. **8**
- B) What is the cell constant of conductivity metre ? How it is related with conductance ? **7**
4. Write a note on **any three** : **15**
- a) Optical rotatory dispersion and CD
- b) Differential scanning calorimetry
- c) Fundamental laws of absorption of EMR
- d) Amperometric titrations.

P.T.O.



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SECTION – II

5. A) What is chromatography ? What are different principles of chromatographic technique ? 5
- B) Explain Van Deemter equation w.r.t. importance in setting column condition. 5
6. A) Write how fluorescence and concentration of material is related. Explain the terms : singlet state and intersystem crossing. 7
- B) In photoflurometer, primary and secondary filters at  $90^\circ$ . Explain. 4
- C) What are the factors affecting fluorescence ? 4
7. A) What is principle of radioimmunoassay ? Enlist application of it. 8
- B) Write apparatus and techniques of coluometric methods of analysis. 7
8. Write a note on **any three** : 15
- a) Adsorbents used in TLC
  - b) Principle and applications of Nephelometry
  - c) Abbes refractometer
  - d) Photo multiplier tube.

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B/I/11/485



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**Third Year B.Pharmacy Examination, 2011**  
**PHARMACOLOGY – II**  
**(2004 Course)**

Time : 3 Hours

Max. Marks : 80

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

SECTION – I

1. Discuss the mode of action, efficacy and drug interactions of oral contraceptives. **10**
2. Classify bronchodilator drugs. Give rational approaches of pharmacotherapy of asthma. **15**
3. Classify cholinomimetic agents with examples. Explain the treatment of organophosphorus poisoning. **15**
4. Write a note on **any three** : **15**
  - A) Muscarinic receptors
  - B) Glaucoma
  - C) Insulin preparations
  - D) Corticosteroid antagonist.

SECTION – II

5. Write the pharmacological account on barbiturates. **10**
6. Classify NSAIDs. Explain the pharmacology of Aspirin. **15**
7. a) Explain the pharmacotherapy of rheumatoid arthritis. **15**  
b) Write the pharmacological account on antianxiety agents.
8. Write a note on **any three** : **15**
  - A) Pharmacotherapy of Alcoholism
  - B) Tricyclic antidepressants
  - C) Opioid dependence
  - D) Halothane.

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**Fourth Year B.Pharm. Examination, 2011**  
**PHARMACOGNOSY – III**  
**(2004 Course)**  
**Pharmacognosy and Phyto-Chemistry – III**

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. Answer the following questions in brief : 10
- i) Write two microscopical differences between Cinchona bark and Kurchi Bark.
  - ii) What are protoalkaloids ? Give examples with structure of atleast one.
  - iii) State the hydrolysis product of
    - a) Atropine
    - b) Cocaine
  - iv) What is Cinchona Red ? What is its importance in Cinchona Bark ?
  - v) Write pharmacological significance of
    - a) Colchicine
    - b) Solasodine
  - vi) Describe the ring system for purine alkaloids. Give the chemical test to detect them.
2. A) Describe in details method of extraction of opium alkaloids. State their pharmacological significance. 5
- B) Draw a well labelled diagram of T.S. of Ephedra; enlisting their important diagnostic features. 5
- C) Differentiate between the following crude drugs with atleast five differentiating features. 5
- i) Brazillian Ipecac and Panama Ipecac.
  - ii) Lobelia I.P. and Lobelia B.P.

P.T.O.





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**Fourth Year B.Pharmacy Examination, 2011**  
**PHARMACEUTICS – IV**  
**(2004 Course)**

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. Explain design, construction and working of HEPA filter unit. Give its evaluation and validation tests. **10**
2. Explain importance of Validation Master Plan (VMP) in pharmaceutical industry. **15**
3. What are the sources for particulate matter in parenterals ? Which methods are used to detect the same ? What is the limit for particular matter in parenterals as per Pharmacopoeia ? **15**
4. Write short notes on (**any three**) : **15**
  - a) Intraperitoneal dialysis fluid
  - b) Optimization methods in pharmaceuticals
  - c) Quality control tests for parenterals
  - d) Drawbacks of conventional ophthalmic preparations
  - e) Preformulation studies for parenteral proteins and peptides.

P.T.O.

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SECTION – II

5. What are the techniques used for filling of aerosols in containers ? Explain different types of aerosol systems. **10**
6. Enlist methods for preparation of microencapsules. Explain coacervation phase separation method with examples. Discuss applications of microencapsules. **15**
7. How controlled release system differs from sustained release system ? What is the rationale for selection of drug candidates for controlled drug delivery systems ? Discuss oral controlled release dosage forms. **15**
8. Write short notes on (**any three**) : **15**
- a) Polymers for modified drug delivery systems
  - b) Interfacial polymerization
  - c) Osmotic drug delivery system
  - d) Probiotics
  - e) Iontophoretic drug delivery system.

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B/1/11/3,505



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**Fourth Year B. Pharm. Examination, 2011  
PHARMACEUTICAL ANALYSIS – III  
(2004 Course)**

Time : 3 Hours

Max. Marks : 80

- Instructions :** 1) *Question No. 1 and 5 are compulsory.*  
2) *Out of the 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 labeled diagrams wherever necessary.*

SECTION – I

- |   |    |
|---|----|
| 1. a) Explain spin-spin coupling and chemical shift.                          | 4  |
| b) Explain how spin-spin coupling is useful in structural elucidation.        | 6  |
| 2. a) Explain in brief, 'Analytical Method Validation' as per ICH guidelines. | 9  |
| b) Explain the terms ENDOR and ELDOR.   | 6  |
| 3. a) Describe various sample handling techniques for solid samples in IR.    | 8  |
| b) Discuss various types of mass analyser in mass spectroscopy.               | 7  |
| 4. Write short notes on <b>any three</b> :                                    | 15 |
| a) Raman spectroscopy   |    |
| b) X-ray diffraction methods  |    |
| c) Difference between atomic absorption and flame emission spectroscopy       |    |
| d) FTIR.  |    |

P.T.O.

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SECTION – II

5. a) Write in brief theory of Gas Chromatography. **5**  
b) Explain band broadening and HETP in gas chromatography. **5**
6. a) Discuss various types of pumps used in HPLC. **8**  
b) Write in brief about trouble shooting and quantitation technique in HPLC. **7**
7. a) Give the application of HPTLC. **6**  
b) Explain simulated moving bed technology and principle of super critical fluid extraction. **9**
8. Write short notes on **any three** : **15**  
a) Different modes of electrophoresis  
b) Nuclear reaction and radiation  
c) Detectors in gas chromatography  
d) Horizontal TLC.

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B/I/11/3,505





**First Year B. Pharmacy Examination, 2011**  
**Paper – 1.7 : COMPUTER APPLICATIONS AND BIO-STATISTICS**  
**(2008 Pattern)**

Time : 3 Hours

Max. Marks : 80

- Instructions :*
- 1) Question Nos. 1 and 5 are **compulsory**. Out of the remaining attempt **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** diagram must be drawn **whenever** necessary.
  - 4) Black figures to the **right** indicate **full** marks.

**SECTION – I**

1. A) What is a graphical representation of data ? Give the limitation of graphical representation. 5
- B) Draw less than ogive curve for the following data : 4

<b>Class</b>	20 – 25	25 – 30	30 – 35	35 – 40	40 – 45	45 – 50
<b>F</b>	10	15	50	55	40	19

- C) State the merits and demerits of median. 3
2. A) Describe test procedure for testing single population mean if sample size is small. 4
- B) Find Mean and Mode for the data given below : 5  
14, 15, 13, 12, 11, 09, 14, 10, 13, 14, 15, 14, 16, 12, 13
- C) Calculate coefficient of correlation between X and Y from the data given below : 5

<b>X</b>	50	62	72	25	20	60	60
<b>Y</b>	48	65	74	33	25	55	66

P.T.O.



3. A) Distinguish between Chance Causes and Assignable Causes. 4
- B) A die is rolled 5 times. Find the probability of getting '3' or '4' at most 2 times on uppermost face. 5
- C) Find the median from the following distribution of 100 persons by age. 5

<b>Age last birthday</b>	15 – 19	20 – 24	25 – 29	30 – 34	35 – 39	40 – 44
<b>No. of persons</b>	4	20	38	24	10	4

4. A) Calculate standard deviation from the following data : 5

<b>Marks</b>	0 – 10	10 – 20	20 – 30	30 – 40	40 – 50
<b>No. of students</b>	2	4	8	4	2

- B) The equation of two lines of regression obtained in a correlation analysis are

$$4x - 5y + 33 = 0 \text{ and}$$

$$20x - 9y - 107 = 0$$

Find :

- i) The means values of x and y
- ii) Coefficient of correlation between X and Y. 4
- C) Write a note on Stratified Random Sampling. 5

### SECTION – II

5. A) How many computer generation have evolved until now ? Explain each. 5
- B) Explain characteristics of computer. 4
- C) Which software is used for preparing presentation slides ? Explain. 3



6. A) Explain the important features of Windows operating system. 4  
B) Convert  $(110111)_2$  binary number to its decimal equivalent. 5  
C) What is software ? Explain the classification of software. 5
7. A) Differentiate between Hard Disk Drive (HDD) and Floppy Disk Drive (FDD). 4  
B) Explain working of Dot matrix printer. 5  
C) Write a short note on : 5  
i) ASCII  
ii) GUI.
8. A) Define computer. Draw and explain the basic block diagram of computer. 5  
B) Explain any one output device used in computer system. 4  
C) Write the advantages and disadvantages of computer. 5

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**First Year B. Pharmacy Examination, 2011  
PHARMACOGNOSY – I (2004 Pattern)**

Time : 3 Hours

Max. Marks : 80

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

**SECTION – I**

1. A) Define the following (any five): 5
- i) Crude drug
  - ii) Evaluation of a crude drug
  - iii) Ash value
  - iv) Stomatal index
  - v) Pallisade ratio
  - vi) Adulteration.
- B) State functions of the following tissues (any five): 5
- i) Stomata
  - ii) Xylem
  - iii) Phloem
  - iv) Schlerenchyma
  - v) Chollenchyma
  - vi) Trichomes.

**P.T.O.**



2. A) Describe in details Anatomy and Histology of Barks. **8**
- B) What are leaf constants ? Explain with suitable examples how leaf constants help in identification and authentication of leaves. **7**
3. A) Explain how diagnosis and treatment of a disease is done in Ayurvedic system of medicine. **8**
- B) What are various methods of cultivation of a crude drug ? Mention their advantages and disadvantages. **7**
4. Write short note on (any three) : **15**
- a) Plant growth regulations
  - b) Pests and pest control
  - c) Chemical classification of a crude drug
  - d) Ergastic cell context.

SECTION – II

5. Give biological source and pharmaceutical uses of the following : **10**
- i) Agar
  - ii) Acacia
  - iii) Locust bean gum
  - iv) Carrageenan
  - v) Inulin.
6. A) Explain the method of manufacturing and preparation of wheat, maize and rice starch. **8**
- B) What are various sources of pectin ? How is pectin isolated from them ? Give its pharmaceutical applications. **7**



7. A) Write specific importance of the following : 8
- i) Ash value
  - ii) Karl Fischer's method
  - iii) Water soluble extractive value
  - iv) Phloroglucinol and Sudan Red III.
- B) Define Sophistication. How and why the intentional adulteration is done ?  
Explain with appropriate examples. 7
8. Write short note on (any three) : 15
- a) Preliminary phytochemical screening
  - b) Honey
  - c) Cellulose and cellulose derivatives
  - d) Natural sweeteners.
- 

B/1/11/365

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[3956] – 205

Second Year B. Pharmacy Examination, 2011  
2.5 : PHARMACEUTICAL ANALYSIS-- I  
(2008 Pattern)

Time : 3 Hours

Max. Marks : 80

- Instructions:** 1) Answer **three** questions from Section I and **three** questions from Section II.  
2) Question Nos. **one** and **four** are **compulsory**.  
3) Answer to the **two** Sections should be written in **separate** books.  
4) **Black** figures to the **right** indicate **full** marks.

SECTION – I

1. Solve **any one** :
- i) What is buffer index ? Explain buffer in detail. Write equation to calculate pH of buffer solution. Discuss various types of solvents used in non aqueous titration. 10
  - ii) Explain in details about applications and instrumentation of polarimeter. Define specific and molecular rotation. 10
2. Solve **any five** : 15
- i) Classify chemical indicators with suitable examples.
  - ii) What is cotton effect ?
  - iii) Discuss on sodium nitrate titration.
  - iv) Write down assay of titanous chloride.
  - v) Explain the principle of permanganate titration.
  - vi) Discuss in brief Ostwald theory.
  - vii) Enlist various conditions used in iodometric determination.
3. Write notes on (any **three**) : 15
- i) High frequency method
  - ii) Redox indicators
  - iii) Theory of optical activity
  - iv) Iodine titration
  - v) Pharmaceutical application of non aqueous titration.

P.T.O.



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SECTION – II

4. Classify electrodes potentiometry and add a note on glass electrode. Discuss on mixture analysis in complexometric titration. 10

OR

What is co-precipitation and how it is reduced? Give the application of gravimetric analysis.

5. Solve **any five** : 15

- i) Discuss on metalochromic indicators.
- ii) Explain chelation and coordination number.
- iii) Write down assay of calcium gluconate as per I.P.
- iv) Discuss on post precipitate.
- v) Give the classification of errors and mean to minimize errors.
- vi) Explain masking and demasking phenomenon.
- vii) Why Eoson is used in acidic condition?

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

- i) Applications of pH and potentiometry
- ii) Types of EDTA titrations
- iii) Kfajans method
- iv) Oxygen flask combustion
- v) Filtration.

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B/1/11/3,745



[3956] – 31

**Third Year B. Pharmacy Examination, 2011  
PHARMACEUTICS – III (2004 Course)**

Time : 3 Hours

Max. Marks : 80

- Instructions :** 1) *Question Nos. 1 and 5 are compulsory. Out of the remaining attempt 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. Discuss in detail any five defects in process of film coating of tablets and suggest remedies to each. **10**
2. A) Explain manufacture of gelatin from raw material and explain various steps in manufacture of empty hard gelatin capsules. **8**
- B) Write a detail account of biopharmaceutical aspects regarding development of pharmaceutical product. **7**
3. A) Explain various excipients used in tablet formulation and their role in tableting. **8**
- B) Give detail account of nature of gelatin used in manufacture of soft gelatin capsule. Add a note on role of plasticizers in soft gelatin capsule. **7**
4. Write short notes on (**any three**) : **15**
- 1) Chewable tablets
- 2) Physics of compression
- 3) Extrusion spheronization
- 4) Polymorphism in preformulation studies.

**P.T.O.**

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SECTION – II

5. What are hair care preparations ? Write in detail formulation aspects of shampoo. **10**
6. A) Write in detail different methods of preparation of ointment with suitable examples. **8**  
B) Give an account of evaluation of suspension. **7**
7. A) What are principles of effectiveness of sunscreen preparations ? Explain with examples. **8**  
B) What are pharmaceutical considerations in development of body cosmetic products ? **7**
8. Write short notes on **(any three)** : **15**
- 1) Equipments used in manufacturing of suspension and emulsion
  - 2) Beeswax-borax creams
  - 3) Multiple emulsions
  - 4) Displacement value.
- 

B/II/11/505



[3956] – 36

**Third Year B.Pharmacy Examination, 2011**  
**PHARMACOGNOSY – II**  
**(2004 Course)**

Time : 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. Answer the following :
- a) Differentiate between the following :
    - i) Sumatra Benzoin and Siam Benzoin
    - ii) Cardenolides and Buffadenolides4
  - b) Explain and give the significance of Dott test. 3
  - c) Explain and give the significance of Borntrager's test and Modified Borntrager's test. 3
2. A) Define and classify the Volatile oils in detail. Explain different methods used to obtain the volatile oils. 8
- B) Give the pharmacognostic account on Clove. 7
3. A) Give the methods of preparation of the following : 9
- i) Cod liver oil      ii) Silk      iii) Bromelain
- B) Define and classify Tannins. Give their chemical tests and explain its importance. 6

**P.T.O.**

[3956] – 36



4. Write short notes on (any three) : 15
- i) Asafoetida
  - ii) Fenugreek and Chicory
  - iii) Drugs from mineral origin
  - iv) T.S. of Fennel.

SECTION – II

5. A) Explain the following : 6
- i) Keller-Killani test
  - ii) Cupraolin test.
- B) Give Synonym, Biological source, chemical constituents and uses of : 4
- i) Indian saffron
  - ii) Himalayan May apple
6. A) Define and classify Glycosides in detail. Give the biosynthesis of the glycosides. 6
- B) Give the Pharmacognostic account on Mulethi. 9
7. A) Define and classify Lipids. Give the methods of extraction of Lipids. 6
- B) Explain the evaluation parameters of Lipids. 9
8. Write short notes on (any three) : 15
- i) Natural Fibres
  - ii) Tracer techniques and their applications
  - iii) Ginger
  - iv) T. S. of Capsicum.

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**Second Year B. Pharmacy Examination, 2011  
(2008 Pattern)**

**2.2 : PHARMACEUTICAL MICROBIOLOGY AND IMMUNOLOGY**

Time : 3 Hours

Max. Marks : 80

- Instructions :** 1) Question Nos. 01 and 05 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. Answer the following (**any five**) : **10**
- a) Give the different applications of microbiology in pharmacy.
  - b) Why cedar wood oil used with oil-immersion objective ?
  - c) Differentiate between Cell wall of Gram Positive and Gram negative bacteria.
  - d) Write the characteristics of Salmonella.
  - e) Explain the term 'Prions'.
  - f) Write morphological characteristics and importance of Saccharomyces Cervisiae.
2. a) Describe the basic requirement for Growth of bacteria. Write a note on synchronous growth. **8**
- b) What are different sources for microbial contamination of pharmaceutical products ? How will you Assess microbial contamination of pharmaceutical product ? **7**
3. Answer the following : **15**
- a) Explain the various approaches used in isolation of actinomycetes.
  - b) Describe in detail Fluorescence microscopy.
  - c) Explain in detail multiplication of human viruses.

P.T.O.

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4. Write a note on **(any three)** : **15**
- a) Factors affecting on preservative efficacy.
  - b) Shapes of bacteria
  - c) Robert Koch
  - d) Disease causing Rickettsia.

SECTION – II

5. Answer the following **(any five)** : **10**
- a) Define :
    - i) Virulence
    - ii) Antiseptic
  - b) What are opsonins ?
  - c) How will you validate HEPA filter ?
  - d) Give the classification of Immunological products.
  - e) Differentiate between Active immunity and passive immunity.
  - f) Enlist biological indicators for monitoring sterilization processes.
6. a) How will you Perform sterility testing of pharmaceutical products as per I. P. **8**
- b) Explain in detail monoclonal antibody production and write application of monoclonal antibodies. **7**
7. Answer the following : **15**
- a) Explain in brief different methods used for evaluation of disinfectant.
  - b) How will you perform microbial assay of penicillin ?
  - c) Explain in short the method of preparation, storage and dose of diphtheria antitoxin.
8. Write a note on **(any three)** : **15**
- a) Sources of contamination in aseptic area.
  - b) Determinants of Virulence.
  - c) Properties of Antigens.
  - d) Type III hypersensitivity.
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B/I/11/3,695





[3956] – 307

**Third Year B. Pharmacy Examination, 2011**  
**3.7 : PHARMACEUTICAL BUSINESS MANAGEMENT**  
**(2008 Course)**

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 in brief concept of material management in pharmaceutical industry. **10**
2. Answer **any five (each three marks)** : **15**
  - a) Explain important steps in planning.
  - b) Explain the functions of Q. C. department.
  - c) Give various methods of purchasing.
  - d) Give causes of Industrial Disputes.
  - e) What is need for new product development, branding and packaging in product management ?
  - f) Explain importance of validation in manufacturing process.
3. Write short note on (**any three**) : **15**
  - 1) R and D in pharma. industry
  - 2) Importance and functions of management
  - 3) Decision making
  - 4) Management by objective.

**P.T.O.**



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SECTION – II

4. Define pricing. Explain factors affecting pricing and various methods of pricing. **10**
5. Answer **any three** : **15**
- a) Write a note on product life cycle.
  - b) Write role and qualities of medical representative.
  - c) What are different types of communication ?
  - d) Define motivation. Write its significance and explain Maslow's theory of motivation.
6. Write short note on (**any three**) : **15**
- a) Regulatory agencies
  - b) Documentation
  - c) Sales promotion
  - d) Channel's of distribution.
- 

B/I/11/3600



[3956] – 33

**Third Year B.Pharmacy Examination, 2011**  
**PHARMACEUTICAL CHEMISTRY – IV (Medicinal)**  
**(2004 Course)**

Time : 3 Hours

Max. Marks : 80

- Instructions :** 1) Question no. 1 and 5 are **compulsory**. Out of the remaining attempt **two** questions from Section I and **two** 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

1. Write structure, IUPAC name and mechanism of action of the following **any three** : 12
- 1) Ketoconazole
  - 2) Melphalan
  - 3) Metronidazole
  - 4) Trimethoprim.
2. A) What are antibiotics ? Explain with examples the development of acid and enzyme resistant penicillines. 7
- B) Write the mode of action and synthetic steps for Clotrimazole. 7
3. A) What is cancer ? Classify anticancer agents with examples. 7
- B) Discuss the chemistry of alkylating agents with mode of action. 7
4. A) What is fungal infection ? Add a note on imidazole antifungals. 7
- B) Explain the chemistry of Tetracyclines. 7

P.T.O.

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SECTION – II

5. A) What is viral infection ? Classify antiviral drugs with examples. **6**  
B) Write a note on the development of reverse transcriptase inhibitors. **6**
6. A) What are antimetabolites ? Classify the chemotherapeutic agents acting as antimetabolites with examples. **7**  
B) Write the synthesis for Pyrimethamine. **7**
7. A) What are sulphonamides ? Discuss the physicochemical properties and SAR for sulphonamides. **7**  
B) What is synergism ? Explain synergism of sulphonamides with DHFR inhibitors. **7**
8. Write note on **any two** : **14**  
1) Mode of action of quinolone antibacterials  
2) HIV protease inhibitors  
3) Sources of lead structures in drug design.
- 

B/I/11/715



[3956] – 45

**Fourth Year B. Pharm. Examination, 2011**  
**PHARMACEUTICAL JURISPRUDENCE AND REGULATORY AFFAIRS**  
**(2004 Course)**

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

SECTION – I

1. Discuss in detail the constitution, functions and working of pharmacy council of India. 10
2. A) Discuss the conditions for the grant or renewal of license for manufacture of drugs other than those specified in schedule C, C<sub>1</sub> and X. 9
- B) Labelling of vaccines and ophthalmic preparations. 6
3. A) Discuss formula for calculation of retail price of formulation. 6
- B) Define Cannabis. Discuss various penalties under NDPS Act. Discuss the powers the power of central government to permit and regulate certain operations relating to Narcotic Drugs and Psychotropic Sub. Act, 1985. 9
4. Write short notes on (**any three**) : 15
- 1) Education regulation
- 2) Cyber law
- 3) Public analyst
- 4) Industrial safety and health.

P.T.O.

[3956] – 45



SECTION – II

5. What is Hatch Waxman Act with reference to generic drugs, add note on ANDA and bioequivalence. **10**
6. A) Discuss in brief about : **8**  
a) Electronic submission  
b) Investigation new drug application.
- B) Discuss general procedure for securing patents in India. **7**
7. A) Discuss in brief salient features of Indian Patent Act, 1970. Discuss provision of compulsory license. **7**  
B) Discuss WHO Guidelines. **8**
8. Write a short note on (**any three**) : **15**  
a) DMF  
b) TGA  
c) MCA  
d) BLA.

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B/1/11/3,505



[3956] – 305

**Third Year B. Pharmacy Examination, 2011  
(2008 Pattern)  
3.5 : PHARMACOLOGY – II**

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  $\beta$  blockers. Explain the pharmacological actions, adverse effects and therapeutic uses of  $\beta$  blockers. **10**
- OR
1. Explain the mechanism of action, the pharmacological actions, adverse effects and therapeutic uses of Atropine. **10**
2. Answer **any five** :
- a) What are the therapeutic uses of  $\alpha$  adrenergic blockers ? **3**
  - b) Explain the metabolism of Adrenaline and noradrenaline. **3**
  - c) Classify opioid analgesics. **3**
  - d) Classify the drugs used in the treatment of parkinsonism. **3**
  - e) What is preanaesthetic medication ? Explain in brief. **3**
  - f) What are the advantages of benzodiazepines over barbiturates ? **3**
  - g) What are the therapeutic uses of adrenaline ? **3**
3. Write short notes on **any three** :
- a) Morphine poisoning. **5**
  - b) Biphasic response and Dale's vasomotor reversal. **5**
  - c) Treatment of Alzheimer's disease. **5**
  - d) Tricyclic antidepressants. **5**
  - e) Status epilepticus. **5**

P.T.O.

[3956] – 305



SECTION – II

4. Explain in detail the pharmacotherapy of peptic ulcer. 10
- OR
4. Explain the mechanism of action, the pharmacological actions, adverse effects and therapeutic uses of insulin. 10
5. Answer **any five** :
- a) Explain the mechanism of action of local anesthetics. 3
  - b) What are the therapeutic uses of oxytocin ? 3
  - c) Classify antiemetics. 3
  - d) Classify laxatives. 3
  - e) What is the mechanism of action of oral contraceptives ? 3
  - f) Classify antiasthmatics. 3
  - g) Write a brief note on glucagon. 3
6. Write short notes on **any three** :
- a) Calcitonin. 5
  - b) Emetics. 5
  - c) Sulphonylureas. 5
  - d) Pharmacotherapy of cough. 5
  - e) Antithyroid drugs. 5
- 

B/1/11/3,600



First Year B.Pharmacy Examination, 2011

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. Discuss the various sources of impurities in pharmaceutical substances. 10

OR

1. Define the terms 'Hard Water' and 'Soft Water'. Distinguish between permanent and temporary hardness of water. Discuss official tests applicable to official waters.

2. Attempt any five of the following : 15

- a) Explain in brief radio-opaque substances with examples.
- b) Name and explain subatomic particles.
- c) Explain ash value and its significance.
- d) Why stannated hydrochloric acid is used in limit test for arsenic ?
- e) Explain the terms 'preservative' and 'diluent' with examples.
- f) Give the method of preparation, properties and uses of nitrous oxide.
- g) Enlist different waters official in IP and explain sterile water for injection.

P.T.O.



[3956] – 103



3. Write notes on **any three** of the following : 15
- a) Properties, uses and assay of oxygen
  - b) Antioxidants
  - c) Various identification tests as per IP
  - d) Limit test for sulphate
  - e) Handling and storage of radioactive materials.

SECTION – II

4. Discuss the method of preparation, uses and assay of compounds used in cyanide poisoning. 10

OR

4. Discuss the methods of preparation, uses and assay of magnesium carbonate and calcium phosphate.
5. Attempt **any five** of the following : 15
- a) Explain the properties, uses and assay of iodine solution IP.
  - b) What is metabolic acidosis ?
  - c) Enlist official sodium chloride formulations used in electrolyte replacement therapy.
  - d) Describe preparation, uses and assay of sodium fluoride.
  - e) Explain the reactions involved in assay of potassium iodide.
  - f) Discuss role of zinc and its salts as essential and trace ion.
  - g) Describe with principle and reactions assay of hydrogen peroxide.
6. Write notes on **any three** of the following : 15
- a) Assay of boric acid IP
  - b) Mechanism of action of topical agents
  - c) Copper sulphate
  - d) Physiological role of chloride and bicarbonate
  - e) Assay of potassium permanganate.

B/I/11/3335



[3956] – 202A

**Second Year B.Pharmacy Examination, 2011  
(2008 Pattern)**

**2.2 : PHARMACEUTICAL MICROBIOLOGY AND IMMUNOLOGY**

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 different methods used for isolation of bacteria and write a note on 'Colony characteristics'. 10
- OR
1. List different types of microscopy. Explain in detail electron microscopy. 10
2. Answer the following (**any five**) : 15
- a) Differentiate between Gram positive and Gram negative cell wall of bacteria.
  - b) Write the characteristics of Escherichia.
  - c) Draw and explain in short growth curve of bacteria.
  - d) What are the contributions of Robert Koch to microbiology ?
  - e) How will you isolate actinomycetes from soil ?
  - f) Write 'Whittaker's five kingdom concept'.
  - g) Differentiate between Lytic and lysogenic cycle of bacteriophage.
3. Write a note on (**any three**) : 15
- a) Dermatophytes
  - b) Preservation of pharmaceutical products
  - c) Multiplication of human viruses
  - d) Rickettsia
  - e) Types of microbial spoilage.

P.T.O.

[3956] – 202A



SECTION – II

4. Describe in detail monoclonal antibody production and explain its applications. **10**

OR

4. What is microbial assay ? Discuss in detail general methods used for microbial assay of antibiotics as per I.P. **10**

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

- a) Differentiate between active immunity and passive immunity.
- b) Explain in detail 'complement fixation test'.
- c) Explain in short designing of aseptic area.
- d) What is D-value and write its significance ?
- e) What is triple vaccine ? Explain.
- f) Write biological indicators used for evaluating the sterilization process.
- g) Write ideal properties of disinfectants.

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

- a) Determinants of virulence
- b) Membrane filtration
- c) Type I-hypersensitivity
- d) Phenol coefficient test
- e) Diphtheria antitoxin.

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B/I/11/3,695



[3956] – 206

**Second Year B. Pharmacy Examination, 2011**  
**2.6 : PHARMACOGNOSY – I**  
**(2008 Pattern)**

Time : 3 Hours

Max. Marks : 80

*Instructions : Question Nos. 1 and 5 are compulsory. Solve any two questions from the remaining.*

SECTION – I

1. Write note on following : 10
  - a) Ergastic cell contents
  - b) Cultivation of crude drugs
  - c) Quality control of crude drugs
  - d) Proper collection of crude drugs.
2. A) Define neutraceuticals. Write about any three neutraceutical drugs. 8  
B) Explain role of plant growth regulators in the production of good quality crude drugs. 7
3. A) Define Pharmacognosy. Explain role of various scientists in the development of Pharmacognosy. 8  
B) Write note on ash value and its significance. 7
4. Write note on **any three** : 15
  - A) Subterranean organs
  - B) Adulteration of crude drugs
  - C) Absorbent cotton
  - D) Honey.

P.T.O.



SECTION – II

5. Answer the following :

- a) What is Stomatal number ? Give its significance. 2
  - b) What is Papyrus Ebers ? 2
  - c) Define gum and mucilage. 2
  - d) Differentiate between organised drug and unorganised drug. 2
  - e) Describe the various shapes of bark. 2
6. A) Define carbohydrates along with its classification and chemistry. 8
- B) Describe morphology and anatomy of bark drug. 7
7. A) Define primary and secondary metabolites in plants. Classify them with relation to biosynthetic pathways. 7
- B) Give two identification tests for following drugs : 8
- i) Agar                      ii) Starch
  - iii) Guar gum              iv) Acacia
8. A) Explain dermal tissue system in plants. Add a note on ergastic cell contents. 7
- B) Define extraction. Which are various methods of extraction and explain their merits and demerits ? 8



[3956] – 208

**Second Year B.Pharmacy Examination, 2011  
PHARMACEUTICAL ENGINEERING  
(2004 Pattern)**

Time : 3 Hours

Max. Marks : 80

- Instructions:** 1) *Q. No. 1 and 5 are compulsory, attempt any two questions from remaining three questions from Section I and three 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. a) Explain the Kirchoff's law. **5**  
b) Explain the heat transfer during pool boiling. **5**  
c) Explain the construction and working of multiple effect evaporator. **5**
3. a) Explain the tubular heat exchangers as heat transfer equipment. **5**  
b) Explain the construction and working of any one type of boiler. **5**  
c) Explain the construction and working of Swenson-Walker crystallizer. **5**
4. Write short notes on (any three) : **15**  
a) Mier's supersaturation theory  
b) Mechanical steam trap  
c) Central air conditioning  
d) Water de-ionization.

**P.T.O.**

[3956] – 208



SECTION – II

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

B/I/11/435



[3956] – 301

**Third Year B. Pharmacy Examination, 2011**

**(2008 Pattern)**

**3.1 : PHARMACEUTICS – II**

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. Describe goals and importance of preformulation. Discuss bulk characterization in detail. **10**
2. Attempt **any 3** : **(5 Marks each)**
  - a) Write a note on directly compressible vehicles.
  - b) Discuss defects encountered in tablet manufacture with causes and remedies.
  - c) Give an account of film formers in tablet coating.
  - d) Write a note on interaction of container and closure.
3. Attempt **any 3** : **(5 Marks each)**
  - a) Discuss advances in tablet coating pans.
  - b) Describe problems encountered in formulation of dry filled capsules and considerations that go into selection of excipients.
  - c) Write a note on packaging and packaging materials used for tablets.
  - d) Write a note on CGMP guidelines.

**P.T.O.**



[3956] – 301



SECTION – II

4. Discuss the stability of suspension with the help of DLVO theory. Describe evaluation of suspensions 10
5. Attempt **any 3** : (5 Marks each)
- a) Write a note on antiperspirants and deodorants.
  - b) Give composition of lipstick and evaluation test for lipstick.
  - c) Write note on penetration enhancers.
  - d) Describe the stability testing of emulsions.
6. Attempt **any 3** : (5 Marks each)
- a) What are cosmeceutical ? Describe the importance of hydroxy acids as cosmeceutical.
  - b) Give comparative account of cold cream and vanishing cream.
  - c) Write a note on wet shave preparations.
  - d) Describe hair colouring preparations.
- 

B/1/11/3,600



[3956] – 301A

**Third Year B. Pharmacy Examination, 2011  
(2008 Pattern)**

**3.1 : PHARMACEUTICS – II**

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.

SECTION – I

1. Attempt **any one** : **10**

Describe goals and importance of preformulation. Discuss bulk characterization in detail.

OR

Discuss granulation processes. Give elaborate account of advances in granulation methods.

2. Attempt **any five** (each 3 marks) : **15**

- a) Give an account of material used for tablet packing.
- b) Explain the significance of base adsorption .
- c) Explain disintegration test for tablets.
- d) Explain the problem of picking and sticking in tablet manufacture.
- e) Give biopharmaceutical aspects of dosage form design.
- f) Describe interaction of dosage forms with containers.
- g) What are JCH guide lines ?

3. Attempt **any three** (each 5 marks) : **15**

- a) Give an account of film formers in tablet coating.
- b) Discuss various perforated pans used in tablet coating.
- c) Write a note on gelatin in capsule manufacture.
- d) Describe formulation of effervescent tablets.
- e) Describe compression cycle in rotary tablet machine.

**P.T.O.**

[3956] – 301A



SECTION – II

4. Attempt **any one** : **10**

Discuss the stability of suspensions with the help of DLVO theory. Describe evaluation of suspension.

OR

Give an elaborate account of various ointment bases. Add a note on routes of transdermal permeation of drug.

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

- a) Evaluation tests of lipstick.
- b) Use of hydroxy acids as cosmeceuticals.
- c) Give ideal requirements and formulation of lather shaving cream.
- d) Describe additives used in suspension.
- e) Explain importance of diluent : solvent ratio in nail lacquer.
- f) Describe tests for evaluation of emulsions.
- g) Explain concept of phase inversion temperature.

6. Attempt **any three (each 5 marks)** : **15**

- a) Give an account of penetration enhancers.
- b) Write a note on chemical depilatory.
- c) Explain difference between temporary, semi permanent and permanent hair colours. Give an account of permanent hair colorants.
- d) What are the principles of action of sunscreen ? Give ideal properties of sunscreen preparations.
- e) Give an account of equipments used in manufacture of semisolids.

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B/I/11/3,600



[3956] – 303A

**Third Year B.Pharmacy Examination, 2011  
(2008 Pattern)**

**3.3 : MEDICINAL CHEMISTRY – I**

Time : 3 Hours

Max. Marks : 80

- Note :*
- 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.*
  - 4) *Correct structure and neat diagrams must be drawn wherever necessary.*

SECTION – I

1. Solve **any one** :
  - I) Give the classification of anticonvulsant drugs on the basis of chemical structures. Give the MOA, SAR of Hydantoins. 10
  - II) Describe the Chemistry, Pharmacological actions, SAR and Metabolism of acetyl choline. 10
2. Attempt **any five** of the following : 15
  - a) Outline synthesis of Nikethamide.
  - b) Classify oral Hypoglycemic agents with examples.
  - c) Discuss about adrenergic receptors and classify adrenergic agents.
  - d) Draw Synthesis of Doxepin.
  - e) What are major pathways of drug metabolism ? Explain Phase I reactions.
  - f) Give an account of forces involved in drug receptor interaction.
  - g) Classify antiarrhythmic agents with examples.
3. Write notes on (**any three**) : 15
  - a) Preanaesthetic medication
  - b) SAR of Sympathomimetic agents
  - c) Discuss MOA, SAR of Benzodiazepines
  - d) Drugs used in Parkinsons disease
  - e) MAO inhibitors.

P.T.O.

[3956] – 303A



SECTION – II

4. Classify sedative and Hypnotics. Give MOA, SAR of Barbiturates. **10**
- OR
4. a) Discuss in detail the SAR studies of tricyclic antidepressant agents along with suitable examples. **6**
- b) Give the classification of neuromuscular blocking agents on the basis of MOA. **4**
5. Attempt **any five** of the following : **15**
- a) Outline synthesis of Diphenhydramine.
- b) Discuss ester based local anaesthetics.
- c) Classify with suitable examples and give the mode of action of cardiotonics.
- d) Outline synthesis of Guanethidine Monophosphate.
- e) What is difference between sedatives, hypnotics, anticonvulsants and general anaesthetics ?
- f) Elaborate various factors affecting drug-protein binding.
- g) Discuss the process of metabolic inactivation of norepinephrine in the body.
6. Write notes on (**any three**) : **15**
- a) Antimigraine agents
- b) CNS stimulants drugs
- c) ACE inhibitors
- d) Hallucinogens
- e) Volatile anaesthetics.

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B/1/11/3,600



[3956] – 304

**Third Year B. Pharmacy Examination, 2011**  
**3.4 : PHARMACEUTICAL ANALYSIS – II**  
**(2008 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** answer books.
- 3) **Neat** diagrams must be drawn **wherever** necessary.
- 4) **Black** figures to the **right** indicate **full** marks.

SECTION – I

1. A) Explain Van Deemters equation in detail. How it helps to improve column performance ? **6**
- B) Write the theory of UV-Vis spectroscopy. **4**
2. A) Draw a neat diagram of DME and explain its functioning along with advantages and limitations of the DME. **7**
- B) What are salient features of Polarograph ? Discuss the factors affecting limiting current. **5**
- C) What is half wave potential ? Give its significance. **3**
3. A) State the principle of fluorimetry. Draw a neat labeled diagram of fluorimeter. **7**
- B) Discuss the factors affecting fluorescence. **5**
- C) What is singlet state, triplet state and quenching ? **3**
4. Write a note on **any three** : **15**
- a) Advantages and limitations of Amperometric titrations
- b) Potentiostatic Coulometry
- c) Radiation sources in UV-Vis spectrophotometry
- d) Measurement of angle of refraction.

P.T.O.

[3956] – 304



SECTION – II

5. A) Explain the following terms :
- 1) Molar absorptivity
  - 2) EMR
  - 3) Wavelength
  - 4) Retention time. 4
- B) Discuss in brief about filters and monochromators used in UV-Vis spectroscopy. 6
6. A) What are different methods of thermal analysis ? Explain the factors affecting thermogravimetric results. 7
- B) Explain the difference between Nephelometry and Turbidometry. Give the instrumentation and applications of turbidometric analysis. 8
7. A) Describe Principle and applications of flame photometry. 7
- B) Draw a neat labeled diagram of flame photometer. Explain the functioning of each part. 8
8. Write a note on **any three** : 15
- a) Adsorbants used in TLC
  - b) Merits and demerits of instrumental analysis
  - c) DTA
  - d) Applications of fluorimetry.

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B/1/11/3,600



[3956] – 307A

**Third Year B. Pharmacy Examination, 2011  
(2008 Pattern)**

**3.7 : PHARMACEUTICAL BUSINESS MANAGEMENT**

Time : 3 Hours

Max. Marks : 80

SECTION – I

1. Explain in brief concept of material management in Pharmaceutical Industry. **10**

OR

1. Explain in brief drug discovery and development process.

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

a) Describe important steps in planning.

b) Explain the functions of Q.C. department.

c) Give various methods of purchasing.

d) Give causes of industrial dispute.

e) What is need for new product development, branding and packaging in product management ?

f) What is validation ? Explain its importance.

g) Explain break even analysis.

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

a) R and D in pharma industry.

b) Importance and functions of management.

c) Decision making.

d) Management by objective.

e) Current status and growth scenario of pharmaceutical industry.

**P.T.O.**



[3956] – 307A



SECTION – II

4. Define pricing. Explain factors affecting pricing and various methods of pricing. **10**

OR

4. Write qualities of leadership. Explain different styles of leadership.

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

- a) Explain product life cycle.
- b) What are qualities and role of a medical representative ?
- c) What is motivation ? Write its significance.
- d) Write in brief about different types of communication.
- e) Write techniques of sales promotions.
- f) Write importance of marketing research.
- g) Write in brief methods of advertising.

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

- a) Regulatory agencies
- b) Channels of distribution
- c) Performance appraisal
- d) Interview techniques
- e) Maslow's theory of motivation.

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B/1/11/3,600



[3956] – 37

**Third Year B.Pharmacy Examination, 2011**  
**PHARMACEUTICAL MARKETING AND MANAGEMENT**  
**(2004 Course)**

Time : 3 Hours

Max. Marks : 80

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

SECTION – I

1. Solve the following : 5

A) Price per unit Rs. 10.00, variable cost is Rs. 5.00 and fixed cost is Rs. 20,00,000. Calculate : P/V ratio, BES, sales to earn profit of Rs. 50,00,000, profit at sales Rs. 1,00,00,000 and MOS.

B) Draw the network and find the critical path. 5

Activity	Te
0 → 1	5
0 → 2	5
1 → 3	30
2 → 3	60
3 → 4	25
4 → 5	7
4 → 9	5
9 → 10	10
10 → 5	0
10 → 11	10
11 → 12	10
12 → 13	45
13 → 14	30
5 → 6	5
6 → 7	25
7 → 8	10
8 → 14	0
10 → 14	1
14 → 15	5

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- 2. A) What are the causes of industrial dispute ? Focus on collective bargaining. 8
- B) Differentiate the terms purchasing and procurement. Give methods of purchasing. 7
- 3. A) Define planning. Give the process and importance of planning. 8
- B) Explain the process of new drug discovery and development. 7
- 4. Write short note on (**any three**) : 15
- A) PRIDE
- B) Sales forecasting
- C) Fundamental principles of organizing
- D) TRIPS.

SECTION – II

- 5. A) From the following information prepare balance sheet of Jidnyasa Remedies. 5
- | <b>Particulars</b>  | <b>Dr.</b>      | <b>Particulars</b>  | <b>Cr.</b>      |
|---------------------|-----------------|---------------------|-----------------|
| Goodwill            | 36,000          | Capital             | 1,80,000        |
| Drawings            | 6,000           | Net profit          | 10,000          |
| Land and building   | 1,00,000        | Bills payable       | 1,000           |
| Plant and machinery | 36,000          | Sundry creditors    | 2,500           |
| Furniture           | 16,000          | Interest on capital | 18,000          |
| Bills receivable    | 4,000           |                     |                 |
| Closing stock       | 6,500           |                     |                 |
| Cash in hand        | 7,000           |                     |                 |
|                     | <b>2,11,500</b> |                     | <b>2,11,500</b> |
- B) Purchase price per unit Rs. 60, purchase order cost Rs. 240, total requirement for a year 9000 units, carrying cost 20% of average inventory value; Calculate EOQ. 5
  - 6. A) Explain ABC and VED analysis. 4
  - B) Explain product life cycle. 4
  - C) What are different styles of leadership ? Discuss about managerial grid. 7
  - 7. A) Define price. What are the types and factors affecting the price ? 8
  - B) Explain in detail the classification of theories of motivation. 7
  - 8. Write short note (**any three**) : 15
  - A) Marketing research    B) Advertising    C) PLC    D) EOQ.



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**Fourth Year B.Pharm. Examination, 2011**  
**BIOPHARMACEUTICS AND PHARMACOKINETICS – V**  
**(2004 Course)**

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. Explain the pharmacotechnical factors that influence GI absorption of a drug. **10**
2. Why is distribution of a drug not uniform throughout the body ? Explain the different factors influencing drug distribution. **15**
3. a) Explain the significance of protein tissue binding of drugs. **10**  
b) Renal excretion of penicillins is unaffected by protein-drug binding. Why ? **5**
4. Write short notes on (**any 3**) : **15**
  - a) pH partition hypothesis
  - b) Volume of distribution and its significance
  - c) Bioactivation and tissue toxicity
  - d) BCS and BDDCS.

**P.T.O.**

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SECTION – II

5. What are the various nonrenal routes of drug excretion ? **10**
6. a) Discuss the different factors affecting the drug interactions. **7.5**  
b) Discuss the factors affecting drug dissolution. **7.5**
7. Define and explain extraction ratio. How is it related to oral availability of a drug ? Explain the influence of blood flow rate and protein binding on total clearance of drugs with different ER values. **15**
8. a) Discuss the factors affecting bioavailability of a drug. **8**  
b) Discuss the applications of pharmacokinetic principles. **7**

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**Fourth Year B.Pharm. Examination, 2011**  
**PHARMACEUTICAL CHEMISTRY – V (Medicinal)**  
**(2004 Course)**

Time : 3 Hours

Max. Marks : 80

- Instructions :** 1) Q. No. 1 and Q. No. 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) Figures to the **right** indicates **full** marks.
- 4) Correct structure must be drawn **wherever** necessary.

SECTION – I

1. Explain cholinergic receptors. Classify cholinergic agents. Write SAR of ACh. **12**
2. a) What are major pathways of metabolism ? Explain oxidation reactions in detail. **6**  
b) Classify sympathomimetic agents and add a note on mixed action drugs. **6**  
c) Draw synthesis of diazepam. **2**
3. a) Classify general anesthetics and add a note on SAR, MOA of barbiturates. **6**  
b) Explain SAR, MOA and uses of tricyclic antidepressants. **6**  
c) Draw synthesis of imipramine. **2**
4. a) Write notes on (**any three**) : **12**  
1) Drug receptor interactions  
2) Hydantioins as anticonvulsants  
3) Isosterism and biological activity  
4) Free Wilson analysis.
- b) Draw synthesis of thiopental sodium. **2**

P.T.O.

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SECTION – II

5. Classify antihistaminics in detail and write a note on Pheniramines. **12**
6. a) Classify diuretics agents and add a note SAR, MOA of site 3 diuretics. **6**  
b) Classify antiarrhythmic agents. Write MOA of each class. Add a note on class I drugs. **6**  
c) Draw synthesis of Diclofenac. **2**
7. a) Write Mechanism of action, SAR of salicylates and anilines as analgesics. **6**  
b) Write a note on steroidal anti inflammatory agents. **6**  
c) Draw synthesis of benzocaine. **2**
8. a) Write notes on (**any three**) : **12**  
1) ACE inhibitor prodrugs  
2) Amide based local anesthetics  
3) Proton pump inhibitors  
4) Antiandrogens.
- b) Draw synthesis of omeprazole. **2**

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