



[3856] – 105

**First Year B.Pharm. Examination, 2010  
(2008 Course)**

**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. Define blood pressure. Discuss factors affecting B.P. and add a note on regulation of B.P. 10
- OR
1. Enlist different organs involved in respiration. Explain mechanism of breathing and exchange of gases at lung and tissue level. 10
2. Solve **any three** : 15
- i) Describe blood clotting mechanism.
  - ii) Enlist conducting elements of heart and explain conduction system of heart.
  - iii) Draw a neat labelled diagram of digestive system and explain functions of liver.
  - iv) Give types and the common locations of epithelial tissues in body. Explain characteristics of epithelial tissues.
  - v) Explain structure and function of lymph node.
3. Write short notes on (**any five**) : 15
- i) Cell membrane
  - ii) Hemolytic disease of new born
  - iii) Blood groups
  - iv) Blood circulation
  - v) ECG
  - vi) Cardiac cycle
  - vii) Enzymes in digestion.

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SECTION – II

4. Enlist various organs of female reproductive system and explain menstrual cycle. **10**

OR

4. Discuss anatomy of skeletal muscle and explain in detail mechanism of muscle contraction. **10**

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

i) Describe urine formation process.

ii) Explain role of hormones of pituitary gland.

iii) Draw a neat labelled diagram of T.S. of spinal cord and explain internal structure of spinal cord.

iv) Comment on reflex arc.

v) Explain structure and function of skin.

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

i) Nephron

ii) Sperm

iii) Distinguish between sympathetic and parasympathetic nervous system

iv) Ovaries

v) Cranial nerves and their functions

vi) Interior of eye ball

vii) Hypothalamic hormones.

B/II/10/905



**First Year B.Pharm. Examination, 2010**  
**COMPUTER APPLICATION AND BIO-STATISTICS**  
**(Including Calculus) (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 whenever necessary.*

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

SECTION – I

1. a) Explain measures of Dispersion. 3

b) Determine the Median of following Frequency Distribution. 4

<b>X</b>	12	13	14	15	16	17
<b>F</b>	2	8	15	15	7	3

c) Compute Standard Deviation and Coefficient of Variance of marks scored by 10 candidates given below : 5  
54, 61, 64, 69, 58, 56, 49, 57, 55, 50

2. a) Explain independent events with suitable example. 4

b) State Merits and Demerits of Mode. 5

c) Calculate Correlation Coefficient between X and Y from the following. 5

<b>X</b>	17	44	48	16	19
<b>Y</b>	8	17	42	19	4

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3. a) Write short note on Scatter Diagram. 4
- b) A card is drawn from a well shuffled pack of Playing cards. What is the Probability that the card is a) A King b) A face card c) An Ace of Spade d) Diamond Card. 5
- c) Evaluate :  $\lim_{x \rightarrow 5} \frac{X^3 + 6X^2 + 12X + 8}{X^2 + 4X + 4}$  5

4. a) Write a note on non-parametric test. 4
- b) Draw less than ogive curve for the following. 5

Class	5 – 15	15 – 25	25 – 35	35 – 45	45 – 55
F	12	20	23	32	15

- c) Define normal distribution and state its properties. 5

## SECTION – II

5. a) Explain different I/O devices of Computer. 5
- b) Explain features of Windows O.S. 4
- c) Convert  $(28)_{10}$  into its binary equivalent. 3
6. a) Explain applications of computer in Pharmacy. 4
- b) Differentiate between High level and Low level Language. 5
- c) Explain characteristics of computer. 5
7. a) Differentiate between RAM and ROM. 4
- b) Explain Desktop in Windows O.S. 5
- c) Explain the following command in DOS. 5
- i) Date ii) Time iii) Mkdir iv) CD v) Copy Con
8. Write short note on :
- a) Unix O.S. 4
- b) Hard Disk 5
- c) Scanner. 5

B/II/10/450



[3856] – 42

**Fourth Year B.Pharmacy Examination, 2010**  
**PHARMACOLOGY – III (Including Clinical)**  
**(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. Classify the drugs used for the treatment of myocardial ischemia. Explain in detail pharmacology of organic nitrates. **12**
2. Classify antitubercular agents. Explain in detail chemotherapy of tuberculosis. Add a note on drugs used for mycobacterium avium complex. **14**
3. Classify anticancer agents. Write in detail pharmacology of any one alkylating agent. **14**
4. Write a note on **any two** : **14**
  - A) Non-pharmacological therapy of hypertension.
  - B) Superinfections.
  - C) Epipodophyllotoxins.

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SECTION – II

5. Explain in detail types and phases of clinical trials. Discuss in detail design and interpretations of double blind placebo control clinical trials. **12**
6. What are the limitations of bioassays ? Explain the design and detail procedure of bioassay of tetanus antitoxin. **14**
7. A) Explain in detail local and systemic toxicities. **14**  
B) Add a detail note on factors influencing toxicity of drugs.
8. Write a note on **any two** : **14**  
A) Prevention and treatment of poisoning.  
B) Adverse drug reactions.  
C) Treatment of arsenic poisoning.

B/II/10/425



[3856] – 101

**First Year B. Pharmacy Examination, 2010**  
**1.1 : PHARMACEUTICS – I**  
**(2008 Pattern)**

Time : 3 Hours

Max. Marks : 80

**Instructions.** : i) *Answers to the two Sections should be written in separate books.*

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

SECTION – I

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

Discuss in detail concept of physicochemical properties involved in preformulation.

OR

Explain the concept of drug delivery system. Add a note on sustained and targeted drug delivery.

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

- a) Describe Ayurveda as system of medicine.
- b) Define 'New Drug' and 'Drug' as per D and C Act, 1940.
- c) Explain cGMP as a tool for quality assurance.
- d) Describe the development of pharmaceutical industry in India.
- e) Define bioequivalence, biopharmaceutics and bioavailability.
- f) Explain ideal characteristics of packaging material.
- g) Explain the need of dosage forms.

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

- a) Mechanism of Absorption.
- b) Quality control of radiopharmaceuticals.
- c) Good manufacturing practices.
- d) Containers and closures
- e) Dose efficiency and dose response concept.

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SECTION – II

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

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

OR

What is filtration ? Explain in brief filter aids and filter media. Explain the construction, working and application of filter leaf.

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

- a) Define elixir, linctus and syrup. Give their examples.
- b) Explain manufacturing of effervescent granules.
- c) Define size separation. Write standards for powders as per I.P.
- d) Explain the various mechanisms for mixing of liquid.
- e) What do you mean by viscosity ? Discuss any one method for viscosity determination.
- f) Write a note on Dry Syrup.
- g) Discuss various factors affecting size reduction.

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

- a) Explain construction, working and application of Edge and End runner mill.
- b) Discuss the formulation and evaluation of oral rehydration powder.
- c) Describe in brief various methods for size separation
- d) Write a note on :
  - i) Propeller mixer
  - ii) Hammer Mill
- e) Define Syrup. Explain methods of preparation and preservation of syrups.

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B/II/10/925





[3856] – 102

**First Year B. Pharm. Examination, 2010**  
**(2008 - Pattern)**  
**1.2 :MODERN DISPENSING PRACTICES**

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 emulsions. Discuss instability of emulsions. 10
- OR
1. Comment on record keeping in good dispensing practices. 10
2. Answer in brief (**any five**) : (3×5=15)
- a) Explain formulation of Elixers.
  - b) Describe pricing of prescription.
  - c) Comment on suspending agents.
  - d) Give the role of pharماسist in patient counseling for OTC products.
  - e) Explain formulation of dry powder suspension.
  - f) Explain selection of emulsifying agents.
  - g) In what proportion may a pharماسist mix 3% and 15% cetrimide solution to prepare 400 ml of cetrimide solution .
3. Write a short note on (**any three**) : (5×3=15)
- a) Types of suspensions
  - b) Factors affecting dose of drug
  - c) Formulation of monophasic solutions
  - d) Prescription handling
  - e) Pharmacy as a Career.

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SECTION – II

4. Explain the concept of Novel drug delivery systems, write its merits and demerits. Write patient counselling for sustained release tablets. **10**

OR

4. Differentiate between suppository and pessary. Discuss the compounding of these. **10**

5. Answer **any five**. **(5×3=15)**

- a) Write the ideal properties of drug to formulate in hard capsules.
- b) Explain the formulation of effervescent salts.
- c) Write the patient counselling points for dispensing of insulin injection.
- d) Describe the properties of ligatures and sutures.
- e) Write a general patient counselling for Asthma patient.
- f) What do you mean by quarantine area in a drug store ?
- g) Write method for filling of extemporaneously prepared in collapsible tubes.

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

- a) Pills as a dosage form
  - b) Physical incompatibility
  - c) Calibration of suppository moulds
  - d) Role of pharmacist in family planning
  - e) Cocoa butter as a base.
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B/II/10/885



[3856] – 103

**First Year B.Pharmacy Examination, 2010**  
**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. What is radioactive decay ? Discuss the properties of  $\alpha$ ,  $\beta$  and  $\gamma$  radiations. **10**

OR

1. Explain the terms 'pharmacopoeia' and 'monograph'. Enlist different Pharmacopoeias and discuss salient features of monograph. **10**

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

- a) Explain the limit for chloride for potassium permanganate as per IP.
- b) Why the tube is packed with dried cotton wool impregnated with lead acetate solution while carrying out limit test for arsenic ?
- c) Explain the terms hydrogen ion concentration, pH and pOH.
- d) Explain the terms buffer action and buffer capacity.
- e) Discuss the role of oxygen in biological system.
- f) Give the properties, uses and method of assay of ammonia.
- g) Write in brief about adsorbents.

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

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- a) Water as pharmaceutical vehicle
- b) Discuss role of buffers in pharmacy.
- c) Storage conditions as detailed in I.P.
- d) Raw materials as source of impurities in pharmaceuticals.
- e) Methods of softening water.

SECTION – II

4. How the acid base balance of the body is maintained ? 10

OR

4. Discuss the mechanism of action of topical protective agents with examples. Explain the properties, uses and method of assay of talc and zinc oxide.

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

- a) Explain the term milliequivalent. Calculate the number of mEq of potassium chloride in one liter of a 0.48% w/v solution.
- b) List the compounds of calcium and magnesium used as antacid.
- c) Explain assay of ferrous sulphate, along with reactions.
- d) Discuss mechanism of action of anti-caries agents.
- e) Describe preparation and mechanism of action of antimony potassium tartarate.
- f) Define antidotes and explain their mechanism of action.
- g) Describe with principle and reactions assay of ammonium chloride.

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

- a) Electrolyte combination therapy
- b) Ideal properties of antacids
- c) Antidotes
- d) Physiological role of copper
- e) Saline cathartics

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B/II/10/1095



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**First Year B.Pharm. Examination, 2010**  
**ANATOMY, PHYSIOLOGY AND HEALTH EDUCATION (2004 Course)**

Time : 3 Hours

Max. Marks : 80

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

b) *Answers to the two Sections should be written in separate answer books.*

c) *Neat labelled diagrams must be drawn wherever necessary.*

SECTION – I

1. Define and classify blood. Explain the methods of detection of blood groups.  
Explain the significance of RH factor. 10
2. a) Draw well labelled diagram of heart showing the circulation of blood through it. Explain conducting system of heart. 7.5  
b) Define blood pressure. Describe the controlling mechanisms for the regulation of blood pressure. 7.5
3. a) Explain in detail process of respiration. 7.5  
b) Draw neat labelled diagram of stomach. Explain its functions in detail. 7.5
4. Write short notes on (**any three**) : 15
  - a) Lymph node
  - b) Composition and functions of skeleton
  - c) Muscular tissue
  - d) Pancreas.

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SECTION – II

5. Describe the structure of nephron. Explain the process of urine formation. **10**
6. a) Outline the actions of thyroid hormones. Explain how blood level of thyroid Hormones are regulated ? **7.5**
- b) Describe structure of eye. Explain physiology of sight. **7.5**
7. a) Give the histology of skeletal muscle. Explain the physiology of skeletal muscle contraction. **7.5**
- b) Outline and explain functions of cranial nerves. **7.5**
8. Write short notes (**any three**) : **15**
- a) Contraceptive devices
  - b) Menstrual cycle
  - c) Communicable diseases
  - d) Pituitary gland.

B/II/10/425



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**Second Year B.Pharmacy Examination, 2010**  
**2.6 : PHARMACEUTICAL BIOCHEMISTRY**  
**(Including Clinical Biochemistry)**  
**(2004 Course)**

Time : 3 Hours

Max. Marks : 80

- Instructions :** 1) *Question 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 should be drawn **wherever** necessary.*
- 4) *Black figures to the **right** indicate **full** marks.*

SECTION – I

1. a) Define enzyme inhibitor and explain reversible and irreversible inhibition of enzymes. **10**
2. a) Describe in detail structure of protein. **10**
- b) Describe structure of cell membrane with diagram. **5**
3. a) What are marker enzymes ? Give applications of marker enzymes. **8**
- b) Explain structure of starch and glycogen. **7**
4. Write short notes on the following (**any three**) : **15**
- a) Color reactions of amino acids
- b) Factors affecting enzyme activity
- c) Phospholipids
- d) Transport across cell membrane.

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SECTION – II

5. Explain different mechanism to maintain physiological acid base balance in body. **10**
6. a) Describe Glycolysis along with its regulatory enzymes. **10**  
b) Describe absorption, transport and storage of Iron in body. **5**
7. a) Explain DNA replication. **8**  
b) Describe synthesis of vitamin – D in body. **7**
8. Write short notes on the following (**any three**) : **15**  
a) Clearance tests as kidney function tests  
b) Structure of t RNA  
c)  $\beta$  oxidation of fatty acids  
d) Transamination.

*HowToExam.com*

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B/II/10/450





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**Fourth Year B.Pharmacy Examination, 2010**  
**PHARMACEUTICAL CHEMISTRY V (Medicinal)**  
**(2004 – Course)**

Time : 3 Hours

Max. Marks : 80

- Note :* 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) Answer to the **two** Sections should be written in **separate** answer **books**.
- 3) Figures to the **right** indicate **full** marks.
- 4) Correct structure must be drawn **wherever** necessary.

SECTION – I

1. Classify CNS depressants and add a note on SAR, MOA of benzodiazepines. **12**
2. a) What are major pathways of metabolism ? Explain phase II reactions using suitable examples. **6**
- b) Explain adrenergic receptors and add a note on  $\beta_1$ -selective blockers. **6**
- c) Draw synthesis of atenolol. **2**
3. a) Classify general anesthetics and add a note on SAR of barbiturates. **6**
- b) Write a note on MAO inhibitors. **6**
- c) Draw synthesis of Phenytoin. **2**

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4. a) Write notes on **(any three)** : 12
- 1) Drug receptor interactions.
  - 2) Oxazolidinediones as anticonvulsants.
  - 3) Drugs used in Alzheimers disease.
  - 4) Long acting neuroleptics.
- b) What are different factors affecting the metabolism ? 2

SECTION – II

5. Classify NSAIDs in detail and write SAR, MOA of salicylates. 12
6. a) Classify antianginal agents and add a note on calcium channel blockers. 6
- b) What are thiazide diuretics ? Explain in detail. 6
- c) Draw synthesis of diclofenac. 2
7. a) What are opioid analgesics ? Write SAR and MOA of Morphine. 6
- b) Write a note on non steroidal estrogenic agents. 6
- c) Draw synthesis of omeprazole. 2
8. a) Write notes on **(any three)** : 12
- 1) ACE inhibitors
  - 2) Amide based local anesthetics
  - 3) H2 Blockers
  - 4) Class IA antiarrhythmic drugs.
- b) Draw synthesis of Chorpheniramine or Benzocaine. 2

B/II/10/600



[3856] – 201

**Second Year B.Pharmacy Examination, 2010**  
**2.1 : PHYSICAL PHARMACY**  
**(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. Attempt **any one** : **10**  
Explain the DLVO theory and its pharmaceutical application. Highlight the stability of a lyophobic sol.  
OR  
What is critical constant ? Explain the different methods of liquefaction of gases.
2. Attempt **any five (3 marks each)** : **15**  
i) Explain the different binding forces between molecules.  
ii) Derive Gibbs phase rule.  
iii) Define glass transition temperature.  
iv) What are ideal and real solutions ?  
v) Discuss solubility of weak electrolytes.  
vi) Enlist applications of colloids.  
vii) Define law of corresponding state.
3. Write short notes on **any three (5 marks each)** : **15**  
i) 2 component system.  
ii) Protective colloids.  
iii) Debye Huckel theory.  
iv) Solute solvent interaction.  
v) Van der Waals equation for real gases.

P.T.O.

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SECTION – II

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

Classify rheological systems along with examples. Add note on Cupe and Bob viscometer.

OR

Explain the different methods for the determination of order of a reaction.

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

- i) Define rate determining step, order of reaction and molecularity of reaction.
- ii) What are surfactants ?
- iii) Flow properties of powders and factors affecting it.
- iv) Define and distinguish dissolution and diffusion.
- v) Explain Nernst potential.
- vi) Enlist applications of rheology.
- vii) Discuss apparent zero order reaction.

6. Write short notes on **any three** (5 marks each) : **15**

- i) Methods for determining surface area.
- ii) USP dissolution test.
- iii) Sedimentation method of analyzing the particle size.
- iv) Soluble monolayer and Gibbs equation.
- v) Effect of temperature on rate on reaction.

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*B/II/10/1,200*



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**Second Year B.Pharmacy Examination, 2010**

**2.2 : PHARMACEUTICAL MICROBIOLOGY AND IMMUNOLOGY  
(2008 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. Answer the following (**any five**) : **10**
- a) Write name and function of oil used for oil-immersion objective.
  - b) Write note on 'Protozoa'.
  - c) Differentiate between Slime layer and Capsule.
  - d) Give the general properties of viruses,.
  - e) Explain in short 'Bacterial reproduction'.
  - f) Write the contributions of Louis Pasteur for microbiology.
2. a) Describe in detail various methods used for measurement of bacterial growth. **8**
- b) Explain in detail principal and working of compound microscope. **7**
3. Answer the following : **15**
- a) What are dermatophytes ? Explain it.
  - b) Comment on 'Actinomycetes as source of antibiotics'.
  - c) Explain the different factors affecting the microbial spoilage of pharmaceutical products.

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4. Write short notes (**any three**) : 15
- a) Colony characteristics.
  - b) HIV.
  - c) Rickettsia.
  - d) Preservative efficacy test.

SECTION – II

5. Answer the following : 10
- a) Define :
    - i) Immunogen      b) Z-value
  - b) Give the disadvantages of phenol coefficient test.
  - c) What is the selection criteria for test micro-organisms used for microbial assay of vitamin ?
  - d) Write the biological effects of lymphokines released by T cells.
  - e) Give the Harmful role of normal microbial flora of the human body.
  - f) What are allergenic extracts ? Explain it.
6. a) Explain in detail nonspecific defence mechanism of human host against pathogens. 8
- b) What are different methods of sterilization ? Describe in detail sterilization by filtration. 7
7. Answer the following : 15
- a) Explain in brief quality control of vaccine.
  - b) Describe in detail Type-I hypersensitivity.
  - c) Explain the principle and procedure of ELISA.
8. Write a note on (**any three**) : 15
- a) Designing of aseptic area.
  - b) MIC.
  - c) Immunoglobulins.
  - d) Factors affecting on disinfectant action.

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**Second Year B. Pharmacy Examination, 2010**  
**2.6 : PHARMACOGNOSY – I (2008 Course)**

Time : 3 Hours

Max. Marks : 80

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

SECTION – I

1. 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
2. A) Describe the morphology and anatomy of leaves. 7  
B) Why is determination of moisture content of crude drug is necessary ? Enlist the various methods of its determination. Explain Karl Fischer's method of determination of moisture content. 8
3. A) Enlist the various methods of evaluation of crude drug. Add a note on Physical methods of evaluation. 8  
B) How intentional adulteration is done and why ? 7
4. Write short notes on (**any three**) : 15
  - a) Honey
  - b) Secondary metabolites
  - c) Herbal dietary supplements
  - d) Collection of crude drugs.

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SECTION – II

5. Define Carbohydrates along with its classification and add a note on Acacia. **10**
6. A) Describe Agar, its method of preparation, constituents, uses and distinguishing tests. **7**
- B) How will you identify following drugs chemically ? **8**
- i) Agar
  - ii) Tragacanth
  - iii) Starch
  - iv) Mucilage.
7. A) What is Cellulose ? What are the characteristic and uses of cellulose derivatives ? **8**
- B) Explain the various methods of propagation with its advantages and disadvantages. **7**
8. Write short notes on **(any three)** : **15**
- a) Pectin
  - b) Inulin
  - c) Lycopodium spore method
  - d) Alginates.

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B/II/10/585





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**Second Year B.Pharmacy Examination, 2010  
(2004 Course)**

**2.5 : PHARMACEUTICAL ANALYSIS – I**

Time : 3 Hours

Max. Marks : 80

**Instructions:** 1) *Q. Nos. 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 2 Sections should be written in separate answer books.*

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

**SECTION – I**

1. a) Why glacial acetic acid is used as solvent and Perchloric acid in glacial acetic acid is used as titrant in determination of very weak bases ? **6**
- b) Explain with example, the determination of very weak acid by nonaqueous titration. **6**
2. a) Explain the Indicator theories of neutralization indicators. **10**
- b) How 0.1 M hydrochloric acid is prepared and standardized ? **4**
3. a) Explain the titration curve for titration of strong acid with strong base. **7**
- b) What is sampling ? Explain the sampling techniques. **7**
4. a) What is primary standard ? Enlist ideal properties of primary standard. **6**
- b) Explain the principle involved in and method of determination of aspirin by titrimetric analysis. **8**

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SECTION – II

5. a) State different types of EDTA titrations with suitable examples. **8**  
b) How will you prepare and standardize 0.01 M disodium EDTA solution ? **4**
6. a) Discuss methods of endpoint detection in precipitation titrations. **8**  
b) Classify errors in pharmaceutical analysis. **6**
7. a) Give a detailed account of Kjeldahl's method. **8**  
b) compare co-precipitation and post-precipitation. **6**
8. Write notes on (**any two**) : **14**  
a) Good Laboratory Practices  
b) t test  
c) Metallochromic indicators.

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B/II/10/495



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**Second Year B.Pharmacy Examination, 2010**  
**2.7 : PHARMACOLOGY – I**  
**(Including Pathophysiology)**  
**(2004 Course)**

Time : 3 Hours

Total Marks : 80

- Instructions:** 1) *Q. 1 and 5 are compulsory. Solve any two questions of the remaining from Section A and Section B.*
- 2) *Figures to the right indicate full marks.*
- 3) *Answer to the Section A and B shall be written on separate answer sheet.*

SECTION – A

1. Define drug distribution. Describe role of plasma proteins in drug distribution. **10**
2. a) Explain drug toxicity in man with suitable examples. **8**
- b) Define antiplatelet agents, write pharmacology of any one drug. **7**
3. a) Discuss drug treatment in menstruation. **8**
- b) Explain molecular and biochemical mechanism of drug action. **7**
4. Write a note on (**any three**) : **15**
- a) Development of new drug
- b) Sources of drugs
- c) HMG-Co- A reductase inhibitors
- d) Drug-receptor interactions.

P.T.O.

[3856] – 27



SECTION – B

5. Define hepatitis, classify it and discuss pathophysiology of hepatitis-B. **10**
6. a) Classify depression, enlist its clinical manifestation and discuss management with suitable examples. **8**
- b) Explain pathophysiology of diabetes mellitus. **7**
7. a) Define pain and add a note on pathophysiology of pain. **8**
- b) Describe causes, progress and management of congestive cardiac failure. **7**
8. a) Enlist various types of pneumonia. Add a note on any one type. **8**
- b) Discuss stages of cancer with suitable examples. **7**

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B/II/10/420



[3856] – 31

**Third Year B.Pharmacy. Examination, 2010**  
**(2004 Course)**  
**PHARMACEUTICS – III**

Time : 3 Hours

Max. Marks : 80

*Instructions: 1) Q. 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. Explain physicochemical properties, biopharmaceutical considerations and therapeutic aspects and their significance in design of oral solid dosage form. **10**
2. A) Mention objectives of granulation. Discuss fluid bed granulation. **8**  
B) Discuss formulation aspects of effervescent tablet. Explain storage and packaging for effervescent tablets. **7**
3. A) Discuss in process quality control tests in manufacture of uncoated tablet with its significance. **8**  
B) Explain in detail rotary die process. **7**
4. Write short notes on (**any three**) : **15**
  - 1) Blister packaging
  - 2) 'Hardness' of soft gelatin
  - 3) Compression cycle
  - 4) Container closure interactions.

**P.T.O.**



SECTION – II

5. What are eye make up preparations ? Mention objectives of them. Explain eye mascara and eye shadow in detail. **10**
6. A) What are instabilities of emulsion ? Explain in detail with reasons of instabilities. **8**  
B) What are flocculated and deflocculated suspension ? Write about evaluation of suspension. **7**
7. A) What is vanishing cream ? Give an account of formulation aspects of vanishing cream. **8**  
B) Describe ointment bases with appropriate examples. **7**
8. Write short notes on (**any three**) : **15**
- 1) HLB value and selection of emulsifying agent
  - 2) Gelling agents
  - 3) Nail laquers
  - 4) Glycero-gelatin suppositories.
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[3856] – 34

**Third Year B.Pharmacy Examination, 2010**  
**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 answer books.*
- 3) Neat diagram must be drawn wherever necessary.*
- 4) Black figures to the right indicate full marks.*

SECTION – I

1. A) What is EMR ? Give the wave properties of it. Classify different analytical methods based on interaction of EMR with material to be analyzed. 7
- B) Explain choice of solvent in UV – vis spectroscopy. 3
2. A) What is linear scale polarography ? Describe various factors affecting limiting current in polarography. 8
- B) Draw neat diagram of polarimeter. How angle of rotation of compound is determined. 7
3. A) What are the different electrodes used in potentiometry ? State and explain different methods of end point detection for potentiometry. 8
- B) Explain working of combined glass electrode with the help of neat diagram. 7
4. A) What are the different thermal methods of analysis ? Explain factors affecting thermo gravimetric results. 7
- B) Explain how Nephelometry and Turbidometry differs. Give Instrumentation and application of turbidometric analysis. 8

P.T.O.



SECTION – II

5. A) Explain how chromatography is superior separation technique. Write about selection of chromatographic methods of analysis. **6**  
B) What are adsorbents used in TLC ? **2**  
C) What is grain direction and capacity factor ? **2**
6. A) State principle of fluorometry. Draw a neat labeled diagram of fluorometer. **7**  
B) Explain terms : **4**  
a) Internal conversion  
b) Intersystem crossing.  
C) Explain factors affecting fluorescence. **4**
7. A) Explain Van Deemters equation in detail. How it helps to improve column performance. **5**  
B) Write theory UV of visible spectroscopy. **5**  
C) Write about measurement of angle of refraction. **5**
8. Write a note on **any three** : **15**  
a) Amperometric titrations  
b) Principle and theory of Radioimmunoassay  
c) Derivative spectrophotometry  
d) Dropping mercury Electrode.
-





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**IV Year B.Pharm. Examination, 2010**  
**PHARMACOGNOSY – III**  
**(Industrial)**  
**(2004 Course)**

Time : 3 Hours

Total Marks : 80

*Instructions: 1) Q. 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 (any 5) : 10

i) What is the use of Colchicine in Horticulture ?

ii) State the hydrolysis production of

a) Atropine

b) Cocaine.

iii) Write the water soluble pair of Ergot alkaloids. What is its pharmacological use ?

iv) Enlist four varieties of Cinchona mentioning their chemical difference.

v) Write two microscopical differences between Vinca leaf and Vasaka leaf.

vi) What is Murexide Test ? Write its significance.

P.T.O.



2. A) What are true alkaloids, proto alkaloids and pseudo alkaloids ? Give examples of each class with atleast one structure of each. **5**
- B) Draw a well labelled diagram of T.S. of Datura leaf, enlisting important diagnostic features. **5**
- C) Differentiate between following crude drugs with atleast five features in each :
- i) Brazillian Ipecac      Panama Ipecac
- ii) Lobelia I.P.      Lobelia B.P. **5**
3. A) Give elaborate chemical account of an indole alkaloid containing drug obtained from fungal source. **5**
- B) Explain role of hybridization and cell immobilization in cultivation and preservation of medicinal plants. **5**
- C) Write a note on opium alkaloids. **5**
4. Write notes on (**any three**) : **15**
- a) Shankhapushpi and Gulvel
- b) PlantAllergens
- c) Cardiovascular agents of Marine source
- d) Chemical relationship between Ipecac Alkaloids.

SECTION – II

5. A) Describe the procedure for determination of following evaluation parameters as per WHO guidelines :
- i) Bitterness value
- ii) Foaming Index. **5**
- B) Describe structural illucidation (by instrumental technique) of Reserpine OR Digoxine. **5**



6. A) Draw a flow diagram for preliminary phytochemical screening of crude drugs. Give important chemical tests for their detection. **5**
- B) What are various types of herbal industries ? Give an elaborate account. **5**
- C) Describe principle and applications of Craig's counter current extraction apparatus. **5**
7. A) What are Bhasmas ? Give their method of preparation. What evaluation parameters are used to keep check on their purity ? **5**
- B) Give principle and instrumentation of Supercritical fluid extraction. What are its advantages over other methods of extraction ? Explain with examples. **5**
- C) What is the difference between Dicoction and Avaleha ? What are their advantages over one another ? Enlist their evaluation parameters. **5**
8. Write notes on **(any three)** : **15**
- a) Skin and hair cosmetics
  - b) Determination of Microbial Load
  - c) Asava and Arishta
  - d) Regulatory aspects of import-export of herbal drugs.
-



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**Fourth Year B. Pharm. Examination, 2010**  
**PHARMACEUTICS – V**  
**(Biopharmaceutics and Pharmacokinetics)**  
**(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. a) Discuss the physicochemical factors affecting drug absorption. Highlight diffusion layer model/film theory. **7**
- b) What is the influence of drug pka and GI pH on drug absorption ? **3**
2. a) How the organ size and perfusion rate influence the drug distribution ? **7.5**
- b) Explain the different physiological barriers to the drug distribution. **7.5**
3. a) How can the principle of binding be used for drug targetting ? Explain. **7.5**
- b) What is the influence of various disease states on plasma protein level and drug binding ? **7.5**
4. a) Write a note on BCS and BDDCS. **15**
- b) Discuss bioactivation and tissue toxicity.

P.T.O.

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SECTION – II

5. Explain the factors influencing renal excretion of drug. **10**
6. a) Explain the different mechanism of drug interactions. **10**  
b) Quote examples of beneficial drug interactions. **5**
7. What are pharmacokinetic models ? What is the importance and utility of developing such models ? Discuss briefly the types of pharmacokinetic models. **15**
8. a) What is flip-flop phenomenon ? **7.5**  
b) Discuss the types of physiological models. **7.5**

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**Fourth Year B.Pharm. Examination, 2010**  
**PHARMACEUTICAL JURISPRUDENCE AND REGULATORY AFFAIRS**  
**(2004 Course)**

Time : 3 Hours

Max. Marks : 80

- Instructions: 1) Question Nos. 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. Define “Illicit Traffic”. Discuss power of Central Government to permit, control and regulate certain operations under NDPS 1985. 10
  
2. A) What are the qualifications and duties of Drug Inspector ? Give procedure of Inspections. 9  
B) Discuss the requirements of Non-bonded Laboratory. Write procedure for obtaining rectified spirit under Non-bonded Laboratory. 6
  
3. A) Define ‘Advertisement’. Describe the provisions pertaining classes of prohibited advertisement and Exempted advertisement. 10  
B) Differentiate in between State and Joint State Pharmacy Council under Pharmacy Act 1948. 5
  
4. Write short notes on (any three) : 15
  - 1) Industrial Safety and Health
  - 2) Consumer Protection Act
  - 3) Public Analyst
  - 4) D.T.A.B.

P.T.O.

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SECTION – II

5. A) Define Patents. Discuss in brief the filling and processing of Patents. 7  
B) Define IPR, add note on Trade marks. 3
6. A) Discuss in brief about 8  
a) Europe-European Agency for the Evaluation of medicinal product.  
b) Medicine Control Agency  
B) Discuss ICH Guidelines. 7
7. A) Discuss in brief salient features of Indian Patents Act 1970. 7  
B) Differentiate between NDA and ANDA. Write note on 'contents of ANDA. 8
8. Write short note on (**any three**) : 15  
1) US-FDA  
2) Exclusive Marketing Right  
3) Patent infringement  
4) TGA.
- 

B/II/10/410



[3856] – 104

**First Year B.Pharmacy Examination, 2010**  
**1.4 : PHARMACEUTICAL ORGANIC CHEMISTRY – I**  
**(2008 Pattern)**

Time: 3 Hours

Total Marks: 80

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

SECTION – I

1. A) Explain the mechanism involved in Friedel Craft acylation and nitration of Benzene. 10

OR

- B) Explain substitution nucleophilic unimolecular reaction mechanism with stereochemistry with suitable examples.

2. A) Draw the structure of following compound (**any 3**) : 3

- a) 2, 4 Hexadione
- b) Methyl-2- butenoate
- c) Cyclopropane carboxylic acid
- d) 3-Methyl-4-pentene-2-one.

- B) Answer the following (**any four**) : 12

- 1) Define and illustrate Tautomerism.
- 2) Compare the stability of primary, secondary and tertiary, carbonium ion.

P.T.O.





- 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) Acetic acid.
- 6) Explain Huckels rule for aromaticity with suitable example.

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

**15**

- 1) What is resonance ? Explain the rules of resonance with suitable example.
- 2) Compare  $SN^1$  and  $SN^2$  mechanism.
- 3) Write a synthesis of following compound starting with Benzene and with suitable reagent
  - a) Para nitro toluene
  - b) Meta nitro toluene.
- 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) What are elimination reactions ? Discuss the Mechanism, stereochemistry, kinetics and orientation involved in elimination reaction. **10**

OR

A) Explain why aldehydes are more reactive than ketone for nucleophilic addition reaction and add a note on addition of hydrogen cyanide to aldehyde.

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) Aniline and Phenol.

2) Explain hydrogenation reaction with C-C multiple bond.

3) Why esters are less reactive towards nucleophile than aldehydes ?

4) Arrange the following compounds in order of increasing acidity.

- a) Acetic acid
- b) Chloro acetic acid
- c) formic acid.

5) Describe how primary, secondary and tertiary amines can be separated from mixture.

6) Explain Cannizzaro reaction with mechanism.

7) Give any two methods of synthesis of carboxylic acids.

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

1) Preparation of Sulphonic acid.

2) Reaction of phenols.

3) Ozonolysis.

4) Saytzeff and Hoffmann elimination.

5) Knoevenagel condensation.



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**First Year B.Pharmacy Examination, 2010**  
**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. Give different mechanisms of heat transfer. Explain Fourier's law in detail. 10

OR

Explain crystallization by evaporation and describe circulating magma crystallizer.

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

- a) Mechanical steam trap.
- b) Tank crystallizer.
- c) Environmental controls in pharmaceutical Industry.
- d) Pan evaporator.
- e) Define humidity and percent relative humidity.
- f) Boiling inside a vertical tube.
- g) Agitated tank crystallizer.

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

- a) Kirchoff's law of heat transfer.
- b) Tubular heat exchangers.
- c) Crystal forms.
- d) Swenson-Walker crystallizer.
- e) Climbing Film evaporator.

P.T.O.

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SECTION – II

4. Derive Bernoulli's equation for flow of fluids and describe various types of energy losses in fluid flow. 10

OR

Define distillation. Compare distillation and evaporation. Discuss boiling point diagram and equilibrium curve.

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

- a) Inclined manometer.
- b) Basket extractor.
- c) Bubble cap plate column.
- d) Fluidized bed dryer.
- e) Drum dryer.
- f) Material selection in preventing corrosion.
- g) Galvanic corrosion.

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

- a) Venturi meter.
  - b) Disc meter.
  - c) Robert diffusion battery.
  - d) Molecular diffusion in mass transfer.
  - e) Distillation under reduced pressure.
- 

B/II/10/1610



**First Year B.Pharmacy Examination, 2010**  
**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) Calculate the geometric mean of the salaries of workers given below : 5

<b>Salary (Rs.)</b>	100-110	110-120	120-130	130-140	140-150	150-160
<b>No. of Workers</b>	14	16	30	20	15	5

B) Draw a frequency polygon from the following data : 4

<b>Age</b>	10-12	12-14	14-16	16-18	18-20	20-22	22-24
<b>No. of Students</b>	4	10	16	30	20	14	6

C) What are sampling and non sampling errors ? 3

P.T.O.



2. A) The median and mode of the following distribution are 27 and 26. Calculate the missing frequency. 5

<b>Class interval</b>	0-10	10-20	20-30	30-40	40-50
<b>Frequencies</b>	4	?	20	?	8

- B) 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

- C) Define “measure of dispersion”. What are the requirements of a good measure of dispersion ? 4

3. A) A bag contains 8 white and 4 red balls. Five balls are drawn at random. What is the probability that 2 of them are red and 3 white ? 5

- B) Enlist different types of Non-Parametric tests. And give the advantages of non-parametric tests. 4

- C) Calculate the person correlation coefficient between the ages of the plants and their heights. 5

<b>Age in week (x)</b>	1	2	3	4	5	6	7
<b>Height in c.m.</b>	5	13	16	23	33	38	40

4. A) In binomial distribution with 6 independent trials the probabilities of 3 and 4 successes are found to be 0.2457 and 0.0819 respectively. Find the parameter p of the distribution. 4

- B) Write a short note on critical region. 5

- C) Given the following data  $\bar{x}=36$   $\bar{y}=85$   $\sigma_x = 11$   $\sigma_y = 8$  and  $r = 0.66$  find the regression equation and estimate x when  $y = 75$ . 5





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**First Year B.Pharmacy Examination, 2010**  
**PHARMACEUTICS – I**  
**(Including Community Pharmacy) (2004 Courses)**

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

SECTION – I

1. a) Define drug, dosage form and explore the concept of formulation. Explain factors affecting drug absorption. 6
- b) Explain the methods of prevention of aeration and foam during liquid mixing. 4
2. Explain the physiological factors affecting drug bioavailability. 15
3. a) Explain the fate of drug in the body. 6
- b) Explain the manufacturing process and equipments used in the manufacturing of solution. 9
4. Write short notes on **-(any three) :** 15
- a) Mouth washes
- b) Plate and frame filter
- c) Passive diffusion as mechanism for drug absorption
- d) Syrup.

P.T.O.



[3856] – 11



SECTION – II

5. Define size separation, write the importance of size separation. Explain the cyclone separator in detail. **10**
6. a) Explain in detail GMP requirements for manufacturing of pharmaceuticals. **8**  
b) What is Pharmacopeia ? Give the importance of different Pharmacopeias. **7**
7. a) Explain dry and wet granulation methods. **9**  
b) Explain in detail Fluid energy mill. **6**
8. Write short notes on (**any three**) : **15**
- a) Role of community pharmacist in management of communicable diseases
  - b) Dusting powder
  - c) Hammer mill
  - d) Ayurvedic system of medicine.

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[3856] – 12

**First Year B.Pharm. Examination, 2010**  
**DISPENSING OF MEDICINE AND HOSPITAL PHARMACY**  
**(2004 Course)**

Time : 3 Hours

Max. Marks : 70

- Instructions :**
- *Figures on the **right** indicate marks.*
  - *Question No. **I** and **V** are **compulsory**.*
  - *Of the remaining solve **any two** questions from **each** Section.*

SECTION – I

- I. Define ointments and write a note on types of ointment bases. Give ideal properties of ointment bases. **11**
- II. A) Define prescription. Explain different parts of prescription. **6**
- B) Calculate quantity of NaCl required in preparing 600 ml of 0.9% solution. **4**
- C) Write labeling instructions for (a) Lozenge (b) Liniment **2**
- III. A) Enlist and elaborate on identification tests for types of emulsion. **6**
- B) Define solution. Classify and describe monophasic liquid dosage forms. **6**
- IV. Write short notes on (**any 3**) : **12**
- 1) Suspending agents
  - 2) Therapeutic incompatibility
  - 3) Suppository bases
  - 4) Emulsifying agents.

**P.T.O.**

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SECTION – II

- V. Classify hospitals. Write about organizational structure of hospital. **11**
- VI. A) Briefly explain about satellite pharmacy services. **6**
- B) Explain the role of computers in hospital pharmacy. **6**
- VII. A) Explain the role of pharmacy and therapeutics committee in drug safety. **6**
- B) What are clinical applications of radiopharmaceuticals in pharmacy ? **6**
- VIII. Short notes (**any 3**) : **12**
- 1) Central sterile supply room
  - 2) Responsible of Hospital Pharmacist
  - 3) Hospital formulary
  - 4) Unit dose drug distribution systems.

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[3856] – 13

**First Year B.Pharmacy Examination, 2010**  
**PHARMACEUTICAL CHEMISTRY – I (2004 Course)**  
**(Inorganic)**

Time : 3 Hours

Max. Marks : 80

- Instructions :**
- 1) *Question No. 1 from Section I and Question No. 5 from Section II are compulsory.*
  - 2) *Out of remaining questions solve 2 questions from Section I and 2 questions from Section II.*
  - 3) *Answers to the two Sections should be written in separate books.*
  - 4) *Figure to the right indicate full marks.*

SECTION – I

1. a) Discuss the role of major extracellular and intracellular electrolytes. 8  
b) Write principle involved in limit test for lead. 2
2. a) Explain role of fluoride and phosphate in tooth decay. 5  
b) Define hardness of water and state the methods to remove hardness of water. 5  
c) What is radiopaque contrast media ? Explain barium sulphate as radiopaque contrast media. 5
3. a) Explain the role of Iron in body. 5  
b) Enlist sources of impurities in pharmaceutical substances and explain their effect on pharmaceutical substances. 5  
c) Describe limit test for Iron. 5
4. a) Define antidote, discuss different antidotes with their mechanism of action. 5  
b) Define monograph. Elaborate contents of monograph. 5  
c) Discuss in brief applications of radiopharmaceuticals. 5

P.T.O.

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SECTION – II

5. a) What are protective and adsorbents ? Describe two official compounds used as protective. 5
- b) Define the terms buffer, emetics, cathartics, antacid and expectorant. 5
6. a) Classify topical agents on the basis of their actions with example. 5
- b) Discuss in brief antioxidants. 5
- c) Define and classify inorganic Gastrointestinal agents. 5
7. Write short notes on (**any five**) : 15
- a) Astringents
- b) Protectives
- c) Assay of KI
- d) Assay of  $\text{NH}_4\text{Cl}$
- e) Combination Antacids
- f) Preservatives.
8. a) Discuss in brief antimicrobial agents. 5
- b) Discuss the source, physiological importance and compounds of Iodine. 5
- c) Explain the role of oxygen, carbon dioxide in human body. 5

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B/II/10/440



[3856] – 14

**First Year B.Pharm. Examination, 2010**  
**PHARMACEUTICAL CHEMISTRY – II**  
**(Organic)**  
**(2004 Course)**

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

Time : 3 Hours

Max. Marks : 80

SECTION – I

1. A) Define **any four** of the following : (4)
- 1) Carbocation
  - 2) Stereochemistry
  - 3) Inductive effect
  - 4) Nucleophile
  - 5) Tautomerism.
- B) Draw the structures of following compounds (**any four**) : (4)
- 1) 2 amino benzonitrile.
  - 2) Cyclohexane 1, 4, dicarboxylic acid.
  - 3) Naphthalene 1, 8 disulfonic acid.
  - 4) 1, 3, 5 trichloro benzene.
  - 5) 2, 2, dichloropropionic acid.
- C) What do you mean by Geometrical isomerism ? (2)

P.T.O.

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-2-



2. Give reasons (**any 5**) : (15)
- i) Ammonia is a stronger base over aniline.
  - ii) p-nitrophenol is a stronger acid than phenol.
  - iii) Halogens though deactivators are O, P, directors in electrophilic aromatic substitution.
  - iv) Aldehydes are more reactive than ketones.
  - v) Guanidine is one of the strongest organic base.
  - vi) Nitro benzene when reacted with Nitrating mixture gives m-dinitrobenzene.
3. a) Explain electrophilic aromatic substitution with respect to Nitration and halogenation. (5)
- b) Explain Electrophilic aromatic substitution in Napthalene. (5)
- c) Explain  $SN_1$  reaction. (5)
4. Write short notes on (**any three**) : (15)
- i) Enantiomerism
  - ii)  $SN_2$  reaction
  - iii) Friedal Craft Alkylation
  - iv) Orientation in monosubstituted benzene.

#### SECTION – II

5. Define elimination reaction. Explain  $E_1$  and  $E_{1cb}$  reactions in detail. (10)
6. a) Explain addition reactions across  $C = O$  bond. (7)
- b) Compare and contrast elimination and substitution reactions. (8)



7. a) Explain preparation of carboxylic acid derivatives. (5)  
b) Explain cannizaro reaction with examples. (5)  
c) Explain reactions of carboxylic acids. (5)
8. Starting from benzene or toluene and suitable reagents how will you synthesize the following (give only reaction equations and reaction conditions.) Solve any five of following : (15)
- 1) Anthranilic acid
  - 2) P. nitro acetanilide
  - 3) M-nitro benzoic acid
  - 4) 2, 4, 6 trinitrophenol
  - 5) P-aminophenol
  - 6) Diphenyl ether.

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B/II/10/435



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[3856] – 16

**First Year B.Pharm. Examination, 2010**  
**PHARMACOGNOSY – I**  
**(2004 Course)**

Time : 3 Hours

Max. Marks : 80

*Instructions : 1) Question Nos. 1 and 5 are compulsory. Out of remaining attempt any 2 questions from Section I and any 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 plant growth regulators ? What is the significance of Auxins as growth regulator ? 10
2. A) What is a pesticide ? Give the characteristics of an ideal pesticide. 8  
B) Describe the anatomy of leaf. 7
3. A) What are Natural gums ? How are they formed ? Give the importance of Acacia. 8  
B) Define fruit. Classify fruits. Write in detail about indehiscent fruits. 7
4. A) Write short note on (any three) : 15  
a) Stomatal no.  
b) Foreign Organic matter  
c) Vegetative propagation  
d) Similar similibus caventur.

P.T.O.

[3856] – 16



SECTION – II

5. Define “crude drug”. Give the contribution of Galen in the history of Pharmacognosy. 10
6. A) Difference between Indian gum and Ghatti gum. 7  
B) Significance of refractive index and optical rotation in drug evaluation. 8
7. A) Which are the alternative systems of medicine ? Write about Homeopathic system of medicine. 7  
B) What is principal of ‘Karl Fischer’ Method ? 8
8. A) Write short note on (**any three**) : 15  
a) Palisade Ratio  
b) Japanese Isinglass  
c) Loss on Drying  
d) Substitution.

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B/II/10/415



[3856] – 203

**Second Year B.Pharmacy Examination, 2010**  
**2.3 : PHARMACEUTICAL BIOCHEMISTRY**  
**(2008 Course)**

Time: 3 Hours

Max. Marks: 80

- Note :* 1) *Q. 1 and Q. 5 are compulsory. Out of remaining attempt any two questions from each Section.*
- 2) *Draw well labelled 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. What is BMR ? Describe the factors affecting the BMR in detail. **10**
- II. a) Classify carbohydrate with examples and explain Chitin. **8**
- b) Describe Kidney function test in detail. **7**
- III. a) Describe uronic acid pathway with the functions of glucuronic acid. **8**
- b) Describe cell organelles with their roles. **7**
- IV. Write short notes on (**any three**) : **15**
- a) Genetic disorders of carbohydrate metabolism.
- b) PCR technique.
- c) Essential fatty acids and their biochemical functions
- d) Biomembranes.

P.T.O.

[3856] – 203



SECTION – II

- V. Classify Enzymes with suitable examples and explain competitive and non-competitive enzyme inhibition. **10**
- VI. a) Explain citric acid cycle in detail ? Why it is amphibolic in nature ? **8**  
b) Write in detail about purine metabolism. **7**
- VII. a) Give biochemical functions of fat soluble vitamins. **8**  
b) Describe Krebs-Hensleit cycle. **7**
- VIII. Write short notes on (**any three**) : **15**
- a) Essential and Non-essential amino acids
  - b) Renal mechanism of acid base balance.
  - c) Biosynthesis of cholesterol.
  - d) Homeostasis of blood.
- \_\_\_\_\_

B/II/10/1,035



[3856] – 204

**Second Year B.Pharmacy Examination, 2010**  
**2.4 : PHARMACEUTICAL ORGANIC CHEMISTRY – II**  
**(2008 Course)**

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

SECTION – I

1. Give reaction, mechanism and application of any two rearrangement of electron deficient carbon atom. **10**

OR

1. Explain any two nucleophilic rearrangement of electron deficient Nitrogen atom. **10**
2. Answer the following (**any five**) : **15**
- a) What is Mutarotation ? Give its significance.
- b) What are configurational and conformational isomers ? Write in brief about Atropisomerism.
- c) How will you distinguish between glucose and fructose and glucose and sucrose ?
- d) What are amino acids ? Discuss any three methods of synthesis of amino acids.

P.T.O.

[3856] – 204

-2-



- e) Draw the Newmann projection formulae of n-butane and discuss the energy profile diagram of conformations in n-butane.
- f) Discuss the constitution of Lactose.
- g) Synthesize phenylalanine by Strecker's synthesis.

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

**15**

- a) What are carbohydrates ? Draw the structure of glucose. What will happen when glucose treated with i) Nitric acid ; ii) Bromine water ; iii) Sodium borohydride ?
- b) What are proteins ? Discuss in brief about structure of protein.
- c) What is racemic modification ? Enlist the different methods for resolution of racemic mixture.  
Discuss in brief about Diastereomer formation method in brief :
- d) Write a short note on combinatorial chemistry.
- e) Discuss stereoselective and stereospecific reaction with suitable examples.

SECTION – II

4. a) Discuss Fischer-indole and Skraup quinoline synthesis method.

**6**

b) Write in brief about electrophilic substitution reactions of five membered monoheterocyclic ring system.

**4**

OR

4. Give the methods of synthesis and reactions of the following :

**10**

- i) Thiazole
- ii) Isoquinoline



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

a) Give the structure and numbering of

i) Quinoline

ii) Benzimidazole

iii) Oxazole

b) Explain why pyridine is less reactive than benzene.

c) Discuss chair, boat and twist boat conformation of cyclohexane molecule.

d) Why pyridine undergoes electrophilic substitution at  $\beta$ -position ?

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

f) Classify rearrangement reactions.

g) What is retrosynthesis ? Give the retrosynthesis of Losrtan.

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

a) Fries rearrangement

b) Curtius rearrangement

c) Hoffman rearrangement

d) Willgerodt reaction

e) Lossen rearrangement.

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*B/II/10/760*





[3856] – 205

**Second Year B.Pharmacy Examination, 2010**  
**2.5 : PHARMACEUTICAL ANALYSIS – I**  
**(2008 Course)**

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) Discuss various methods for calculation of equivalent of redox substances. Classify redox indicators. Write a note on Cerriomeric titration. **10**
  - ii) Explain in details about applications and instrumentation of polarimeter. Add a note on optical activity. **10**
2. Solve **any five** : **15**
- i) Discuss in brief various solvents used in non aqueous titration.
  - ii) What is buffer index ? Write equation to calculate buffer index.
  - iii) Explain common ion effect. How is it utilized for controlling the concentration of weak electrolyte.
  - iv) Explain cotton effect and CD.
  - v) Explain in brief Sodium nitrate titration.
  - vi) Give the application of high frequency titration.
  - vii) Prepare titration curve for Ferrous sulphate with ceric sulphate.
3. Write notes on (**any three**) : **15**
- i) Instrumentation of conductometry.
  - ii) ORD and its application.
  - iii) Various methods of oxidation – reduction reactions.
  - iv) Assay of Sulphanilamide.
  - v) Theory of buffer solution.

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SECTION – II

4. Discuss various indicators used in precipitation titration. And give the effect of pH, ligand and valency of metal ion on stability constant. **10**

OR

What is co-precipitation and how it is reduced ? Add a note on post-precipitation. **10**

5. Solve **any five** : **15**

- i) Write assay of Calcium gluconate as per I.P.
- ii) Calculate pH of 0.01 M acetic acid solution ( $pK_a = 4.76$ ).
- iii) Discuss on types of EDTA titration.
- iv) Explain concept of complexation and chelation.
- v) Give the application of potentiometry.
- vi) Explain common ion phenomenon. How it is utilized for controlling the concentration of weak electrolyte ?

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

- i) Oxygen flask combustion.
  - ii) Metalochromic indicators.
  - iii) Filtration.
  - iv) Mohr's methods.
  - v) Factors affecting stability constant.
- 

B/II/10/770



[3856] – 207

**Second Year B.Pharmacy Examination, 2010**  
**2.7 : PHARMACOLOGY – I**  
**(2008 Course)**

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 labelled diagrams must be drawn wherever necessary.*  
*4) Black figure to the right indicate full marks.*

SECTION – I

1. Define and classify anticoagulants. Discuss in detail pharmacology of oral anti-coagulants. 10
- OR
1. Discuss the anaphylaxis and allergic reactions mediated by histamine and give its treatment.
2. Solve **any five** of the following : 15
- i) Enlist the various processes which determine the renal excretion of drugs and discuss in detail tubular secretion.
  - ii) Enlist the various factors affecting the renal excretion of drugs. How pH and pKa of drugs can affect the renal excretion ?
  - iii) Discuss about photosensitivity.
  - iv) Discuss in detail passive diffusion.
  - v) Discuss in detail ligand gated ion channels.
  - vi) Discuss how genetic factors modifies drug action.
  - vii) Discuss the pharmacology of prostaglandins.

P.T.O.

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3. Write a note on the following (**any three**) : 15
- i) Essential drug concept and orphan drugs
  - ii) Transmucosal routes
  - iii) Redistribution and Tissue storage
  - iv) Dose response relationship
  - v) Non viral vectors for gene transfer.

SECTION – II

4. Discuss the pathogenesis and clinical features of type 1 and 2 diabetes mellitus.  
Add a note on acute metabolic complications of diabetes mellitus. 10

OR

4. Define hypertension. Write the general and etiologic classification of hypertension.  
Discuss the etiology and pathogenesis of essential hypertension.
5. Solve **any five** of the following : 15
- i) Discuss the pathophysiology of inflammation.
  - ii) Discuss the etiology of chronic peptic ulcers.
  - iii) Discuss the etiology and types of HF.
  - iv) Define tuberculosis and discuss the types of tuberculosis.
  - v) Pathophysiology of gonorrhoea.
  - vi) Discuss the etiology of chronic obstructive airway disease.
  - vii) Discuss the etiology of malignancy.

6. Write a note on the following (**any three**) : 15
- i) Lepromatous leprosy
  - ii) Alzheimer's
  - iii) Parkinson's disease
  - iv) Urinary tract infections
  - v) Cardiac arrhythmias.

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B/II/10/760



[3856] – 21

**Second Year B.Pharm. Examination, 2010**  
**2.1 : PHARMACEUTICS – II (Physical Pharmacy)**  
**(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.*

SECTION – I

1. What are colligative properties of nonelectrolytes ? How these can be used to determine molecular weight of the substance ? Explain in detail. 10
2. Explain in detail polymorphism. Give its application to pharmacy. 15
3. A) Explain in detail solubility of gases in liquids. 7  
B) What is partition coefficient ? Give its application in pharmacy. 8
4. Write short note on (any 3) : 15
  - 1) Conductometric titrations.
  - 2) Various methods of crystal analysis.
  - 3) One component system.
  - 4) First law of Thermodynamics.

P.T.O.

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SECTION – II

5. Define surface tension. Explain different methods of determination of surface tension. **10**
6. Explain what is order of reaction. Discuss various methods of determination of order of reaction. **15**
7. Give importance of particle size determination in pharmacy. Explain various methods to determine particle size. **15**
8. Write short note on (**any 3**) : **15**
- 1) Adsorption isotherm.
  - 2) Thixotrophy.
  - 3) Derived properties of powders.
  - 4) HLB (Hydrophilic Lipophilic Balance).

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B/II/10/475



[3856] – 22

**Second Year B. Pharmacy Examination, 2010**  
**2.2 : PHARMACEUTICAL MICROBIOLOGY**  
**(2004 Course)**

Time : 3 Hours

Max. Marks : 80

- Instructions:** 1) *Q. No.s 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 : **10**
- a) State the reason for using cedar wood oil under 100X objective.
- b) Define :
- i) exotoxin                      ii) selective media
- c) State the correlation between capsule and virulence of bacteria
- d) Enlist the media used in isolation of *Staphylococcus aureus* with reasons.
- e) Give the importance of fungi.
2. a) Describe the compound microscope. **7**
- b) Explain in detail one of the method of multiplication of a bacteriophage. **8**
3. Answer the following : **15**
- a) State the methods of enumeration of bacteria and describe any one method.
- b) Diagrammatically describe the gram positive cell wall with example.
- c) State the methods of preservation of microbial cultures.

P.T.O.

[3856] – 22



4. Write short notes on (**any three**) : 15
- a) *Salmonella*
  - b) Preservation of pharmaceutical products
  - c) Conjugation
  - d) Sporulation.

SECTION – II

5. Answer the following : 10
- a) Which tests are done for microbial limit test of starch ?
  - b) What are interferons ? Give their significance.
  - c) What is the action of cholera toxin ?
  - d) What is the importance of *Aspergillus* ?
  - e) Write action of ultra violet light on bacteria and their use in sterilization.
6. a) Describe in brief general method of vaccine production. 8
- b) What is complement ? Describe classical complement pathway. 7
7. a) Describe different classes, action and uses of disinfectants. 8
- b) Write on sterility test of pharmaceutical products. 7
8. Write short note on (**any 3**) : 15
- a) Radiation sterilization
  - b) Vitamin B<sub>12</sub> assay
  - c) Normal flora of human body
  - d) Kelsey – Syke's test.
- 

B/II/10/465





**Second Year B.Pharmacy, Examination, 2010**  
**2.3 : PHARMACEUTICAL ENGINEERING**  
**(2004 Course)**

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) *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 theories of supersaturation and crystal growth. **10**
2. a) Explain the heat transfer between fluid and solid boundary. **5**  
b) Give the reasons for caking of crystals; also suggest suitable measures to prevent caking of crystals. **5**  
c) Explain the construction and working of multiple effect evaporator. **5**
3. a) Explain the principles of air conditioning and refrigeration. Give applications of environmental control in pharmaceutical industry. **8**  
b) Explain the principle, construction and working of circulation magma crystallizer. **7**
4. Write short notes on following (**any three**) : **15**
  - a) Pool Boiling
  - b) Mechanical steam trap
  - c) Plate heat exchanger
  - d) Water deionization

P.T.O.

[3856] – 23



SECTION – II

5. Explain the importance of boiling point diagram and equilibrium curve in distillation, also explain the molecular distillation. **10**
6. Answer the following :
- a) What is corrosion ? Explain galvanic corrosion. **5**
  - b) Explain the principle and working of Basket extractor. **5**
  - c) Explain the construction and working of Tray dryer. **5**
7. a) Explain the different factors affecting drying of solids, also explain the behavior of solid during drying. **10**
- b) Explain the Poiseulli's approach of Fluid flow. **5**
8. Write short notes on following (**any three**) : **15**
- a) Molecular diffusion
  - b) Orifice meter
  - c) Stainless steel
  - d) Triangular diagram.
- 

B/II/10/445



[3856] – 24

**Second Year B.Pharmacy Examination, 2010**  
**2.4 : PHARMACEUTICAL CHEMISTRY – III (Organic)**  
**(2004 Course)**

Time : 3 Hours

Max. Marks : 80

- Instructions :*
- Question No. 1 and 5 are compulsory. Solve any two out of remaining three from each Section.*
  - Answer to the two Sections should be written in separate answer sheet.*
  - Figures to the right indicate full marks.*
  - Write reactions wherever necessary.*

SECTION – I

- a) Draw stereochemical formula of all the possible stereoisomers of the following compounds. Label them appropriately. **6**  
 $\text{CH}_3\text{CHBrCHOHCH}_3$ ;  $\text{CH}_3\text{CH}(\text{C}_6\text{H}_5)\text{CHOHCH}_3$ ;  $\text{HOCH}_2(\text{CHOH})_2\text{CH}_2\text{OH}$
- b) Define the term 'conformation'. Discuss the various conformations of cyclobutane. **4**
- a) Explain with help of figures why the chair conformation of cyclohexane is the most stable of all the conformations. **5**
- b) What is Mutarotation ? Explain how mutarotation takes place in glucose ? **5**
- c) What are hexoses ? How will you differentiate between fructose and glucose with help of chemical reactions ? **5**
- a) What are Proteins ? Discuss any two methods used in synthesis of Amino acids. **10**
- b) Comment on the secondary structure of proteins. **5**
4. Discuss in detail any three rearrangements involving electron deficient carbon atom. **15**

P.T.O.

[3856] – 24



SECTION – II

5. Discuss Fischer indole and Skraup synthesis in detail along with the role of all the reagents used in these methods. **10**
6. a) Discuss nucleophilic and electrophilic substitution in pyridine. **5**  
b) Give any two methods of synthesis, two chemical reactions and two medicinal uses of (any **two**) Thiophene; Imidazole ; Furan. **10**
7. a) What is a racemic modification ? Enlist the methods used for resolution of racemic mixtures. Discuss in detail one physical and one chemical method in detail. **10**  
b) Write a note on combinatorial chemistry. **5**
8. Write notes on **any three** : **15**  
a) Atropisomers  
b) Knorr pyrrole synthesis  
c) Pinacol-Pinacolone rearrangement  
d) Beckmann rearrangement.

B/II/10/630



[3856] – 32

**Third Year B.Pharmacy Examination, 2010  
PHARMACEUTICAL BIOTECHNOLOGY  
(2004 Course)**

Time : 3 Hours

Max. Marks : 80

**Instructions:** 1) Q. 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** answer books.

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

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

SECTION – I

1. Give the principle of r-DNA technology along with significance of enzymes. Give role of Ti-plasmid in genetic engineering. **10**
2. a) Enlist and explain various methods of screening the recombinants. **10**  
b) Write a note on Southern blotting techniques and its applications. **5**
3. a) What is PTC ? Describe cell suspension culture and its growth parameters in detail. **10**  
b) Elaborate role of blood plasma and serum in animal tissue culture. **5**
4. Write short notes on (**any three**) : **15**
  - a) DNA fingerprinting
  - b) RFLP
  - c) Meristem culture
  - d) Primary and established cell lines.

P.T.O.

[3856] – 32



SECTION – II

5. Give details of strain improvement, media, different stages of fermentation and product recovery in streptomycin production. **10**
6. a) Give in detail the method of production of Somatotropin. **10**  
b) Write about hybridoma technology. **5**
7. a) What are the recombinant DNA vaccines ? Elaborate on Hepatitis B Vaccine. **10**  
b) Give manufacturing of Vit B<sub>2</sub> by fermentation process. **5**
8. Write short note on **any three** : **15**
- a) Waste water management
  - b) Artificial insemination
  - c) Applications of enzyme immobilization
  - d) ELISA.
- 

B/II/10/515



[3856] – 33

**Third Year B.Pharmacy Examination, 2010**  
**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) Answers 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 :
- 1) Ciprofloxacin
  - 2) Dapsone
  - 3) Metronidazole
  - 4) Clotrimazole. 12
2. A) Discuss the development and SAR for quinolone antibacterial. 7  
B) Write the mechanism of action and synthesis of Chloramphenicol. 7
3. A) What is cancer ? Classify anticancer drugs with examples. 7  
B) What are antithyroid agents ? Classify with examples. 7
4. A) What are sulphonamides ? Discuss the physicochemical properties and SAR for sulphonamides. 7  
B) Write the synthesis and mode of action for sulphamethoxazole. 7

P.T.O.

[3856] – 33



SECTION – II

5. A) What is tuberculosis ? Add a note on first line agents. **6**  
B) Write the mode of action, synthesis and metabolism of Isoniazide. **6**
6. A) What are antimetabolites ? Classify the chemotherapeutic agents acting as antimetabolites with examples. **7**  
B) Explain the chemistry of antimetabolite used as antimalarials. **7**
7. A) What is viral infection ? Classify antiviral drugs with examples. **7**  
B) Write the structure IUPAC name, mode of action and metabolism of acyclovir. **7**
8. Write note on **any two** : **14**  
1) Chemistry of Tetracyclines  
2) Prodrugs  
3) Conjugation reactions in drug metabolism.

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B/II/10/960





[3856] – 35

**Third Year B.Pharmacy Examination, 2010**  
**PHARMACOLOGY – II**  
**(2004 Course)**

Time : 3 Hours

Max. Marks : 80

- Instructions :* 1) Question Nos. 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. Describe the biosynthesis, storage and release of insulin. Add a note on insulin preparations. **10**
2. Write the pharmacological account on beta adrenoceptor blocking agents. **15**
3. Discuss the pharmacological actions of corticosteroids. Add a note on corticosteroid antagonists. **15**
4. Write a note on any **three** : **15**
  - A) Belladonna poisoning
  - B) Oxytocics
  - C) Neuromuscular blocking agents
  - D) Drugs regulating calcium homeostasis.

P.T.O.

[3856] – 35



SECTION – II

5. Discuss the pharmacotherapy of Parkinson's disease. **10**
6. Discuss the mechanism of action and adverse reactions of the following drugs : **15**
- a) Diazepam                      b) Morphine                      c) Lithium carbonate
7. Discuss various stages of anesthesia. Add a note on pre and post-anesthetic medications. **15**
8. Write a note on any **three** : **15**
- A) Selective serotonin reuptake inhibitors
- B) COX-2 inhibitors
- C) Classification of seizure and drug employed in its management
- D) Local anesthetics.

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B/II/10/565



[3856] – 36

**Third Year B.Pharmacy Examination, 2010**  
**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 Buffadenolides. 4
  - 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 Eucalyptus. 7
3. A) Give the methods of preparation of the following : 9
- i) Papain
  - ii) Wool
  - iii) Rosin
- B) Define and classify Tannins. Give their chemical tests and explain its importance. 6

P.T.O.

[3856] – 36



4. Write short notes on (**any three**) : **15**
- i) Podophyllum
  - ii) Fenugreek and Chicory
  - iii) Kaolin and Bentonite
  - iv) T.S of Digitalis.

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 :
- i) Indian saffron
  - ii) Himalayan May apple. **4**
6. A) Define and classify Glycosides in detail. Give the biosynthesis of the glycosides. **6**
- B) Give the Pharmacognostic account on Digitalis. **9**
7. A) Define and classify Resins. Add a note on Physiological and Pathological resins. **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) Indian goose berry.
  - iv) T.S. of Cassia bark.
- 

B/II/10/495



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**Third Year B.Pharmacy Examination, 2010**  
**PHARMACEUTICAL MARKETING AND MANAGEMENT**  
**(2004 Course)**

Time: 3 Hours

Max. Marks: 80

- Note :* 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) Draw the network and find the critical path.

Activity	Te
1 → 2	6
2 → 3	3
2 → 4	9
3 → 4	0
3 → 5	7
4 → 6	8
4 → 7	2
5 → 8	1
6 → 8	4
7 → 8	5

B) Price per unit Rs. 4.00, variable cost is Rs. 2.00 and fixed cost is Rs. 3,00,000. Calculate : P/V ratio, BES, Sales to earn profit of Rs. 6,00,000. Profit at sales Rs. 5,00,000 and MOS.

5

P.T.O.



- 2. A) Explain the process of New Drug discovery and development. 8
- B) Define the term management scientifically and also explain management is art, profession or science. 7
- 3. A) What is Decision making ? Explain the process and types of decision making. 8
- B) Define Planning. Give the importance of planning. Describe about sales forecasting. 7
- 4. Write short note on (**any three**) : 15
- A) MBO
- B) Fundamental principles of organizing.
- C) Thoughts Scientific management.
- D) Trade Unions Act.

SECTION – II

- 5. A) From the following information prepare Balance Sheet of Takali Remedies. 5

Particulars	Dr.	Particulars	Cr.
Net loss	16,000	Capital	1,60,000
Drawings	2,400	Bills payable	1,000
Land and Building	50,000	Sundry creditors	4,000
Plant and Machinery	58,000	Interest on capital	6,200
Furniture	64,000	Loan	69,600
Bills receivable	3,500	Bank overdraft	1,500
Closing stock	12,200	Outstanding expenses	4,000
Cash in hand	12,000		
Cash at bank	7,500		
Sundry debtors	12,000		
Patents	6,200		
Prepaid expenses	2,500		
	<b>2,46,300</b>		<b>2,46,300</b>



- B) Consumption per quarter = 400 units, Carrying cost 40% of unit price, cost of placing the order Rs. 400; Calculate EOQ and No. of orders per year. **5**
6. A) Explain in detail the classification of theories of motivation. **8**
- B) What is ratio analysis ? Explain various types of ratios. **7**
7. A) Explain the communication process. What are the barriers of effective communication ? **8**
- B) What are different styles of Leadership ? Discuss about Leadership grid. **7**
8. Write short note (**any three**) : **15**
- A) Marketing research
- B) Advertising
- C) PLC
- D) Launching of new pharmaceutical product.
- 

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**Fourth Year B.Pharmacy Examination, 2010**  
**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 types and formulation of LVPs. Give quality control tests of it. **10**
2. Explain the concept and importance of optimization techniques in pharmaceuticals. Explain factorial design method of optimization with suitable pharmaceutical examples. **15**
3. What packaging materials are used for parenterals ? Explain any one in detail along with its evaluation tests. **15**
4. Write short notes on (**any three**) : **15**
  - a) Freeze dried parenteral products
  - b) HVAC systems for parenteral plants
  - c) Indicators used for evaluation of sterilization cycles
  - d) Equipment validation
  - e) Particulate matter contamination in parenterals.

**P.T.O.**



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SECTION – II

5. Explain importance of valve assembly and propellants in aerosol system. Give quality control tests of aerosols. **10**
6. Enlist methods for preparation of microencapsules. Explain mechanical encapsulation process in detail. Give evaluation test for microencapsules. **15**
7. Explain the concept of pharmacokinetic principles in the design of controlled drug delivery systems. Explain drug release pattern from these systems. Discuss parenteral controlled drug delivery systems. **15**
8. Write short notes on (**any three**) : **15**
- a) Dried human plasma
  - b) Sonophoretic drug delivery system
  - c) Ocusert
  - d) Intrauterine devices
  - e) Liposome.
- 

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**Fourth Year B.Pharm. Examination, 2010**  
**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) Describe various sample handling techniques for solid sample in IR. **5**  
b) Discuss types of molecular vibrations in IR. **5**
2. a) Explain fragmentation modes in mass spectroscopy. **7**  
b) Explain in brief  $C^{13}$  NMR and NOE. **8**
3. a) Discuss system suitability parameter as per USP. **5**  
b) Write a note on instrumentation of Atomic absorption spectroscopy. **5**  
c) Give the principle of ESR. **5**
4. Write short notes on **any three** : **15**
  - a) Chemical shift.
  - b) X-ray diffraction techniques.
  - c) Interference in flame photometry.
  - d) Raman spectroscopy.

P.T.O.

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SECTION – II

5. a) State various detectors used in gas chromatography. **6**  
b) Explain in brief theory of gas chromatography. **4**
6. a) Explain various pumps used in HPLC. **7**  
b) Discuss in brief on quantization technique and degassing techniques in HPLC. **8**
7. a) Give the principle and application of super critical fluid extraction. **8**  
b) Explain in brief on centrifugal TLC and Horizontal TLC. **7**
8. Write short notes on **any three** : **15**
- a) Measurement of Radioactivity.  
b) Application of HPTLC.  
c) Types of development in Electrophoresis.  
d) ENDOR and ELDOR.

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