



[3756] – 3

Fourth Year B.Pharmacy Examination, 2010
PHARMACEUTICAL (MEDICAL) CHEMISTRY – II
(2001-02 Old Course)

Time : 3 Hours

Max. Marks : 70

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

SECTION – I

1. Classify Anticonvulsants with examples. Describe mechanism of action and SAR of any three classes. **11**
2. Describe the pharmacological actions, chemistry, SAR and metabolism of acetyl choline. **12**
3. Outline the synthesis of (**any four**) : **12**
 - a) Phenyl butazone
 - b) Amantadine
 - c) Nifedipine
 - d) Clonidine
 - e) Methadone
 - f) Phenytoin.
4. Write short notes on (**any three**) : **12**
 - a) General anaesthetics
 - b) Concept of prodrug
 - c) MAO inhibitors
 - d) Receptor site theories.

P.T.O.



SECTION – II

5. Classify antihypertensive agents giving suitable examples. Add a note on ACE inhibitors as antihypertensive agent. **11**
6. What are CNS stimulants ? Classify them. Describe the chemistry, SAR, MOA of each class in brief with suitable examples. **12**
7. Define the term ‘Hormones’. Discuss the chemistry and biological actions of adrenocorticoids. **12**
8. Write short notes on **(any three)** : **12**
- a) Tricyclic antidepressants
 - b) Analeptics
 - c) Cardiac glycosides
 - d) Parkinsonism.



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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 formulations of SVPs with its quality control tests. **10**
2. Discuss importance of validation. Explain different phases of process validation with suitable pharmaceutical examples. **15**
3. Explain the importance of environmental and personal control in parenterals. **15**
4. Write short notes on (**any three**) : **15**
 - a) Factorial design method of optimization
 - b) Total parenteral nutrition
 - c) Contact lens and lens care products
 - d) Gowning area in parenterals
 - e) Parenteral proteins and peptides.

P.T.O.



SECTION – II

5. Explain the concept of oral controlled release dosage forms with its types.
Discuss selection criteria and dose calculation of drug for such systems. **10**
6. Discuss physicochemical properties of aerosols systems with reference to solution, suspension and emulsion. **15**
7. Enlist methods for preparation of microencapsules. Explain any two methods from coacervation phase separation and any two methods from mechanical encapsulation process in detail. Discuss applications of microencapsulation. **15**
8. Write short notes on (**any three**) : **15**
- a) Filling of aerosols in containers
 - b) Mucosal drug delivery systems
 - c) Transdermal drug delivery systems
 - d) Collection, processing and storage of whole human blood
 - e) Parenteral implants.



[3756] – 102

First Year B. Pharmacy Examination, 2010
MODERN DISPENSING PRACTICES
(2008-Revised 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. Define prescription. What is inscription ? Comment on responding to prescription. **10**

OR

Discuss types of suspensions. Describe formulation of suspensions. Add note on physical stability of suspensions. **10**

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

- Give the formulas for dose calculation for child.
- Explain in brief additives used in solutions for internal use.
- Give the identification tests for emulsions.
- Describe in brief reporting of adverse drug reaction.
- Give the pharmacopoeial storage conditions for formulations.
- Explain steps involved in compounding.
- Describe formulation of Glycerites.

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

- Code of pharmaceutical ethics.
- Patient counseling at pharmacy.
- Creaming and phase inversion of emulsion.
- Formulation of liniments and lotions.
- Patient medication record.

P.T.O.



SECTION – II

4. Discuss with suitable examples various types of therapeutic incompatibilities. **10**

OR

Differentiate between ointments, creams and pastes and discuss the good compounding practices involved in the extemporaneous preparation of these. **10**

5. Answer **any five** : **(5×3=15)**

- a) Write the ideal properties of drug to formulate its suppository using glycerogelatin base.
- b) Describe the types of powders administered by other than oral route.
- c) Discuss the role of different additives used in dry powder for filling in hard capsules.
- d) Write with example OTC medication and self medication.
- e) Write various drug-drug interactions with the oral contraceptive pills.
- f) Write patient counselling points for enteric coated tablets.
- g) Classify the ligatures and sutures.

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

- a) Patient counselling for eye drops.
- b) Patient counselling for Rotahaler.
- c) Legal requirements to establish retail pharmacy.
- d) Non-Pharmacological therapy in diabetes.
- e) Properties of Lozenge base and drugs for lozenges.



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

COMPUTER APPLICATION AND BIO-STATISTICS (Including Calculus)

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 II 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) Write note on simple random sampling with replacement. **3**
b) Find mean and median for the following data 15, 18, 13, 19, 20, 24. **4**
c) The daily profits (in Rs.) of 100 shops is distributed as follows.
Profit per shop : 0-50 50-100 100-150 150-200 200-250 250-300
No. of shops : 12 18 27 20 17 06
Draw frequency polygon for this data. **5**
2. a) Write a note on Bernoulli distribution. **4**
b) In regression study, the two regression lines are :
 $2X - 3Y + 6 = 0$ and
 $4Y - 5X - 8 = 0$.
Calculate correlation coefficient between X and Y. Also, determine the standard deviation of Y, if the standard deviation of X is 3. **5**
- c) Obtain the rank correlation coefficient between the X and Y.
X : 50 55 65 50 55 60 50 65 70 75
Y : 110 110 115 125 140 115 130 120 115 160 **5**

P.T.O.



3. a) Evaluate $\lim_{x \rightarrow 3} \frac{x^2 - 9}{\sqrt{x+6} - \sqrt{4x-3}}$. 4
- b) Write note on chance causes and assignable causes. 5
- c) Calculate the standard deviation from the following frequency distribution. 5
- | | | | | | |
|---------------------------|-------|-------|-------|-------|-------|
| Profit : | 10-20 | 20-30 | 30-40 | 40-50 | 50-60 |
| (Rs. Crores) | | | | | |
| No. of Companies : | 8 | 12 | 20 | 6 | 4 |
- (f)
4. a) Merits and demerits of median. 4
- b) Describe the test procedure of testing equality of two population mean if sample size is large. 5
- c) Find the probability that three cards drawn at random, without replacement from a well shuffled pack of 52 playing cards are all spades. 5

SECTION – II

5. a) Draw the block diagram of computer. Explain functions of each parts. 5
- b) Differentiate between impact and non-impact printers. 3
- c) Write note on higher level language. 4
6. a) Explain the features of word processing software that increases productivity of typist. 5
- b) Explain any five functions used in Excel. 5
- c) Differentiate between input and output devices. 4
7. a) What are the various components of windows O.S ? Explain in brief. 5
- b) Explain the different types of memory. 5
- c) Explain the following terms : 4
- | | |
|------------|-----------|
| i) Desktop | ii) Icons |
|------------|-----------|
8. a) Write short notes on : 10
- | | |
|----------|------------------------|
| i) Mouse | ii) DOT matrix printer |
|----------|------------------------|
- b) Differentiate between DOS and Windows O.S. 4



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

2.1 : PHARMACEUTICS – II (Physical Pharmacy)

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. Explain Gibb's phase rule equation. Discuss in detail two component system. **10**
2. Describe in detail first law of thermodynamics. Write a note on Enthalpy. **15**
3. A) Explain solubility of solids in liquids. **8**
B) Note on preservative action of weak acids. **7**
4. Write a note on (**any 3**) : **15**
- 1) One component system.
- 2) Conductometric titrations.
- 3) Polymorphism.
- 4) Second law of Thermodynamics.

P.T.O.



SECTION – II

5. Explain viscosity coefficient ? What are Non Newtonian Fluids ? Explain in detail different types of Non Newtonian Fluids. **10**
6. Describe in detail various methods to determine surface and interfacial tension. **15**
7. A) Explain importance of particle size determination. **7**
B) Write in brief about accelerated stability studies. **8**
8. Write a note on (**any 3**) : **15**
- 1) Flow properties of powders
 - 2) Adsorption isotherm
 - 3) HLB and its importance
 - 4) Energy of activation.



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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. Explain classification of amino acids. 10
2. a) Describe composition, structure and salient features of cell membrane with the help of diagram. 10
b) Define lipids. Explain classification of lipids. 5
3. a) What are fatty acids ? Give classification and biological role of fatty acids. 8
b) Describe classification of enzymes. 7
4. Write short notes on the following (**any three**) : 15
 - a) Secondary structure of protein.
 - b) Therapeutic uses of enzymes.
 - c) Polysaccharides.
 - d) Transport across cell membrane.

P.T.O.



SECTION – II

5. Enlist functions of liver and discuss the tests in brief to evaluate those functions. **10**
6. a) Describe DNA replication. **10**
b) Describe electron transport chain. **5**
7. a) What are ketone bodies ? How they are produced in body ? **8**
b) Define and classify lipoproteins. **7**
8. Write short notes on the following (**any three**) : **15**
- a) Kidney function tests.
- b) Role of Vitamin-A in vision.
- c) Phenylketonuria.
- d) Glycogen storage disorders.



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Fourth Year B.Pharmacy Examination, 2010
PHARMACOGNOSY AND PHYTOCHEMISTRY – II
(Old) (2001-02 Course)

Time: 3 Hours

Max. Marks: 70

- 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. Give pharmacognostic account of Rauwolfia root. 11
2. a) Plant biotechnology is promising source for biomedicines and progress in phytomedicines. Justify. 6
b) Define and classify alkaloids. Give role of alkaloids in plants. 6
3. Elaborate the procedure and significance of following chemical tests (**any 4**) : 12
 - a) Vitali-Morin test
 - b) Murexide test
 - c) Wagner's test
 - d) Libbermann's test
 - e) Van-Urk's reagent.
4. Write short notes on (**any three**) : 12
 - a) Successive solvent extraction
 - b) Applications of TLC and HPTLC to herbal drugs/products
 - c) Biosynthesis of tropane alkaloids
 - d) Preliminary phytochemical screening.

P.T.O.



SECTION – II

5. a) Give chemistry and classification of fixed oils with examples. **6**
b) How will you detect adulteration of fixed oils ? **5**
6. a) What are tannins ? Differentiate between Pale catechu and Black Catechu. **6**
b) Give a detailed account of Ginko-biloba. **6**
7. a) Write about General features of Umbelliferous drugs. Give chemical constituents and uses of Dill fruit. **6**
b) Give detail account of allergens causing dermatitis. **6**
8. Write short notes on (**any three**) : **12**
a) Antimicrobial marine drugs
b) Adulterants of clove
c) Role of various plants as pesticides
d) Tulsi.



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First Year B.Pharmacy Examination, 2010
PHARMACEUTICS – I
(2008 Revised 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.

SECTION – I

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

What are clinical trials ? Describe various phases of clinical trials.

OR

Define dosage form. Discuss in detail classification of dosage form. Add a note on sustained release and targeted drug delivery system.

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

- a) Define pharmaceuticals and explain its scope.
- b) What is first pass effect ?
- c) Add a note on drug efficiency and dose response concept.
- d) Mention applications of radiopharmaceuticals.
- e) Give the importance of GMP.
- f) Explain principle of Unani and Siddha system of medicine.
- g) Describe antioxidants used in formulation.

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

- a) Packaging of tablet
- b) Concept of preformulation
- c) Bio-availability and bio-equivalence
- d) Development of profession of pharmacy
- e) Routes of administration.

P.T.O.



SECTION – II

1. Solve **any one** : 10

What are aromatic waters ? Explain the methods of preparation and preservation of aromatic waters.

OR

Describe the principle, construction, working, advantages and applications of plate and frame filter press.

2. Solve **any five** : 15

- a) Explain why preservatives are not required in simple syrup I.P.
- b) Discuss formulation of linctuses.
- c) Describe factors affecting size reduction.
- d) Write a note on propeller mixer.
- e) Discuss the importance of filter aids.
- f) Explain different methods of granulation.
- g) Write a note on tooth powder.

3. Solve **any three** : 15

- a) Explain the process of size gradation and size distribution.
- b) Explain construction, working and application of Ball mill.
- c) Discuss formulation and manufacturing process involved in liquid oral preparation.
- d) Write note on :
 - i) Rotary filter
 - ii) Planetary mixer.
- e) Discuss methods used for improvement of solubility.



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First Year B. Pharmacy Examination, 2010
PHARMACEUTICAL INORGANIC CHEMISTRY
(2008 Revised Pattern)

Time : 3 Hours

Max. Marks : 80

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

SECTION – I

1. What is hardness of water ? Discuss various methods used to remove temporary and permanent hardness of water. 10

OR

1. What are radiopharmaceuticals ? Write in brief various methods of radiation measurement 10
2. Attempt **any five** of the following : 15
- a) What is biological effect of radiation ?
 - b) Write the modifications of limit tests of Lead.
 - c) Give the role of
 - i) Lead acetate cotton plug in limit test of Arsenic.
 - ii) Thioglycolic acid in limit test of Iron.
 - d) Discuss mechanism of action of antioxidant.
 - e) Write reactions of limit test of arsenic IP.
 - f) Discuss limit test of chloride for potassium permanganate.
 - g) Differentiate between nuclear fission and fusion.
3. Write notes on (**any three**): 15
- a) Monograph of IP.
 - b) Medicinal applications of radiopharmaceuticals.
 - c) Oxygen.
 - d) Effect of impurities on properties of substances.
 - e) Radio opaque contrast media.

P.T.O.



SECTION – II

4. What are essential and trace ions ? Discuss absorption, distribution, physiological role and official compounds of Iron. 10

OR

4. a) What are antidotes ? Classify them with example. Write a note on cyanide poisoning. 5
- b) Discuss in detail combinations of antacid preparations. 5
5. Attempt **any five** of the following : 15
- a) Give the role of semithicone in antacid preparation.
- b) Write about topical protective.
- c) Discuss about acidifying agent.
- d) What are ideal requirement of antacids ? Discuss evaluation of antacids activity.
- e) Give the composition of intra and extra cellular electrolyte. Discuss role of chloride and bicarbonate ion in body.
- f) Discuss the mechanism of action of saline cathartics.
- g) Write about potassium chloride as electrolyte replanisher.
6. Write notes on (**any three**): 15
- a) Assay of Iodine and Magnesium sulphate.
- b) Role of fluoride as anticaries agent.
- c) Alum as astringent.
- d) Physiological acid base balance.
- e) Expectorant and Emetics.



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**First Year B. Pharmacy Examination, 2010
(2008 Pattern)
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. Explain in detail mechanism of blood clotting and add a note on hemolytic disease of new born. **10**

OR

1. Draw a neat labelled diagram of interior of heart and explain cardiac cycle in detail. **10**

2. Solve (**any three**) : **15**

i) Explain structure and function of liver.

ii) Explain physiology of respiration.

iii) Give definitions of following disorders :

a) Leukopenia

b) Leukocytosis

c) Thrombocytopenia

d) Polycythemia

e) Anemia

f) Angina Pectoris

g) Hypertension

h) Arteriosclerosis

i) Bronchitis

j) Hemophilia.

iv) Explain platelet plug formation.

v) Explain structure and function of plasma membrane.

P.T.O.



3. Write short notes on **(any five)** : **15**
- i) Transport of materials across plasma membrane
 - ii) Nervous tissue
 - iii) WBCs
 - iv) ECG
 - v) Mechanism of breathing
 - vi) Stomach
 - vii) Lymph node.

SECTION – II

4. Name various cranial nerves. Explain anatomy of spinal cord and comment on reflex arc. **10**

OR

4. Draw a neat labelled diagram of nephron and explain in detail physiology of urine formation. **10**

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

- i) Distinguish between sympathetic and parasympathetic nervous system.
- ii) Explain structure of sperm and process of spermatogenesis.
- iii) Explain synthesis, storage and release of thyroid hormones.
- iv) Explain structure and function of skin.
- v) Explain physiology of hearing.

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

- i) Renin angiotensin aldosterone system
- ii) Hypothalamic hormones
- iii) Ovaries
- iv) Neurotransmission
- v) Internal structure of eye
- vi) Sperm
- vii) Menstrual cycle.



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First Year B. Pharmacy Examination, May 2010
PHARMACEUTICAL ENGINEERING
(2008 Pattern Revised Course)

Time : 3 Hours

Max. Marks : 80

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

SECTION – I

1. Describe supersaturation and explain Mier's theory with its limitations. **10**

OR

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

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

- Thermodynamic steam trap
- Horizontal tube evaporator
- Boiling with forced circulation
- Describe airhandling system with diagram
- Vacuum crystalizer
- Heat transfer from condensing vapours
- Forced circulation evaporators.

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

- Stefan Boltzmann law of heat transfer
- Process of nucleation
- Falling film evaporator
- Use of humidity chart
- Spiral plate heat exchanger.

P.T.O.



SECTION – II

4. Describe fractional distillation and plate columns used in fractional distillation. **10**

OR

Define corrosion. Give different mechanisms and types of corrosion.

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

- a) Liquid-liquid extraction
- b) Valve plate column
- c) Spray dryer
- d) Flash dryer
- e) Tunnel tray dryer
- f) Use of surface coating in preventing corrosion
- g) Reynold's experiment.

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

- a) Orifice meter
- b) Rotameter
- c) Silver continuous diffusion battery
- d) Single contact extraction with triangular diagram
- e) Molecular distillation.



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

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) Give the classification and methods of preparation of Aromatic waters. **7**
b) Enlist the factors affecting rate of solution and discuss any two of them. **3**
2. a) Discuss the drug distribution in the body and explain dose response concept. **7**
b) Discuss the mechanism of liquid mixing and write a note on Baffles. **8**
3. a) Discuss the concept of preformulation. **7**
b) Explain in brief quality control test for solution. **8**
4. Write short notes on (**any three**) : **15**
a) Liquid shampoo
b) Leaf filter
c) Drug metabolism
d) Sigma Blender.

P.T.O.



SECTION – II

5. Explain the formulation, preparation and evaluation of : **10**
A) ORS powder
B) Talcum powder.
6. a) Enlist various methods of size separation. Explain size separation method based on volume displacement method. **10**
b) Explain Homeopathic system of medicine. **5**
7. a) Explain the role of community pharmacist in management of Asthama. **5**
b) Discuss the importance of size reduction. Explain in detail Ball Mill. **10**
8. Write short notes on (**any three**) : **15**
a) Pouch filling machine
b) Indian Pharmacopoeia
c) Planetary mixer
d) Size gradation.
-



[3756] – 13

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

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

SECTION – I

1. a) Elaborate sources of impurities in pharmaceutical substances and explain their effect on pharmaceutical substances. **5**
b) Describe limit test for Arsenic. **5**
2. a) Define monograph. What are the content of monographs ? **5**
b) Define hardness of water and state the methods to remove hardness of water. **5**
c) What is radiopaque contrast media ? Explain different radiopaque contrast compounds. **5**
3. a) Discuss in brief different official water in I.P. **5**
b) Describe the limit test for lead. **5**
c) Discuss in brief different antidotes. **5**
4. Write short notes on (**any three**) : **15**
 - a) Geiger Muller Counter
 - b) Anticaries agents
 - c) Electrolytes used for replacement therapy
 - d) Applications of Radiopharmaceuticals.

P.T.O.



SECTION – II

5. a) Discuss in brief saline cathartics. **5**
b) Define and classify inorganic gastrointestinal agents. **5**
6. a) Explain the magnesium compounds used as antacids. **5**
b) What are expectorants ? Discuss ammonium chloride and potassium iodide as expectorants. **5**
c) Explain the mechanism of action of inorganic antimicrobial agent. **5**
7. a) Explain the role of oxygen, carbon dioxide in human body. **5**
b) What are astringent ? Explain two official compounds used as astringent. **5**
c) Discuss in brief antioxidants and preservatives. **5**
8. a) Write the uses of Titanium Dioxide, Hydrogen Peroxide, Potassium Iodide, Bismuth Subcarbonate and Activated Charcoal. **5**
b) Define antacid. Discuss in brief aluminum hydroxide as antacid. **10**



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Second Year B. Pharmacy Examination, 2010
PHARMACEUTICAL MICROBIOLOGY AND IMMUNOLOGY
(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. Answer the following (**any five**) : **10**
- a) How Whittaker classify living organism into five kingdom ?
 - b) Differentiate between vegetative cell and endospore.
 - c) Draw a ray diagram of phase contrast microscope.
 - d) Give the characteristics of Pseudomonas.
 - e) Explain the term 'Tumour Viruses'.
 - f) Draw neat labelled diagram of Penicillium species and give its importance.
2. a) Describe various methods used for preservation of microbial culture and give its significance. **8**
- b) Enlist different preservatives used in pharmaceutical formulations. Describe in detail preservative efficacy test. **7**
3. Answer the following : **15**
- a) Describe in detail transmission electron microscopy.
 - b) What are actinomycetes ? Give its importance in antibiotic production.
 - c) Describe the sequence of events occurs during Lytic cycle of bacteriophage.

P.T.O.



4. Write a note on (**any three**) : **15**
- a) Antony Van Leeuwenhock
 - b) Dermatophytes
 - c) Ingredients susceptible to microbial attack
 - d) Rickettsia.

SECTION – II

5. Answer the following (**any five**) : **10**
- a) Define :
 - i) D value
 - ii) Vaccine.
 - b) Write note on 'Brown's tube' ?
 - c) Enlist the test microorganisms used for Antibiotic assay.
 - d) Explain the term 'Allergenic extracts'.
 - e) Differentiate between immediate hypersensitivity and delayed hypersensitivity.
 - f) Give the beneficial role of normal microbial flora of the human body.
6. a) Describe in detail Antigen-Antibody reactions. **8**
- b) What are different types of vaccines ? Write the method for preparation of BCG vaccine. **7**
7. Answer the following : **15**
- a) Define sterilization. Describe in detail Gaseous sterilization.
 - b) How will you perform microbial assay of Vit. B₁₂ ?
 - c) Describe in brief different types of immunity.
8. Write a note on (**any three**) : **15**
- a) Phenol coefficient method
 - b) Laminar air flow
 - c) Type II hypersensitivity
 - d) Complement system.



[3756] – 204

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

Time : 3 Hours

Max. Marks : 80

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

SECTION – I

1. a) Draw the structure of following with numbering : 5
i) 1,3,7 - Trimethyl xanthene
ii) Pteridine
iii) 2-Benzyl thiazole
iv) 3-Methyl quinoline
v) 4-Propyl indole.
- b) Write in brief electrophilic substitution reaction of five membered, Benzene fused heterocyclic ring system. 5

OR

1. a) What are diastereomers ? Explain with suitable examples. 2
b) Draw the Fischer projection of : 3
i) Meso 2,3-Dibromobutane
ii) 2-Chlorobutane
iii) 2R, 3S-2-Chlorobutanol.
- c) What is racemic resolution ? Explain with suitable examples the various methods used. 5

P.T.O.



2. Answer the following (**any five**) : **15**
- a) Trans 1, 2-dimethyl cyclohexane is more stable than its C is isomer. Why ?
 - b) Explain cyclohexane is more stable in chair form than boat form.
 - c) Explain :
 - i) Staggered and eclipsed
 - ii) Fischer projection formula.
 - d) Define the enantiomerism. Give its pharmaceutical significance.
 - e) What are proteins ? Discuss its structure.
 - f) Give the advantage of Z/E nomenclature over cis and trans with example.
 - g) What are stereoselective and stereospecific reactions ? Give suitable examples.
3. Answer the following (**any three**) : **15**
- a) Explain in brief conformation of n-butane.
 - b) Write a note on Racemic modification.
 - c) Indicate more stable and least stable chair conformation of di-substituted cyclohexane.
 - d) What is combinatorial chemistry ? Give the strategies used in Deconvolution method.
 - e) What are amino acids ? Discuss various methods of synthesis of amino acid.

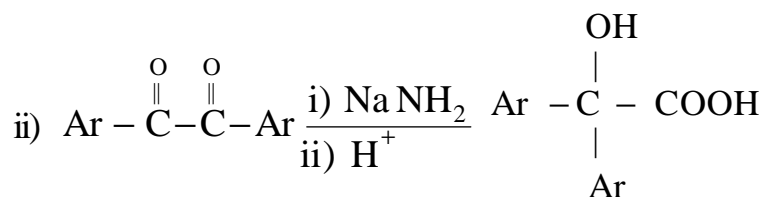
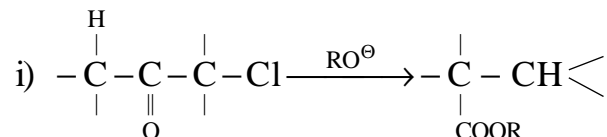
SECTION – II

4. a) Give the scheme of retrosynthesis of : **5**
- i) Propranolol
 - ii) Ciprofloxacin.
- b) Discuss in short in about : **5**
- i) Solid supported synthesis
 - ii) Thiazole synthesis.

OR



4. a) Give the mechanism of 5



b) What are heterocyclic compounds? Give the methods of synthesis and reaction of furan. 5

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

a) Discuss the nomenclature of five membered heterocycles containing one heteroatom.

b) Give the structure and numbering of

i) Quinoline

ii) Benzimidazole

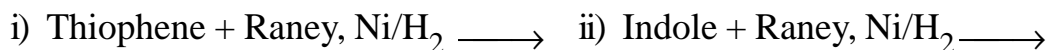
iii) Oxazole.

c) Give the following mechanism.

d) Identify the following rearrangement and give its mechanism.

e) Give reason thiophene is more stable and more aromatic than pyrrole and furan.

f) Complete the reaction :



g) Discuss the Fries rearrangement with mechanism.

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

a) Bayer-Villiger oxidation.

b) Beckman rearrangement

c) Pinacol-pinacolone rearrangement

d) Cope rearrangement

e) Wagner-Meerwin rearrangement.



[3756] – 205

Second Year B. Pharmacy Examination, 2010
PHARMACEUTICAL ANALYSIS – I
(2008 Pattern)
(New 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. Explain functioning of internal indicators. **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) Discuss on titanous chloride titration.
- v) Explain the principle of permanganate titration.
- vi) Give the application of high frequency titration.
- vii) Enlist various conditions used in Iodometric determination.

P.T.O.



3. Write notes on (**any three**) : **15**
- i) Instrumentation of conductometry
 - ii) ORD and CD
 - iii) Various methods of oxidation-reduction reactions
 - iv) Assay of Sulphanilamide
 - v) Pharmaceutical applications of non aqueous titration.

SECTION – II

4. Discuss various factors affecting stability constants. Give pharmaceutical applications of complexometric titration. **10**

OR

What is co-precipitation and how it is reduced ? Give the application of gravimetric analysis. **10**

5. Solve **any five** : **15**
- i) Discuss on Metalochromic indicators
 - ii) Calculate pH of 0.01 M acetic acid solution (pKa – 4.76).
 - iii) Discuss on types of EDTA titration
 - iv) Explain ligand and sequestering agent
 - v) Discuss on potentiometric titration
 - 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) Statistical tests of significance
 - iii) Filtration
 - iv) Nitrogen determination by Kjeldah's method
 - v) Post precipitation.



[3756] – 207 A

**Second Year B. Pharmacy Examination, 2010
(2008 Pattern)**

2.7 : PHARMACOLOGY – I (Including Pathophysiology)

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 figures to the right indicate full marks.*

SECTION – I

1. Structure and functions of biological membrane. Enlist various processes of drug transport across the biological membrane. Discuss in detail specialised transport. **10**

OR

1. Explain the fate of drugs. Discuss the role of microsomal enzyme system in biotransformation of drugs.
2. Solve **any five** of the following : **15**
 - i) Explain the therapeutic index.
 - ii) Discuss about bioavailability of drugs.
 - iii) Explain the term antagonism with suitable examples.
 - iv) Discuss the first pass metabolism with suitable examples.
 - v) Discuss how various pathological states modifying drug action.
 - vi) Discuss the anaphylaxis.
 - vii) Discuss the placental barrier.

P.T.O.



3. Write a note on the following (**any three**) : **15**
- i) G-protein coupled receptors (GPCR)
 - ii) Antiplatelet agents
 - iii) Drug treatment in pregnancy
 - iv) Fibrin acid derivatives used as hypolipidemics
 - v) Types of gene therapy.

SECTION – II

4. Define and classify pneumonia. Discuss the etiology, complications and clinical features of bacterial pneumonia. **10**

OR

4. Define cardiac arrhythmia. Discuss the pathophysiology of cardiac arrhythmia.
5. Solve **any five** of the following : **15**
- i) Discuss the pathophysiology of chronic renal failure.
 - ii) Discuss the pathophysiology of pain.
 - iii) Discuss the pathophysiology of depression.
 - iv) Discuss the etiology of malaria.
 - v) Pathophysiology of angina pectoris.
 - vi) Discuss the complications of AIDS.
 - vii) Clinical features of type 1 and 2 diabetes mellitus.

6. Write a note on the following (**any three**) : **15**
- i) Psychosis
 - ii) Sexually transmitted diseases
 - iii) Allergy
 - iv) Amoebic dysentery
 - v) Myocardial ischemia.



[3756] – 207

**Second Year B. Pharmacy Examination, 2010
(2008 Pattern)**

2.7 : PHARMACOLOGY – I (Including Pathophysiology)

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

SECTION – I

1. Explain the term biotransformation. Enlist the various reactions involved in the biotransformation of drugs. Explain in detail synthetic reactions. **10**
2. a) Explain the term adverse drug reaction. Discuss in detail Toxic effects and Side effects. **10**
b) Write the applications of gene therapy in various genetic disorders with examples. **5**
3. a) Classify NSAIDs. Write the pharmacological actions, therapeutic uses and adverse drug reaction of salicylates. **10**
b) Discuss about the non viral vectors for gene transfer. **5**
4. Write a note on the following (**any three**) : **15**
 - a) H₂ receptor antagonists
 - b) Redistribution and Placental barrier
 - c) Warfarin
 - d) Carcinogenicity and mutagenicity.

P.T.O.



SECTION – II

5. Define peptic ulcers. Explain the etiology and pathogenesis and complications of acute and chronic PU. **10**
6. a) Define and classify psychosis. Discuss the pathophysiology of schizophrenia. **10**
b) Discuss the pathophysiology of malignancy. **5**
7. a) Define ischemic heart disease. Discuss the etiopathogenesis and write the effects of myocardial ischemia. **10**
b) Discuss the pathophysiology of acute renal failure. **5**
8. Write a note on the following (**any three**) : **15**
- a) Typhoid fever
 - b) AIDS
 - c) Malaria
 - d) Pathophysiology of hypersensitivity.



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

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. Write in detailed account of bulk characterisation in preformulation study. Add a note on importance of pH and pKa in it. **10**
2. A) Elaborate the process of capsule shell manufacture of hard gelatin capsule with importance of each step. **8**
- B) Explain construction and working of hand operated capsule filling machine. **7**
3. A) Justify the statement 'Preformulation is key step in pharmaceutical product development. **8**
- B) Explain extrusion spheronisation in detail. **7**
4. Write short notes on (**any three**) : **15**
- 1) Stages involved in sugar coating
- 2) Evaluation of granules
- 3) Effervescent tablet
- 4) Enteric coating materials.

P.T.O.



SECTION – II

5. Explain coarse emulsion and micro emulsion. Discuss in detail various theories proposed for stabilization of emulsion. **10**
6. A) Discuss factors affecting on absorption of drug from semisolids. **8**
B) Describe various methods of manufacture of suppositories. **7**
7. A) What are principles of effectiveness of sunscreen preparations ? Explain suntan preparations with examples. **8**
B) Discuss nail laquer preparations. **7**
8. Write short note on (**any three**) : **15**
- 1) Hair colorants
 - 2) Sunscreen agents
 - 3) Phase inversion
 - 4) Controlled flocculation.



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

Max. Marks : 80

Time : 3 Hours

N.B. : (1) Question No. 1 and 2 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. What is protoplast culture ? Give details of its salient features, production and its importance. 10
2. (a) Write about polymerase chain reaction and its applications. 10
 (b) What are plasmids and give their importance as cloning vectors ? 5
3. (a) Elaborate on different methods of DNA sequencing. 10
 (b) What are the different techniques of animal tissue culture ? Give method of preparation of chick embryo extract. 5
4. Write short notes on (any three) : 15
 - (a) Transgenic animals
 - (b) Gel electrophoresis
 - (c) Ti and Ri Plasmids
 - (d) Cryopreservation.



SECTION - II

2. Give details of fermentation of Penicillin with details of strain improvement and downstream processing. 10
6. (a) Brief about r-DNA technology and give details of synthesis of interferons. 10
b) What are monoclonal antibodies? Give its principle and applications. 5
7. (a) Classify and explain fermenters based on different types of agitation systems. 10
b) Write a note on various technological and safety studies of biotechnological products. 5
8. (a) What is enzyme immobilization? Explain various methods of immobilization. 10
b) Give different methods of *in-vitro* fertilization. 5



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

Max. Marks : 80

Time : 3 Hours

N.B. : (1) Question No. 1 and 2 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.

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b) Give different methods of *in-vitro* fertilization. 5



[3756] – 4

**Fourth Year B. Pharmacy Examination, 2010
(2001-02 Old Course)
PHARMACOLOGY AND BIOASSAY**

Time : 3 Hours

Max. Marks : 70

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

SECTION – I

1. Define and classify Antidiabetic drugs. Explain mechanism of action, pharmacological actions adverse effects and therapeutic uses of insulin. **11**
2. What is Epilepsy ? Classify Antiepileptic drugs. Explain pharmacological actions, mechanism of action, adverse effects and therapeutic uses of phenytoin. **12**
3. A) Define and classify Hypnotic – Sedatives. Explain mechanism action of Diazepam. What are the advantages of benzodiazepines over barbiturates ? **6**
B) Classify anti thyroid drugs. Explain role of propylthiourasil in the treatment of hyperthyroidism. **6**
4. Write short note on (**any two**) : **12**
 - i) MAO Inhibitors
 - ii) Pharmacokinetic Drug Interactions
 - iii) Drug therapy in Paediatrics
 - iv) Oxytocin.

SECTION – II

5. What are Antibiotics ? Classify them and explain mechanism of action, antibacterial spectrum and adverse effects of Penicillin – G. **11**

P.T.O.



6. Define Bioassay. Explain the principles and methods of Bioassay. Explain the methods for bioassay of Digitalis. **12**
7. A) Classify anti amoebic drugs. Explain mechanism of action adverse effects and therapeutic uses of Metronidazole. **6**
- B) Explain the phases of clinical trials. **6**
8. Write short note on (**any two**) :
- i) Pharmacotherapy of Rheumatoid Arthritis
 - ii) Chloramphenicol
 - iii) Co trimaxazole
 - iv) 't' Test.
-



**Fourth Year B.Pharm. Examination, 2010
PHARMACOLOGY – III
(2004 Course)**

Total Marks : 80

Time : 3 Hours

- Instructions:** 1) Question Nos. 1 and 2 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 2) : **10**
- i) Describe the ring system for Tropane alkaloids. Write the chemical test for their identification.
- ii) State the hydrolysis product of
a) Cocaine b) Reserpine
- iii) What is Cinchona Red? Describe the chemical test to detect it.
- iv) Enlist two semisynthetic derivatives of Vinblastine. Mention their advantages over Vinblastine and Vincristine.
- v) Enlist four varieties of Ephedra with at least two differentiating features.
- vi) Write pharmacological significance of
a) Colchicine b) Pilocarpine
2. (A) Explain how solubility pattern of alkaloids helps in their extraction, describing the general method of extraction of alkaloids. **5**
- (B) Draw a well labelled diagram of T.S. of Rauwolfia root, enlisting their important diagnostic features : **5**



- 5 (C) Differentiate between the following crude drugs with at least five differentiating features.
- 5 i) Datura metal and Datura stramonium
- 5 ii) Brazilian Ipecac and Panama Ipecac.
- 5 3. A) Explain life cycle of ergot with special mention to "Saprophytic production of Ergot alkaloids".
- 5 B) State the applications of medicinal plant tissue culture with reference to Hybridisation, and Clonal propagation.
- 5 C) Write a note on Quinoline Alkaloids.
- 15 4. Write notes on (any three) :
- 5 a) Plant Allergens
- 5 b) Madhanshini and Shankha pushpi
- 5 c) Marine Anticancer Drugs
- 5 d) Cultivation and utilisation of Opium.

SECTION – II

- 5 2. A) Describe the procedure for determination of following evaluation parameters as per WHO guidelines :
- 5 i) Foaming Index
- 5 ii) Moisture Content
- 5 B) Describe the procedure for extraction and structural elucidation (by instrumental technique) of Quinine OR Reserpine.
- 5 d. A) What is phytochemical investigation of a Crude drug? Explain with special reference to 'Preliminary Phytochemical Screening'.
- 5 B) Write a note on plant based industries.
- 5 C) Describe principle behind Droplet Counter Current Extraction. Enlist few applications.



7. (A) What is the difference between preparation of Asava and Arishta? Enlist their evaluation parameters. **5**
- (B) What is supercritical fluid extraction? What are its advantages over other methods of extraction? Explain with suitable examples. **5**
- (C) Write note on Bhasma. **5**
8. Write notes on (any three) : **15**
- (a) Herbal cosmetics
 - (b) Determination of pesticide residue
 - (c) Extraction of Caffeine
 - (d) Regulatory requirements of herbal drugs.



[3756] – 43

Fourth Year B.Pharmacy Examination, 2010
PHARMACEUTICS – IV
(Old Syllabus) (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 factors affecting protein binding. **10**
2. a) Explain factors affecting Biotransformation of drug. **8**
b) Explain Theories of Dissolution. **7**
3. a) Explain physiological barriers to distribution of drug. **8**
b) Explain mechanisms of drug absorption. **7**
4. Write short notes on (any 3) : **15**
 - a) Gastric emptying
 - b) Kinetics of protein binding
 - c) Volume of distribution
 - d) pH-Partition hypothesis.

P.T.O.



SECTION – II

5. Explain and interpret Michaelis Menten Equation. **10**
6. a) What is compartmental modeling. Explain pharmacokinetic models. **8**
b) Explain Invitro-Invivo Correlation. **7**
7. a) Write about Bioequivalence studies. **7**
b) Write about methods of bioavailability measurement. **8**
8. Write short notes on **(any 3)** : **15**
- a) Invitro dissolution testing models
 - b) Multiple dosing
 - c) First Order Kinetics
 - d) Urinary excretion data.



[3756] – 44

Fourth Year B.Pharmacy Examination, 2010
PHARMACEUTICS – V
Biopharmaceutics and Pharmacokinetics
(2004 Old 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. a) Discuss the different categories of drug transport mechanisms involved in absorption. Explain in detail passive diffusion. **8**
- b) Highlight the phases of drug transfer from GI absorption site into systemic circulation. **2**
2. a) What are the two major rate-determining steps in the distribution of drugs ? Support your answer with suitable examples. **10**
- b) Unless distribution occurs, the drug may not elicit pharmacological response. Explain. **5**
3. a) A protein bound drug is both pharmacokinetically as well as pharmacodynamically inert. Explain. **7.5**
- b) Highlight the classification for the binding of drug to blood components. **7.5**
4. a) What are the patient related factors affecting drug absorption ? **7.5**
- b) Discuss the chemical pathways of drug biotransformation. **7.5**

P.T.O.



SECTION – II

5. Which physicochemical properties of a drug govern its excretion in urine ? **10**
6. a) Discuss the different factors that lead to drug interactions. **7.5**
b) Discuss the factors influencing passive reabsorption of drugs from tubules. **7.5**
7. a) Define pharmacokinetics and explain pharmacokinetic parameters that describe a typical plasma level time curve. **10**
b) In compartment modelling, elimination is presumed to occur from central compartments only. Why ? **5**
8. Discuss in detail factors affecting bioavailability of a drug. **15**
-



[3756] – 47

Fourth Year B.Pharmacy 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) Explain precessional frequency, chemical shift and coupling constant. | 6 |
| b) Explain various factors affecting chemical shift. | 4 |
| 2. a) State in brief 'Analytical methods of validation as per ICH guidelines. | 9 |
| b) Discuss Mc Lafferty rearrangement. | 6 |
| 3. a) Give the application of IR spectroscopy. | 5 |
| b) Discuss various types of detectors used in IR spectroscopy. | 5 |
| c) Explain types of molecular vibration in IR spectroscopy. | 5 |
| 4. Write short note on any three : | 15 |
| 1) C^{13} NMR | |
| 2) GC-MS | |
| 3) ESR principle | |
| 4) X-ray diffraction techniques. | |

P.T.O.



SECTION – II

5. a) Explain in brief ‘Theory of Gas Chromatography’. **4**
b) Enlist various detectors used in Gas Chromatography. Explain in detail Flame Ionization Detector (FID). **6**
6. a) Discuss various columns used in HPLC. **8**
b) Write down principle and applications of super critical fluid extraction. **7**
7. a) Give the application of HPLC and add a note on photo documentation. **7**
b) Explain in brief Trouble shooting and degassing techniques in HPLC. **8**
8. Write short notes on (**any three**) : **15**
a) Principle of Electrophoresis
b) Pharmaceutical application of Radio chemical methods
c) Interference in flame emission spectroscopy
d) Pumps in HPLC.



[3756] – 7

Fourth Year B.Pharmacy Examination, 2010
PHARMACEUTICS – IV
Biopharmaceutics and Pharmacokinetics
(Old Course – 2001-02)

Time : 3 Hours

Max. Marks : 70

- 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 the physicochemical factors affecting absorption of drugs. **11**
2. What is perfusion rate limiting distribution ? Explain in detail factors affecting distribution of drug. **12**
3. a) With respect to skin as an absorption site elaborate on transdermal absorption. **6**
b) Explain various theories of dissolution. **6**
4. Write short notes on (**any three**) : **12**
- a) Enterohepatic cycling
- b) First pass effect
- c) Tissue binding
- d) Active transport.

P.T.O.



SECTION – II

5. What is one compartment open model ? Derive an equation to determine K_e for a drug administered by IV infusion. 11
6. Derive equations to determine C_{max} , T_{max} and K_e for a drug given extravascularly. 12
7. Give a detailed account of individualisation of dosage regimen. Also add a note on optimization of dosage regimen. 12
8. Write short notes on (**any three**) : 12
 - a) Experimental designs in bioequivalence studies
 - b) Steady state plasma concentration
 - c) Pharmacodynamics
 - d) Biological half life and its importance.



[3756] – 104

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

Time : 3 Hours

Max. 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. Explain the mechanism involved in Friedel Craft alkylation and nitration of Benzene. 10

OR

Explain substitution nucleophilic unimolecular reaction mechanism with stereochemistry and add note on factors affecting on it.

2. Answer the following **any four** from Q. No. 1 to 6. Q. No. 7 is **compulsory** : 12
- 1) Define and illustrate Tautomerism.
 - 2) Ethyl amine is more basic than ammonia. Give reason.
 - 3) What is Inductive effect ? And explain it with suitable example.
 - 4) What is difference between nucleophilicity and basicity ?
 - 5) Draw as many resonance structure as you can for following :
 - a) Aniline
 - b) Phenol
 - 6) Methyl group in toluene is ortho para directing. Explain.
 - 7) Draw the structure of following compound : 3
 - a) 2-Methyl, N-N di-methyl butanamine
 - b) 4-Amino -3-chloropentanenitrile
 - c) 3-Methyl-4-pentene-2-one

P.T.O.



3. Answer the following (**any three**) : **15**
- 1) Write a synthesis of following compound starting with benzene and suitable reagent
 - a) Para nitro toluene
 - b) 1, 3 dinitro benzene.
 - 2) What is hydrogen bonding ? And explain it with suitable example.
 - 3) Compare S_N1 and S_N2 Mechanism.
 - 4) Write a note on structural 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.

SECTION – II

4. A) What are elimination reactions ? Discuss the mechanism and factors affecting elimination reaction. **10**
- OR
- A) Explain why aldehydes are more reactive than ketone for nucleophilic addition reaction and add a note on Cannizzaros reaction.
5. Answer the following (**any five**) : **15**
- 1) How will you differentiate the following pair of compounds by simple chemical test :
 - a) Acetaldehyde and Dimethyl ketone
 - b) Phenol and Benzoic acid.
 - 2) Explain why carboxylic acids are more acidic than alcohols although both ionise by losing proton from a hydroxyl group.
 - 3) Why esters are less reactive towards nucleophile than aldehydes ?



- 4) Arrange the following compounds in order of increasing basicity :
- a) Aniline
 - b) p-chloroaniline
 - c) m-chloroaniline.
- 5) Describe how primary, secondary and tertiary amines can be separated from mixture.
- 6) Explain Markownikoff's rule.
- 7) Give any two methods of synthesis of carboxylic acids.
6. Write note on (**any 3**) : **15**
- 1) Reaction of Sulphonic acid
 - 2) Substitution versus Elimination
 - 3) Ozonolysis
 - 4) Reformastky reaction
 - 5) Aldol condensation.
-



[3756] – 15

First Year B.Pharmacy 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 tissue. Explain in detail about epithelial tissue. **10**
2. a) Describe the components and major functions of lymphatic system. **7.5**
b) Describe the structure of heart wall. Write note on ECG. **7.5**
3. a) Describe the actions of muscles involved in breathing. Describe transport of oxygen and carbon dioxide in the blood. **7.5**
b) Enlist the organs of digestive system. Describe general structure of alimentary canal. **7.5**
4. Write short note (**any three**) : **15**
 - a) Liver
 - b) Blood pressure and its regulation
 - c) Gastric juice
 - d) Respiration.

P.T.O.



SECTION – II

5. Outline the actions of hormones secreted by anterior and posterior lobe of pituitary gland. **10**
6. a) Outline the structure and functions of cerebrum. **7.5**
b) Describe the structure and functions of spinal cord. **7.5**
7. a) Draw well labelled diagram of ear and explain physiology of hearing. **7.5**
b) Describe structure of nephron. Explain the process of urine formation. **7.5**
8. Write short note (**any three**) : **15**
- a) Spermatogenesis
 - b) Communicable diseases
 - c) Methods of family planning
 - d) Health education VS propaganda.



[3756] – 206

Second Year B.Pharmacy Examination, 2010
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 in each Section.

SECTION – I

1. A) Write about the contribution of the following scientist to the pharmacognosy (any four) : 4
- a) Seydler
 - b) Charak
 - c) Hippocrates
 - d) Alexander Fleming
 - e) Dioscoride.
- B) a) Give the chemical test for mucilage. 2
- b) State the difference between organized and unorganized drugs with examples. 2
- c) Define stomatal number and stomatal index. 2
2. A) Give various methods of cultivations. Explain factors affecting cultivation. 7
- B) What is drug adulteration ? Describe the methods of adulteration with examples. 8
3. A) What are stomata ? Describe various types of stomata along with examples. How they help in identification of crude drug ? 8
- B) Write a note on ash value and its significance. 7
4. Write short note on (any three) : 15
- a) Ergastic cell contents
 - b) Anatomy of leaves.
 - c) Collection of crude drug
 - d) Underground modification of stem.

P.T.O.



[3756] – 22

Second Year B.Pharmacy Examination, 2010
2.2 : PHARMACEUTICAL MICROBIOLOGY (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. Answer the following : **10**
- a) State the reason for staining bacteria.
- b) Define : i) Resolving Power ii) Aberrations.
- c) Differentiate between gram positive and gram negative cell wall.
- d) Enlist the media used in MLT for detection of specific microorganisms.
- e) Give the importance of Actinomycetes.
2. a) Describe the method of identification of a bacteria with example. **7**
- b) Describe the growth curve when an *E.coli* is inoculated in Nutrient broth. **8**
3. Answer the following : **15**
- a) State the methods of isolation of bacteria and describe any one method.
- b) Describe the procedure of preservative efficacy testing.
- c) Describe the lytic cycle of a virulent phage.
4. Write short notes on (**any three**) : **15**
- a) Rickettsia.
- b) Whittaker's five kingdom concept.
- c) Spoilage of pharmaceutical products by microorganisms.
- d) Viable counting of bacteria.

P.T.O.



SECTION – II

5. Answer the following : **10**
- a) Define antigen and heterophile antigen.
 - b) What are adjuvants ? Give their significance.
 - c) How will you sterilize : i) Surgical dressings ii) Serum ?
 - d) What is the action of bacterial endotoxin ?
 - e) Write action of ultra violet light on bacteria and their use in sterilization.
6. a) Describe Type I and Type II hypersensitivity reaction. **8**
- b) State the factors affecting the action of disinfectant. **7**
7. a) Describe four chain model of antibody and different classes of antibodies. **8**
- b) Describe in brief designing of aseptic area. **7**
8. Write short notes on (**any 3**) : **15**
- a) Gaseous sterilization.
 - b) Penicillin assay.
 - c) Phagocytosis.
 - d) Rideal – Walker test.



[3756] – 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** books.
- 3) **Neat** diagram must be drawn **wherever** necessary.
- 4) **Black** figures to the **right** indicate **full** marks.

SECTION – I

1. A) Explain the following terms : 4
- 1) Chromophore 2) Auxochrome
- 3) Bathochromic shift 4) Wavelength.
- B) State Beer-Lambert's law and derive an equation for it. 6
2. A) State the principle of Polargraphy techniques in details, and explain its instrumentation. 8
- B) What are the factors which affect diffusion current in polarography ? 4
- C) Explain half wave potential and its significance. 3
3. A) Explain the electrodes used in potentiometry with examples. What are the methods for end point determination ? 8
- B) Draw conductometric titration curve for the following : 3
- 1) HCL with NaOH
- 2) CH₃COOH with NaOH
- 3) CH₃COOH with NH₄OH.
- C) What is cell constant ? Give its significance. 4

P.T.O.



4. Write a note on **any three** : 15
- a) Optimum conditions for spectrophotometric techniques.
 - b) Biamperometric titrations.
 - c) TGA.
 - d) Optional rotatory dispersion and circular dichroism.

SECTION – II

5. A) Explain the terms involved in Van Deemters equation and discuss its importance in setting column conditions. 6
- B) What are the different chromatographic techniques ? Classify them based on nature of stationary phase. 4
6. A) Explain principle of measurement of fluorescence. Write in details about fluorometer. 8
- B) What are the factors which affect fluorescence ? 4
- C) What is singlet state and triplet state ? 3
7. A) Draw neat diagram of double beam UV spectrometer. Explain functioning of each part. 8
- B) Explain the various techniques for color comparison. 7
8. Write a note on **any three** : 15
- a) Development techniques in paper chromatography.
 - b) Merits and demerits of instrumental analysis.
 - c) Nephelometry.
 - d) Principle and applications of Radio immunoassay.



[3756] – 1

Fourth Year B.Pharmacy Examination, 2010
PHARMACEUTICS – III
(2001-02 Old Course)

Time: 3 Hours

Max. Marks: 70

- 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) Explain in brief laminar flow cabinet. | 4 |
| b) HVAC system. | 4 |
| c) Sources of pyrogen and removal of pyrogen. | 3 |
| 2. Discuss various methods for manufacture of water for injection. Give critical tests performed on water for injection. | 12 |
| 3. a) Write a note on ocular inserts. | 4 |
| b) Dop test for filters. | 4 |
| c) Autoclaving process for sterilization of injectibles. | 4 |
| 4. Write short notes on any three : | 12 |
| a) LAL test. | |
| b) Freeze drying of parenteral formulations. | |
| c) Use of additives in ophthalmic products. | |
| d) Polymers used in SR and CR preparations. | |

P.T.O.



SECTION – II

- 5. a) Use of propellants in aerosols. 4
- b) Various containers used for aerosols. 4
- c) Evaluation of aerosols. 3
- 6. a) Give advantages of sustained release dosage forms over conventional dosage forms. 6
- b) Discuss transdermal drug delivery system. 6
- 7. a) Give an account of mechanisms of drug instability. 6
- b) Compatibility testing of drug to be administered as tablet. 6
- 8. Write short notes on **any three** : 12
 - a) Design of tablet department
 - b) Inventory control
 - c) Schedule M
 - d) Scale up of tablet manufacturing.

First Year B.Pharmacy Examination, 2010
COMPUTER APPLICATIONS AND BIO-STATISTICS
(2008 Course)

Time : 3 Hours

Max. Marks : 80

SECTION – I

1. Answer the following (**any 1**) : **(1×10=10)**
- a) Explain different data representation techniques with examples.
 - b) Write a note on generations of computers.
2. Answer the following (**any 5**) : **(5×3=15)**
- a) What are the characteristics of computer ?
 - b) Explain primary memory of computer.
 - c) Write difference between ink jet and laser jet printer.
 - d) What are features of MS-Office ?
 - e) Write any three mathematical functions used in MS-Excel with example.
 - f) Explain FIND and REPLACE commands used in MS-Office.
 - g) What is difference between system software and application software ?
3. Answer the following (**any 3**) : **(3×5=15)**
- a) Write a note on Impact printer.
 - b) Write a note on HDD.
 - c) Write a note on MICR.
 - d) Write a note on GUI in windows.
 - e) Convert the following no. to binary no.
 $(128)_{10} = (?)_2$

P.T.O.



SECTION – II

1. Attempt **any one** :

10

- i) In order to determine whether or not a production of bronze casting is in control, 20 sub-groups of size 6 are taken. The quality characteristic of interest is the weight of the castings and it is found that,

$$\bar{X} = 3.126 \text{ gm and } \bar{R} = 0.009 \text{ gm}$$

- a) Estimate the standard deviation of the weight of castings.
b) Assuming that the process is in control, find upper and lower control limits for the sub-groups means.

- ii) Find Regression equation of Y on X by using least square method.

2. Attempt **any five** :

(3 Marks for each)

- i) Define measures of central tendency.
ii) Write down properties of normal distribution.
iii) Give procedure of sign test.
iv) In a moderately skewed distribution, the arithmetic mean is 10 units and the mode is 7 units, find the median.
v) The fixed assets of Oswal Fats and Oils Ltd. from 2000 – 01 to 2002 – 03 are given below :

Year	2000 – 01	2001 – 02	2002 – 03
Fixed Assets (Rs. lakhs)	415	481	607

Represent the above data by bar diagram.

- vi) Describe assumption of completely Randomised design.
vii) Write down probability mass function of Binomial distribution and also state mean and variance.

3. Attempt **any three** :

15

- i) Write short note on frequency polygon.
ii) State applications of experimental design.
iii) Distinguish between measures of central tendency and dispersion.
iv) Find mean of Piosson distribution.
v) Write short note on least square method.



[3756] – 12

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

Time: 3 Hours

Max. Marks: 70

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

SECTION – I

- I. Define incompatibility and explain in detail physical and chemical incompatibility with examples. **11**
- II. A) Write a note on types of suppository bases. **6**
B) Give an account of various types of instabilities in an emulsion. **6**
- III. A) Explain handling of prescription. **6**
B) Elaborate on the fundamental operations in compounding of medicines. **6**
- IV. Short notes (any **3**) : **12**
- 1) Tests for identifying type of emulsion.
 - 2) Dusting powders.
 - 3) Patient counseling.
 - 4) Therapeutic incompatibility.

SECTION – II

- V. Elaborate on organization and significance of Pharmacy and Therapeutics committee. **11**
- VI. A) Explain briefly organizational structure of hospital pharmacy. **6**
B) Describe the role of hospital pharmacist in hospital committees. **6**

P.T.O.



- VII. A) Discuss the history and development of hospital pharmacy in India. **6**
- B) What is sterilization ? How will you sterilize powders and rubber gloves ? **6**
- VIII. Short notes (any 3) : **12**
- 1) Computers in hospital pharmacy.
 - 2) Distribution of controlled drugs
 - 3) Inventory control in hospital pharmacy.
 - 4) Preparation of radiopharmaceuticals.



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

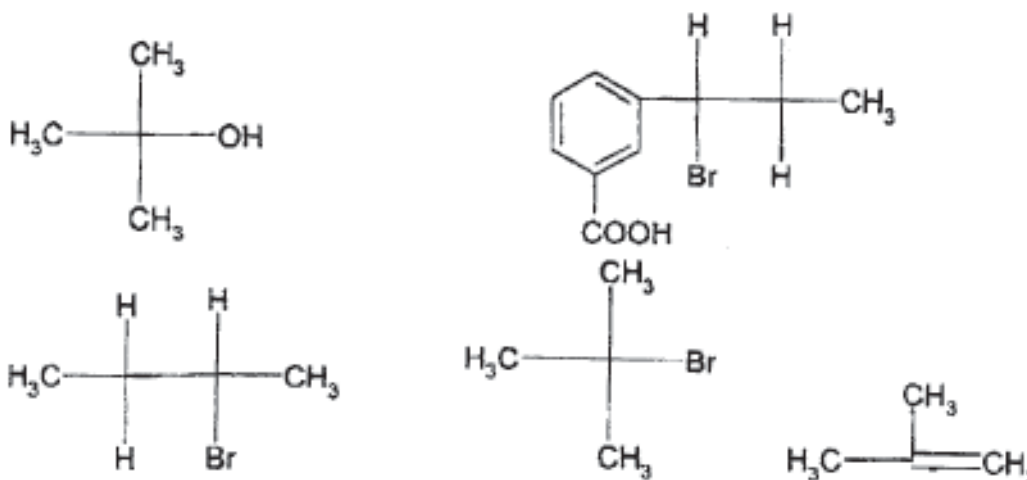
Time : 3 Hours

Max. Marks : 80

- Instructions:** 1) Question Nos. **one** and **five** are **compulsory**. Out of the remaining attempt **two** questions from Section – **I** and **two** questions from Section – **II**.
- 2) Answer to the **two** Section should be written in **separate** answer books.
- 3) Black figures to the **right** indicates **full** marks.

SECTION – I

1. A) Give IUPAC names of the following compounds. (**any three**) 3



- B) Draw structures corresponding to the following IUPAC names. (**any three**) 3
- 1 – Bromo – 2 – methyl propane 1, 2 – Ethane diol.
2 – Methyl – 2 – butane. 2 – methyl propanoic acid.
1, 3, 5 – Tribromobenzene.
- C) What is Inductive effect ? Discuss its applications. 4
2. A) Explain effect of structure on SN_1 and SN_2 reactions. 4
- B) Explain stereochemistry of SN_1 reaction and add a note on factors affecting the rate of aromatic SN reaction. 5
- C) Discuss reaction mechanism of SN_1 and SN_2 reactions. 6

P.T.O.



3. A) Explain the terms – Diastereomers, Enantiomers, Racemic mixture, Asymmetric carbon. **4**
- B) What is Resonance ? State the conditions necessary for resonance and discuss its applications. **6**
- C) Give methods of preparation and reactions of alcohol ? **5**
4. Write short notes on **any three** : **15**
- 1) Benzene and aromaticity.
 - 2) Friedel Craft alkylation and acylation.
 - 3) Claisen Ester condensation.
 - 4) Geometrical isomerism.

SECTION – II

5. A) Explain the terms 1°, 2° and 3° amines with suitable example and how will you distinguish between them. **6**
- B) Predict the products, **4**
- 1) Aniline + Conc. HNO₃ + Conc. H₂SO₄ \longrightarrow ?
 - 2) Acetanilide + Br₂ water \longrightarrow ?
 - 3) Phenol + 3 conc. HNO₃ \longrightarrow ?
 - 4) Ethyl alcohol + Acetic acid + H₂SO₄ \longrightarrow ?
6. A) Give any three methods of preparations of aldehydes and ketones with suitable examples. **5**
- B) Explain the mechanism of nucleophilic addition to carbonyl compounds and write some important reactions given by aldehydes and ketones. **6**
- C) Explain Haloform reaction. **4**
7. Explain orientation, reaction mechanism and stereochemistry of E₁ and E₂ reactions, add a note on factors affecting elimination reaction. **15**
8. Write short notes on **any three** : **15**
- 1) Ozonolysis.
 - 2) Preparation of amines.
 - 3) Cannizaro reaction.
 - 4) Reactions of carboxylic acid derivatives.



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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 the **remaining** attempt 2 questions from Section – I and 2 questions from Section – II.
- 2) Answers to the **two** Sections should be written in **separate** books.
- 3) **Neat** diagrams must be drawn **wherever** necessary.
- 4) **Black** figures to the **right** indicate **full** marks.

SECTION – I

1. What are plant growth regulators ? What is the significance of Gibberellins as growth regulator ? **10**
2. A) What is a adulteration ? Give the methods of adulteration. **8**
B) Difference between Asava and Arishta. **7**
3. A) What are carbohydrates ? How are they classified ? Give the importance of Agar. **8**
B) Define fruit. Classify fruits. Write in detail about indehiscent fruits. **7**
4. Write short note on (**any three**) : **15**
- a) Stomatal index.
- b) Galen and his contribution.
- c) Vegetative propagation.
- d) Similar similibus caventur.

P.T.O.



SECTION – II

5. What are cellulose ? Give the characteristics and uses of cellulose derivatives. **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. Write short note on (**any three**) : **15**
- a) Palisade Ratio.
 - b) Japanese Isinglass.
 - c) Subterranean Organs.
 - d) Substitution.



[3756] – 201

Second Year B.Pharmacy Examination, 2010
PHYSICAL PHARMACY
(2008 Revised 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 X-ray crystallography with Bragg's method of crystal analysis.

OR

Electrical properties of colloids.

2. Attempt **any five** (3 marks each) : **15**
- i) Linde's method of liquefaction of gas.
 - ii) What is polymorphism ?
 - iii) Enlist applications of partition coefficient.
 - iv) BCS classification.
 - v) Distinguish between lyophilic and lyophobic colloids.
 - vi) Give distribution of substances undergoing ionic dissociation and ionic association.
 - vii) Explain 3 component system.

3. Write short notes on **any three** (5 marks each) : **15**
- i) Freezing point depression
 - ii) Solute solvent interaction
 - iii) Solubility of solids in liquids
 - iv) Kinetic properties of colloids
 - v) Conductometric titrations.

P.T.O.



SECTION – II

5. Attempt **any one**: **10**

Classify rheological systems with examples. Explain thixotropy in detail.

OR

Explain the formation of electrical double layer with a neat and labelled diagram.

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

- i) What is Coulter counter used for ? Explain.
- ii) Enlist decomposition pathways of medicinal agents.
- iii) Explain Viscoelasticity.
- iv) What is energy of activation ?
- v) Discuss various types of densities.
- vi) Define and differentiate between surface tension and interfacial tension.
- vii) Discuss pseudo first order reaction.

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

- i) Derived properties of powders.
 - ii) Concept and importance of dissolution.
 - iii) Insoluble monolayer and film balance.
 - iv) Ficks law of diffusion.
 - v) Accelerated stability studies.
-



[3756] – 203

Second Year B.Pharmacy Examination, 2010
PHARMACEUTICAL BIOCHEMISTRY
(2008 Pattern)

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. Define and classify lipids with suitable examples. Give their functions in detail. **10**
- II. a) Describe Liver function test in detail. **8**
b) Explain structures of protein. **7**
- III. a) Explain the process of Gluconeogenesis and special pathways involved in it. **8**
b) Write about glycogen storage diseases. **7**
- IV. Write short notes on (**any three**) : **15**
- a) Genetic disorders of protein metabolism.
b) Radio immuno assay.
c) Na/K ATPase.
d) Difference between Prokaryotic and Eukaryotic cell.

SECTION – II

- V. Classify enzymes and explain factors affecting enzyme action in detail. **10**
- VI. a) Give biochemical functions of water soluble vitamins. **8**
b) Write in detail about pyrimidine metabolism. **7**

P.T.O.



- VII. a) Explain DNA recombination technique with its application. **8**
- b) Describe biosynthesis of fatty acids. **7**
- VIII. Write short notes on (**any three**) : **15**
- a) Genetic code and its characteristics
 - b) Concept of balanced diet
 - c) Deamination and Transamination
 - d) Energetics of Glucose metabolism.



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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) *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 crystallization by adiabatic evaporation, also explain the factors responsible for caking of Crystals. 10
2. a) Explain the single and double pass heat exchanger. 5
b) Explain the heat and material balance for single effect evaporator. 5
c) Explain the Fourier's law of heat transfer. 5
3. a) Give the classification of boilers; explain any one type of boiler with accessories and mountings. 10
b) Give the construction and working of Horizontal evaporator. 5
4. Write short notes on (**any three**) : 15
 - a) Thermostatic steam trap
 - b) Water purification by Reverse osmosis
 - c) Swenson-walker crystallizer
 - d) Central air conditioning.

P.T.O.



SECTION – II

5. Explain the principle of fractionation; how plate efficiency is calculated ? **10**
6. a) Explain the principle and working of freeze dryer. **5**
b) Explain the Reynolds experiment, also write the significance of Reynolds number. **5**
c) Explain the different factors affecting drying of solids. **5**
7. a) Explain the different types of corrosion and methods of combating corrosion. **5**
b) Explain the theory of liquid - liquid extraction. **5**
c) Explain the different Variable area flow meters. **5**
8. Write short notes on (**any three**) : **15**
a) Mass transfer in laminar flow.
b) Construction and working of spray dryer.
c) Rotocel extractor.
d) Non-metals as pharmaceutical material.



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

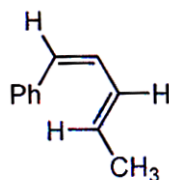
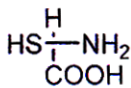
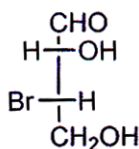
Time : 3 Hours

Max. Marks : 80

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

SECTION – I

1. a) Assign IUPAC name and configuration for the following : 3



- b) Draw and specify as R or S the enantiomers (if any) of : 3
3-chloro-2, 2, 5-trimethylhexane; 3-bromohexane; 1, 3-dichloropentane.
- c) Define the term 'conformation'. Discuss the various conformations of cyclohexane. 4
2. a) Explain the possible conformations of cyclobutane with help of figures. 5
b) Define the terms giving suitable examples:
Mutarotation; Racemic modification; Diastereomers; Specific rotation; Atropisomers. 10
3. a) What are amino acids ? Discuss Strecker, Koop and Gabriel Phthalimide synthesis of Amino acids. 10
b) Comment on the secondary structure of proteins. 5

P.T.O.



4. Write short notes on (**any three**) : 15
- Hofmann degradation of amide;
Wolf rearrangement;
Willgerodt rearrangement;
Lossen rearrangement;
Pinacol-Pinacolone rearrangement.

SECTION – II

5. Discuss why. 10
- a) Thiophene is more stable and more aromatic than pyrrole and furan.
b) Imidazole is more acidic than pyrrole.
c) Claisen rearrangement is intramolecular.
d) Nucleophilic substitution in pyridine takes place at β position.
e) Furan reacts violently with strong mineral acids.
6. a) Discuss Fischer indole synthesis in details. 5
b) Give any two methods of synthesis, two chemical reactions and two medicinal uses of (**any two**)
Pyridine; Imidazole; Quinoline. 10
7. a) Predict the product writing the complete reaction if : 10
- i) Benzamide is reacted with bromine in presence of NaOH.
ii) Cyclohexanone is treated with trifluoroacetic acid.
iii) Glucose is reacted with bromine water.
iv) Two moles of acetaldehyde are reacted in presence of NaOH.
- b) Write a note on combinatorial chemistry. 5
8. Write notes on (**any three**) : 15
- a) Terminal residue analysis of proteins
b) Reactions of glucose
c) Hinsberg thiophene synthesis
d) Wagner Meerwein rearrangement
e) Fiest-Benary synthesis of Furan.



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**Second Year B.Pharm. Examination, 2010
(2004 – Old 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) Answer to the **2** Sections should be written in **separate** answer books.
- 3) **Black** figures to the **right** indicate **full** marks.

SECTION – I

1. a) What is differentiating solvent ? What are the solvents used in nonaqueous titration ? **6**
- b) Explain the preparation and standardization 0.1 M perchloric acid solution. **6**
2. a) Explain the principle in standardization and method of preparation of 0.02 M KMnO_4 solution. **8**
- b) Explain with example why back-titration with blank determinations are performed. **6**
3. What is the difference between Iodometry and Iodimetry ? Explain the preparation and standardization of 0.05 M iodine solution. **14**
4. Write a short note on (**any two**) : **14**
- a) Sampling techniques.
- b) Primary standards.
- c) Redox indicators.

P.T.O.



SECTION – II

5. List unit operations in gravimetry. Explain any one pharmacopoeial application of Gravimetry. **12**
6. a) Write a note on Good Laboratory Practices. **8**
b) Explain the terms mean, mode, median and standard deviation. **6**
7. a) Explain the theory of “Oxygen Flask Combustion Technique”. **8**
b) Compare Mohr’s method and Volhard’s method. **6**
8. Write notes on (**any two**) : **14**
- a) Masking Demasking.
- b) K. Fajan’s indicators.
- c) Organic precipitants.



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Second Year B.Pharmacy Examination, 2010
2.7 : PHARMACOLOGY – I (Including Pathophysiology)
(2004-05 Old Course)
(2004 Course)

Time: 3 Hours

Max. Marks: 80

*Instructions :1) Question Nos. 1 and 5 are **compulsory**. Solve **any two** questions 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. Discuss drug treatment in pediatrics with suitable examples. **10**
2. a) Define biotransformation, classify it and discuss various reactions with suitable examples. **8**
b) Explain factors modifying drug effects with suitable examples. **7**
3. a) Define pregnancy. Justify various precautions to be taken for drug treatment with examples. **8**
b) Discuss pharmacology of thrombolytics. **7**
4. Write a note on (**any three**) : **15**
 - a) Active ingredients of drug
 - b) Drug-receptor interaction
 - c) Haemopoietics
 - d) Excretion of drugs.

P.T.O.



SECTION – B

5. Define Asthama. Discuss pathophysiology of bronchial asthama. **10**
6. a) Enlist clinical features and management options for typhoid fever. **8**
b) Define schizophrenia, enlist it's clinical manifestations and write a note on management. **7**
7. a) Define diabetes mellitus, classify it and explain it's complications. **8**
b) Describe pathophysiology of inflammation. **7**
8. a) Explain causes, clinical features of AIDS. Add a note on HAART therapy. **8**
b) Discuss pathophysiology of cardiac arrhythmias. **7**
-



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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) 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) Melphalan.
 - 2) Tolbutamide.
 - 3) Metronidazole.
 - 4) Busulphan.
2. A) What are antibiotics ? Explain with examples the development of acid and enzyme resistant penicillines. **7**
- B) Classify oral hypoglycemic agents and add a note on sulphonyl ureas. **7**
3. A) What is tuberculosis ? Give the chemical classification of antitubercular drugs with examples. **7**
- B) Define prodrug. Explain types of prodrugs with examples. **7**
4. A) What is cancer ? Classify anticancer drugs with examples. **7**
- B) Discuss the development of antimetabolites as anticancer agents. **7**

P.T.O.



SECTION – II

5. A) Discuss the development and SAR for quinolone antibacterial. **6**
B) Write the mechanism of action and synthesis of Ciprofloxacin. **6**
6. A) What are antimetabolites ? Classify the chemotherapeutic agents acting as antimetabolites with examples. **7**
B) Write the synthesis and mechanism of action for Pyrimethamine. **7**
7. A) Explain life cycle of malarial parasite. Give the classification of antimalarials with examples. **7**
B) Discuss the development of antimalarials from quinine a cinchonna alkaloid. **7**
8. Write note on **any two** : **14**
- 1) Recent development in antiviral chemotherapy.
 - 2) Amebiasis and its treatment.
 - 3) Development of tetramisol as anthelmintic drug.

Third Year B.Pharmacy Examination, 2010
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 physiological and pharmacological actions of glucocorticoids. **10**
2. Write the pharmacological account on parasympatholytic agents. **15**
3. Classify antitussive agents with examples. Discuss the pharmacotherapy of cough. **15**
4. Write a note on **any three** : **15**
 - A) Oral contraceptives
 - B) Neuromuscular blocking agents
 - C) Organophosphorus poisoning
 - D) Insulin preparations.

SECTION – II

5. Discuss the pharmacotherapy of Alzheimer's disease. **10**
6. Explain the physiology of sleep. Write a note on pharmacology of benzodiazepines. **15**

P.T.O.



7. Discuss the mechanism of action and adverse reactions of the following drugs, **15**
- a) Thiopental
 - b) Aspirin
 - c) Amphetamine
8. Write a note on **any three** : **15**
- A) Osteoarthritis
 - B) COX-2 inhibitors
 - C) Pharmacotherapy of alcoholism
 - D) Role of neurotransmitters in CNS.
-



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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. (4)
- 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 of a drug used as a dental analgesic. (7)
3. A) Give the methods of preparation of the following : (9)
- i) Black Catechu
- ii) Cotton
- iii) Shark liver oil.
- B) Define and classify Tannins. Give their chemical tests and explain its importance. (6)

P.T.O.



4. Write short notes on (**any three**) : (15)
- i) Shikimic acid pathway
 - ii) Bentonite
 - iii) Bromelin
 - iv) T.S. of Liquorice.

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 Senna. (9)
7. A) Define and classify Lipids. Give the methods of extraction of Lipids and their uses. (6)
- B) Explain the evaluation parameters of Lipids.
8. Write short notes on (**any three**) : (15)
- i) Natural Pesticides
 - ii) Tracer techniques and their applications
 - iii) Rhubarb
 - iv) T.S. of Shatavari.



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

Time: 3 Hours

Max. Marks: 80

- Instructions :* 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. 2.00, variable cost is Rs. 1.00 and fixed cost is Rs. 2,00,000. Calculate : P/V ratio, BES, Sales to earn profit of Rs. 5,00,000, Profit at sales Rs. 10,00,000 and MOS.
- B) Give the detail account on CPM and PERT. 5
2. A) What is patent ? Focus on TRIPS. 8
- B) Give the causes of industrial disputes ? Focus on collective bargaining. 7
3. A) Define Planning. Give the process and importance of planning. 8
- B) Give different roles of managers. 4
- C) Master budget. 3
4. Write short note on (**any three**) : 15
- A) Goals management.
- B) Fundamental principles of organizing.
- C) Fayol's principles of management.
- D) Factories Act.

P.T.O.



SECTION – II

5. From the following particulars prepare Trading and Profit Loss Account as on 31.12.2009 of AAD Pharmaceuticals. 10

Particulars	Amount (Rs.)
Opening stock	2,000
Wages	2,000
Salaries	2,500
Carriage inward	300
Carriage outward	400
Purchases	6,000
Purchase return	300
Sales	12,000
Sales return	6,000
Interest paid	200
Rent paid	100
Discount received	250
Printing and stationery	700
Travelling expenses	100
Closing stock	5,000

6. A) P = Rs. 625, Consumption per day = 10 units, Carrying cost 20% of unit price, Unit price Rs. 10, No. of days in a year = 360; Calculate EOQ and No. of orders per year. 4
- B) Explain ABC and VED analysis. 4
- C) What are different styles of Leadership ? Discuss about management 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) Channels of distribution.
- B) Sales promotion.
- C) Marketing research.
- D) Performance appraisal.

Fourth Year B.Pharm. Examination, 2010
PHARMACOLOGY – III (Including Clinical)
(2004-Old 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. Explain in detail classification of antibiotics based on their mechanism of actions. Write in detail pharmacology of prototype macrolide antibiotic. **12**
2. Classify diuretics. Explain in detail pharmacotherapy of congestive heart failure. **14**
3. Discuss in detail pharmacotherapy of AIDS and its complications. **14**
4. Write a note on **any two** : **14**
 - A) Rational approaches in the treatment of cancer.
 - B) Pharmacotherapy of Tuberculosis.
 - C) Antiulcer agents.

SECTION – II

5. Explain in detail general principles and design of clinical trials. Discuss in detail Phase-III clinical studies. **12**
6. Write in detail factors influencing toxicity. Explain in detail subacute and chronic toxicity. **14**
7. Write in detail principles of bioassay. Discuss the principle, procedure and legal aspects of bioassay of Adrenaline. **14**
8. Write a note on **any two** : **14**
 - A) Pharmacovigilence
 - B) General Treatment of Poisoning.
 - C) Carcinogenicity.



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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 1 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 D.T.A.B., CDL and DCC under D&C Act 1940. 10
2. A) Discuss in detail constitution and function of PCI. 9
B) Define ceiling price. Explain formula for calculation of retail price of formulations. 6
3. A) Discuss the objectives and salient features of prevention of Food Adulteration Act 1954. 7
B) Discuss the requirements of Bonded Laboratory. Discuss the steps adopted for manufactures in bond. 8
4. Write short notes on (**any three**) : 15
 - 1) Industrial Development and Regulation Act 1954.
 - 2) Government Analyst.
 - 3) Cyber law.
 - 4) Consumer Protection Act.

P.T.O.



SECTION – II

5. Differentiate between NDA and ANDA. Write a note on ‘The Orange book’. **10**
6. A) Discuss ‘Japan-Ministry of Health and Welfare’. **5**
B) Discuss in brief about criteria for obtaining patent. **5**
C) Discuss biologics and licensing application. **5**
7. A) Discuss in brief ‘WHO Guidelines’. **9**
B) Discuss in brief FDA. **6**
8. Write short note on (**any three**) : **15**
- 1) MHRA.
 - 2) IND.
 - 3) TGA.
 - 4) Drug Master file.
-



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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) *Answers 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 phenothiazines. **12**
2. a) What are major pathways of metabolism ? Explain phase I reactions in detail. **6**
b) Classify sympathomimetic agents and add a note on imidazolin derivatives. **6**
c) Draw synthesis of diazepam. **2**
3. a) Classify general anesthetics and add a note on barbiturates. **6**
b) Write SAR, MOA and uses of tricyclic antidepressants. **6**
c) Draw synthesis of propranolol. **2**
4. a) Write notes on (**any three**) : **12**
 - 1) Drug receptor interactions
 - 2) Succinimides as anticonvulsants
 - 3) Drugs used in Parkinsonism
 - 4) Free Wilson analysis.
b) Draw synthesis of thiopental sodium. **2**

2
P.T.O.



SECTION – II

5. Classify analgesics in detail and write SAR, MOA and uses of Morphine. **12**
6. a) Classify antianginal agents and add a note on calcium channel blockers. **6**
b) Classify diuretics. Write in detail about loop diuretics. **6**
c) Draw synthesis of Ibuprofen. **2**
7. a) Classify NSAIDs and write mechanism of action, SAR of salicylates. **6**
b) What are estrogenic agents ? Explain non-steroidal estrogenic agents in detail. **6**
c) Draw synthesis of benzocaine. **2**
8. a) Write notes on (**any three**) : **12**
1) ACE inhibitor prodrugs
2) Ester based local anesthetics
3) Proton pump inhibitors
4) Cardiotonic agents
- b) Draw synthesis of Phenytoin. **2**
-



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Fourth Year B.Pharmacy Examination, 2010
PRACTICE OF PHARMACY/PHARMACEUTICAL MARKETING AND
JURISPRUDENCE
(Old) (2001-02 Course)

Time : 3 Hours

Max. Marks : 70

Instructions : 1) Question No. 1 and 5 are compulsory. Out of the remaining questions attempt any two questions from Section – I and any two questions from Section – II.
2) Answers to the two Sections should be written in separate answer sheets.

SECTION – I

- | | |
|---|-----------|
| 1. What is effective leadership ? Explain different styles of leadership. | 11 |
| 2. A) How the performance of pharmaceutical industry can be evaluated ? | 6 |
| B) Explain different theories of motivation. | 6 |
| 3. A) Discuss importance, limitations and steps involved in Planning. | 8 |
| B) Explain the importance of CPM and PERT. | 4 |
| 4. Write notes on (any 3) : | 12 |
| 1) M.B.O. process. | |
| 2) Trade unions. | |
| 3) Sales promotion and advertisements. | |
| 4) Management Information System. | |

P.T.O.



SECTION – II

5. Explain the following with respect to Pharmacy Act, 1948 : **11**
- 1) State Pharmacy Council.
 - 2) Registration of Pharmacist.
6. A) Explain the administrative bodies established for efficient running of Drug and Cosmetics Act, 1940. **6**
- B) Give the constitution of Pharmacy Council of India. **6**
7. A) Describe various conditions for grant of patent according to Patent Act. **6**
- B) State various offences and penalties under Drugs and Magic Remedies Act, 1940. **6**
8. Write notes on (**any 3**) : **12**
- 1) Industrial Development and Regulation Act, 1951.
 - 2) Class of prohibited advertisements.
 - 3) W.H.O.
 - 4) D.P.C.O.