

August-2007

[KR 746]

Sub. Code : 4237

THIRD B.Pharm DEGREE EXAMINATION.

Paper II — MEDICINAL CHEMISTRY — I

(Regulation 2004)

Time : Three hours

Maximum : 90 marks

Theory : Two hours and  
forty minutes

Theory : 70 marks

M.C.Q. : Twenty minutes

M.C.Q. : 20 marks

I. Long Essay :

(2 × 15 = 30)

Answer any TWO questions.

1. What is prodrug? Explain the various applications of prodrug design with suitable examples.

2. How are the following physico chemical properties influence the biological actions of drugs? Explain with examples.

- (a) Chelation
- (b) Surface activity
- (c) Hydrogen bonding
- (d) Protein binding.

3. Write a short notes on:
- Antitussive compounds
  - Adrenergic receptors.
  - Neurotransmitters
  - SAR of Phenothiazine compounds.
4. (a) What are antihistamines? What do you understand by H<sub>1</sub> & H<sub>2</sub> receptor antagonists? Discuss them with examples.
- (b) Write the general structural formula of pyridine derivatives used as anti-histamines along with the structures of four drugs you have studied under this class.
- (c) Write a short note on second generation antihistamine compounds.
- (d) Give the structures and any one synthesis of
- Chlordiazepoxide
  - Nikethamide.
- II. Short notes : (8 × 5 = 40)
- Answer any EIGHT questions.
1. What is myasthenia gravis? Write the structures of drugs used in the treatment of myasthenia gravis.
2. Define the following with example to each one.
- Transquillizer
  - Sympathomimetic
  - Parasympathomimetic
  - Sympatholytic
  - Parasympatholytic.
3. Write a short note on Phase II reactions in metabolism of drugs.
4. Chiral Drugs Vs biological activity.
5. Write the synthesis of carbonic anhydrase inhibitor act as diuretic agent
6. Outline the synthetic steps involved in
- Lignocaine
  - Primidone.
7. Write a short note on salicylic acid derivatives used as analgesic and antipyretics.
8. Enumerate the biosynthesis of Eicosanoids compounds.
9. Write the synthetic route for any one of Narcotic analgesic compound.
10. Briefly explain the SAR of Barbiturates.

February-2008

**[KS 746]**

**Sub. Code : 4237**

**THIRD B. Pharm. DEGREE EXAMINATION.**

**Paper — II — MEDICINAL CHEMISTRY — I**

**(Regulation 2004)**

**Q.P. Code : 564237**

**Time : Three hours**

**Maximum : 90 marks**

**Theory : Two hours and  
forty minutes**

**Theory : 70 marks**

**M.C.Q : Twenty minutes**

**M.C.Q : 20 marks**

**I. Long Essay :**

**Answer any TWO questions.**

**(2 × 15 = 30)**

**1. Explain the various types of Phase - I Bio transformation Pathways.**

**2. Explain the following physicochemical properties relation to biological action.**

**(a) Chelation.**

**(b) Redox potential**

**(c) Hydrogen bonding.**

**(5 + 5 + 5)**

3. (a) Classify local anaesthetic agents with isomers examples. (3)

(b) Give the synthesis for the following drugs. (4 × 3 = 12)

- (i) Procaine.
- (ii) Lignocaine.
- (iii) Dibucaine
- (iv) Benzocaine.

4. (a) Define and classify anticonvulsants with suitable examples. (5)

(b) Explain the synthesis and use of

- (i) Phenytoin
- (ii) Diazepam.
- (iii) Chlorpromazine hydrochloride. (3 + 4 + 3)

II. Short notes :

Answer any EIGHT questions.

(8 × 5 = 40)

1. Explain the chemistry and biological significance of prostaglandins.

2. What are the different factors that affect the drug metabolism? Explain with few examples.

3. Write a note on the drugs used as sympathomimetic agents.

4. Enumerate important Anti inflammatory agents and write the synthesis of Ibuprofen and phenyl butazone. (1 + 2 + 2)

5. Classify Diuretics with suitable examples. Outline the synthesis of Acetazolamide. (2 + 3)

6. Write the structure and clinical uses of

- (a) Indomethacin
- (b) Meperidine Hcl.
- (c) Imipramine.
- (d) Haloperidol.
- (e) Chlorthiazide.

7. Briefly discuss important general anaesthetics.

8. Describe the synthesis and clinical use of the following : (2  $\frac{1}{2}$  + 2  $\frac{1}{2}$ )

- (a) Dextro amphetamine.
- (b) Nikethamide.

9. Give an account on H<sub>2</sub> – receptor antagonists.

10. Name the cholinergic blocking agents and explain the synthesis of any one of them.

**August 2008**

**[KT 746]**

**Sub. Code : 4237**

THIRD B.Pharm. DEGREE EXAMINATION.

Paper II — MEDICINAL CHEMISTRY — I

(Regulation 2004)

Q. P. Code : 564237

Time : Three hours

Maximum : 90 marks

I. Essays : (2 × 20 = 40)

Answer any TWO questions.

(1) (a) Define metabolism and classify. What is phase II reaction? Explain with suitable examples of conjugation reactions. (2 + 2 + 2 + 8)

(b) Discuss factors affecting metabolism. (6)

(2) (a) What are adrenergic neurotransmitters? and explain their functions. (10)

(b) Give in details about biosynthesis and metabolism of catecholamines. (10)

(3) (a) Outline biosynthesis, metabolism and chemistry of histamine. (7)

(b) What are antihistaminic agents? Classify chemically with examples giving atleast one structure to each class of H<sub>1</sub> receptor antagonist. (5)

## August 2008

(c) Write synthesis of the following : (8)

(i) Triprolidine

(ii) Diphenhydramine hydrochloride.

II. Short notes : (8 × 5 = 40)

Answer any EIGHT questions

(1) What are potassium sparing diuretics? Give synthesis of triamterene.

(2) What are non steroidal anti-inflammatory drugs classify them and give synthesis of ibuprofen?

(3) Outline the synthesis and metabolism of clonazepam.

(4) Discuss about structure activity relationship of benzodiazepines.

(5) Proton pump inhibitors.

(6) Write synthesis and metabolic pathway of lignocaine.

(7) What are  $\beta$  blockers classify and give the structure of

(a) propranolol

(b) Atenolol.

(8) Opioid antagonist

(9) Outline general synthesis and structural activity relationship of phenothiazines.

(10) Write synthesis and IUPAC of thiamylal sodium.

III. Short answers : (5 × 2 = 10)

Answer any FIVE questions

(1) Isosterism

(2) Hydrogen bonding

(3) Why lidocaine is administered with adrenaline? – Explain.

(4) Why thiobarbiturates are metabolized in vivo faster than phenobarbitone? Explain.

(5) Define the terms hypnotics and sedative.

(6) Give general pharmacophore for  $H_1$  receptor antagonist.

(7) Define the terms antipyretic, analgesic and give mechanism of aspirin's antipyretic action.

February 2009

[KU 746]

Sub. Code: 4237

**THIRD B.PHARM. DEGREE EXAMINATION**

**(Regulation 2004)**

**Candidates Admitted from 2004-05**

**Paper II – MEDICINAL CHEMISTRY - I**

***Q.P. Code : 564237***

**Time : Three hours**

**Maximum : 90 marks**

**I. Essay Questions : Answer any TWO questions (2 x 20 = 40)**

1. a) What are drug-receptor interaction? Explain different types of binding forces exist in drug-receptor interaction with example. (10)  
b) Explain the basic concept of prodrug with example. Give it application (10)
2. a) Define the terms sedative and hypnotic. Classify them with each one example with chemical structure for each class. (7)  
b) Brief the SAR of barbiturates. (6)  
c) Give the synthesis and use of diazepam and barbital. (4+3=7)
3. a) Classify diuretics on the basis of site of action with one example. (5)  
b) What are loop diuretics? Explain its mode of action. (5)  
c) Brief the SAR of thiazide diuretics. (5)  
d) Outline the synthesis of Acetazolamide and furosemide. (5)

**II. Write Short Notes : Answer any EIGHT questions (8 x 5 = 40)**

1. How does hydrogen bonding affect biological activity? Explain with example.
2. Write a brief note on phase –II biotransformation pathway.
3. Classify general anaesthetics with example, outline the synthesis of ketamine.
4. Describe the synthesis and clinical use of
  - i) Amitriptylene.
  - ii) Imipramine.
5. Discuss in detail the adrenergic blocking agents. Outline the synthesis of metoprolol.
6. Write the chemical classification of local anaesthetics giving example. Describe their mode of action.
7. Brief the SAR of H<sub>1</sub> – receptor antagonist. Give the synthesis of any one drug.
8. Classify non-steroidal anti-inflammatory agents on the basis of chemistry with one each example. Explain its mode of action.
9. Write the structure and clinical use of
  - i) Morphine, ii) Phenytoin, iii) aspirin, iv) phenobarbitone, v) Benzocaine
10. Explain what is ISO-sterism?

**III. Short Answers: Answer any FIVE questions (5 x 2 = 10)**

1. Enumerate the physiochemical properties in relation to biological action.
2. Define drug metabolism. Mention the types of biotransformation pathways.
3. What are Hydantoins? Write the chemistry of Hydantoins.
4. Enumerate the biosynthesis of noradrenaline.
5. Write the name and structure of H1 – receptor antagonist possessing pyridine and piperidine moieties.
6. What are anti-tussive agents? Give the structure and use of Benzotartate.
7. What are prostaglandins? Mention the biosynthetic pathways for eicosanoids.

\*\*\*\*\*



August 2009

[KV 746]

Sub. Code: 4237

**THIRD B.PHARM. DEGREE EXAMINATION**  
**(Regulation 2004)Candidates Admitted from 2004-05**  
**Paper II – MEDICINAL CHEMISTRY - I**  
**Q.P. Code : 564237**

**Time : Three hours**

**Maximum : 90 marks**

**I. Essay Questions : Answer any TWO questions (2 x 20 = 40)**

1. a) What is phase 1 reaction? Explain briefly with example. Quote with examples the factors affecting drug metabolism.  
b) Define Prodrug. Explain the methods of development of a prodrug.
2. a) Classify H<sub>1</sub>, H<sub>2</sub> receptor anti histaminics with examples. Write a suitable methods for the synthesis of any one compound for each classification.  
b) Explain the mechanism and structure activity relationship of the following drugs. i) Doxylamine succinate. ii) Cyproheptadine Hydrochloride.
3. a) Outline the biosynthetic pathway of Dopamine.  
b) What are Sympathomimetic agents? Classify the sympathomimetic drugs with examples.  
c) Give the synthesis and metabolism of the following drugs.  
i) Salbutamol ii) Phenylephrine.

**II. Write Short Notes : Answer any EIGHT questions (8 x 5 = 40)**

1. Outline the synthesis and metabolism of imipramine Hydrochloride.
2. What are the neuromuscular blockers? Write the synthesis of any one drug you have studied.
3. Classify Diuretics. Write the structure and mechanism of action of Frusemide.
4. What are Non steroidal anti inflammatory agents? Write the structure and the structural activity relationship of Methadone hydrochloride.
5. Write synthesis of the following: a) Ibuprofen. b) Piroxicam
6. Briefly explain the biosynthesis of Eiosanoids.
7. What are Hypnotics and Sedatives? Discuss the structure activity relationship of diazepam.
8. Classify Antipsychotic drugs with examples. Give the structure of prochlorperazine and Chlorpromazine hydrochloride.
9. Write the synthesis of Phenytoin.
10. Write a note on Cholinergic receptor.

**III. Short Answers: Answer any FIVE questions (5 x 2 = 10)**

1. Define steric effect.
2. Adrenergic antagonist.
3. Define antitussive and local anesthetics.
4. Give the mechanism of Banzocaine.
5. Neuro muscular blockers.
6. Prostaglandins.
7. Mechanism of action of Indomethacin.

\*\*\*\*\*

February 2010

[KW 746]

Sub. Code: 4237

**THIRD B.PHARM. DEGREE EXAMINATION**  
**(Regulation 2004) Candidates Admitted from 2004-05**  
**Paper II – MEDICINAL CHEMISTRY - I**  
**Q.P. Code : 564237**

**Time : Three hours**

**Maximum : 90 marks**

**I. Essay Questions :**

**(2 X 20 = 40)**

**Answer any TWO questions.**

1. Describe the physiochemical properties of a drug for its biological action with suitable examples.
2. a) What are the applications of pro drug in drug design? (6)  
b) Outline the biosynthetic pathway of acetyl choline. (8)  
c) Write the synthesis and metabolism of Dicyclomine HCL. (6)
3. a) What are Anxiolytics sedative and Hypnotics? Classify with examples. (5)  
b) Explain the mechanism of action, structure activity relationship and (15)  
synthetic method for the followings:  
i) Ketamin HCL. ii) Barbital iii) Diazepam.

**II. Write Short Notes : Answer any EIGHT questions.**

**(8X 5 = 40)**

1. Write the synthesis of Carbamazepine.
2. Proton pump inhibitors.
3. H<sub>2</sub> receptor antagonists.
4. Discuss the structure activity relationship of diphenhydramine.
5. What are ganglionic blocking agents? Give the structure of  
i) Mecamylamine HCL. ii) Galamine triethiodide.
6. Explain the structure activity relationship of morphine.
7. Define anti convulsants and anti inflammatory agents. Give the structure for each group.
8. Write the synthesis and metabolism of phenylon.
9. Adrenergic neurotransmitters.
10. Write the synthesis and mechanism of action of Acetazolamide.

**III. Short Answers: Answer any FIVE questions.**

**(5X2 = 10)**

1. PKa values.
2. Define the term protein binding with example.
3. General mechanism of local anaesthetic and general anaesthetics.
4. Adrenergic antagonist.
5. Sympathomimetic drugs.
6. Prostaglandin.
7. Redox potential.

\*\*\*\*\*

September 2010

[KX 746]

Sub. Code: 4237

**THIRD B.PHARM. DEGREE EXAMINATION**  
**(Regulation 2004) Candidates Admitted from 2004-05**  
**Paper II – MEDICINAL CHEMISTRY - I**  
**Q.P. Code : 564237**

**Time : Three hours**

**Maximum : 90 marks**

**I. Essay Questions : Answer any TWO questions. (2 X 20 = 40)**

1. a) Give the classification of Sedative – hypnotic drugs.  
b) Explain the synthesis of Diazepam and Barbitol.  
c) Discuss the basic concept and application of Prodrug design.
2. a) Illustrate Phase – I and Phase – II reactions of drug metabolism with suitable examples.  
b) Explain the synthesis and mechanism of any two anti-inflammatory drugs.
3. a) Write the structure, bio-synthesis & metabolism of adrenergic neurotransmitters.  
b) Outline the synthesis of Ephedrine, Tolazoline and Propranolol.

**II. Write Short Notes : Answer any EIGHT questions. (8X 5 = 40)**

1. Explain the effects of surface activity in biological action of drugs.
2. Discuss the mechanism of action of local anaesthetics.
3. Write the SAR of H1 Receptor antagonists.
4. Give the classification of anticonvulsants.
5. Write the structure and uses of any five medicinal compounds with Pyridine nucleus from different pharmacological class.
6. Write a note on cholinergic receptors and stereochemistry of cholinergics.
7. Outline the synthesis of Chlorthiazida and Furosemide.
8. Explain Isosteric concept in detail.
9. Give the classification, properties and mechanism of general anaesthetic.
10. Compare the structure and features of CNS stimulants.

**III. Short Answers: Answer any FIVE questions. (5X2 = 10)**

1. Chelation.
2. Prodrug.
3. Prostaglandins.
4. Structure, Chemical Name and uses of Omeprazole.
5. Mechanism of action of Acetazolamide.
6. Opioid antagonists.
7. Synthesis of acetylcholine.

\*\*\*\*\*