

August 2011

[KZ 4262]

Sub. Code : 4262

**THIRD B.PHARM. EXAMINATION**

**Paper II – MEDICINAL CHEMISTRY - I**

*Q.P. Code : 564262*

**Time : Three hours**

**Maximum: 100 Marks**

**Answer ALL questions.**

**I. LONG ESSAYS**

**(2 x 20 = 40)**

1. a) What are adrenergic neurotransmitters explain their function with example. (2+8)  
b) Derive the biosynthesis and metabolism of catecholamines. (5+5)
2. Explain the following physiochemical parameters related to biological activity with Example. (4 x 5 = 20)  
a) BioIsosterism   b) Hydrogen bonding   c) Geometrical Isomerism   d) Chelation.

**II. SHORT NOTES**

**(8 x 5 = 40)**

1. Application of Prodrug Design.
2. Classify General Anaesthetics with example. Give any one synthesis.
3. Give the Structural Activity Relationship of Thiazide Diuretics.
4. Add a note on COX-1 and COX-2 Inhibitors with mechanism.
5. Classify sedative and Hypnotics with example.
6. Define and classify Antitussive Agents with example.
7. Define Antipsychotics. Give the synthesis for chlorpromazine hydrochloride.
8. Give the synthesis for the following:   a) Chlorthiazide.   b) Terbutaline.

**III. SHORT ANSWERS**

**(10 x 2 = 20)**

**Give the Structure and Medicinal uses for the following:**

1. Halothane.
2. Diazepam.
3. Nikethamide.
4. Atenolol.
5. Benzocaine.

**Define the following Terms:**

6. Redox potential.
7. Xenobiotics.
8. MAO Inhibitors.
9. Tranquilliser.
10. Local Anaesthetics.

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February 2012

[LA 4262]

Sub. Code: 4262

**THIRD B.PHARM. EXAMINATION**  
**Paper II – MEDICINAL CHEMISTRY - I**

*Q.P. Code: 564262*

**Time : Three hours**

**Maximum: 100 Marks**

**Answer ALL questions.**

**I. Elaborate on: (2 x 20 = 40)**

1. (a) Define Diuretics? Classify with example.(2+6)  
(b) Give the Structural Activity Relationship for the mercurial diuretics.(7)  
(c) Derive the synthesis for (i) Acetazolamide (ii) Furosemide.(5)
2. (a). Define and Classify local anaesthetics with example. (2+3)  
(b). Synthesis the followings: (i) Procaine (ii) Lignocaine (iii) Benzocaine  
(iv) Dibucaine. (10)  
(c) Give the Structural Activity Relationship of local anaesthetics.(5)

**II. Write notes on:**

**(8 x 5 = 40)**

1. Write a note on BioIsosterism.
2. Add brief note on Phase II Bio transformation pathway.
3. Give the Synthesis for (a) Phentoin (b) Ibuprofen.
4. Write a note on cholinergic receptors.
5. Biosynthesis of Eicosanoids.
6. Define Sedative and hypnotics? Classify with example.
7. Add a note on Proton Pump Inhibitors.
8. Give the synthesis for the following: (i) Salbutamol (ii) Promethazine.

**III. Short Answers:**

**(10 x 2 = 20)**

**Give the Structure and Medicinal uses for the following**

1. Aspirin.
2. Indomethicin.
3. Chlorpromazine HCl.
4. Diazepam.
5. Impiramine. HCl.

**Define the following Terms**

6. Chelation.
7. Carbonic Anhydrase Inhibitors.
8. Prodrug.
9. Tranquilliser.
10. Antiepileptics.

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[LB 4262]

AUGUST 2012

Sub. Code: 4262

**THIRD YEAR B.PHARM. EXAM**  
**Paper II – MEDICINAL CHEMISTRY - I**

*Q.P. Code: 564262*

**Time : Three hours**

**Maximum: 100 Marks**

**(180 Min) Answer ALL questions in the same order.**

**I. Elaborate on:**

**Pages Time Marks**  
**(Max.)(Max.)(Max.)**

- |   |    |       |
|---|----|-------|
| 1. a) What are antihistamines? Classify them with examples. 19                  | 33 | 20    |
| Explain the structure activity relationship of antihistamines.                  |    |       |
| b) Write the synthetic pathway for i) Diphenhydramine HCl                       |    |       |
| ii) Tripelenamine HCl iii) Promethazine HCl.                                    |    |       |
| 2. Explain in detail about Phase-II metabolic reactions with suitable examples. | 19 | 33 20 |

**II. Write notes on:**

- |  |   |   |   |
|--|---|---|---|
| 1. Describe the Drug-Receptor Interactions.  | 3 | 8 | 5 |
| 2. Write the structure activity relationship of Benzodiazepine.                      | 3 | 8 | 5 |
| 3. Write the synthesis for a) Carbamazepine b) Valproic acid.                        | 3 | 8 | 5 |
| 4. Write a note on Cholinesterase Inhibitors.  | 3 | 8 | 5 |
| 5. What is the Mechanism of action of NSAIDs? Give the synthesis for any one NSAIDs. | 3 | 8 | 5 |
| 6. What are Diuretics? Classify them with examples.                                  | 3 | 8 | 5 |
| 7. Write a note on General Anaesthetics.   | 3 | 8 | 5 |
| 8. Elucidate the prostaglandin synthesis from Arachidonic acid.                      | 3 | 8 | 5 |

**III. Short Answers:**

- |   |   |   |   |
|---|---|---|---|
| 1. Structure and uses of Nikethamide.                         | 1 | 5 | 2 |
| 2. Synthesis of Atenolol.                                     | 1 | 5 | 2 |
| 3. Briefly on Opioid Antagonists.                             | 1 | 5 | 2 |
| 4. Define Local Anaesthetics with Mechanism of action.        | 1 | 5 | 2 |
| 5. Write the structures for a) Ketamine b) Thiopental sodium. | 1 | 5 | 2 |
| 6. Define prodrug with example.                               | 1 | 5 | 2 |
| 7. Surface activity on Biological action.                     | 1 | 5 | 2 |
| 8. Synthesis of Salbutamol.                                   | 1 | 5 | 2 |
| 9. Define Neurotransmitter and give examples.                 | 1 | 5 | 2 |
| 10. Structure and uses of Mecamylamine HCl.                   | 1 | 5 | 2 |

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[LC 4262]

FEBRUARY 2013

Sub. Code: 4262

**THIRD YEAR B.PHARM. EXAM**

**Paper II – MEDICINAL CHEMISTRY - I**

**Q.P. Code: 564262**

**Time : Three hours**

**Maximum: 100 Marks**

**(180 Min)**

**I. Elaborate on:**

**(2x20=40)**

1. a) Classify NSAIDs with examples. Write the synthesis for Ibuprofen and Indomethacin **(6+6)**  
b) Explain the structure activity relationship of Morphine **(8)**
2. How the following physiochemical properties influences the drug's biological action  
a) Ionization b) Protein Binding c) Stereoisomerism d) Steric effect **(4X5=20)**

**II. SHORT NOTES**

**(8X5=40)**

1. Write a note on Loop Diuretics.
2. Enumerate the factors affecting drug metabolism with examples
3. Write the synthetic route for Procaine and Dibucaine
4. Explain the applications of prodrugs.
5. Write the structures for a) Pheniramine maleate b) Meclizine c) Promethazine d) Ranitidine e) Omeprazole
6. Write the synthesis for Dicyclomine and Tropicamide
7. Explain the structure activity relationship of Barbiturates
8. What are Anticonvulsants? Classify them with examples

**III. SHORT ANSWERS**

**(10X2=20)**

1. Dissociative anaesthesia
2. Mechanism of action of Diazepam
3. Define receptor and give examples
4. Structure and uses of Neostigmine and Bethanechol
5. Two prostaglandins approved for human clinical use.
6. Synthesis of Imipramine HCl
7. Irreversible anticholinesterase agents
8. Mechanism of action of Local Anaesthetics.
9.  $\beta$ -2 stimulants
10. Write the structure for Triflupromazine and Haloperidol

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(LD 4262)

AUGUST 2013

Sub. Code: 4262

**THIRD YEAR B.PHARM. EXAM**  
**PAPER II – MEDICINAL CHEMISTRY -I**  
*Q.P. Code: 564262*

**Time: Three Hours**

**Maximum: 100 marks**

**I. Elaborate on:**

**(2X20=40)**

1. a) Explain the various types of Phase – I Biotransformation Pathways.  
b) Discuss factors affecting metabolism.
2. a) Classify H<sub>1</sub> Receptor Antagonists? Give the synthesis for the following drugs.
  - i) Diphenhydramine hydrochloride ii) Triprolidine hydrochloride
  - iii) Cyclizine hydrochloride iv) Promethazine hydrochloride.b) Brief the SAR of H<sub>1</sub> – receptor antagonist.

**II. Write notes on:**

**(8X5=40)**

1. Explain the chemistry and biological significance of prostaglandins.
2. Outline the synthetic steps involved in a) Lignocaine b) Procaine.
3. Classify Anti-inflammatory agents and write the synthesis of Ibuprofen.
4. Brief the SAR of barbiturates.
5. Describe the synthesis and clinical use of the following:
  - (a) Dextroamphetamine (b) Nikethamide.
6. Name the cholinergic blocking agents and explain the synthesis of any one of them.
7. How does hydrogen bonding affect biological activity? Explain with example.
8. Explain the methods of development of prodrugs.

**III. Short Answers on:**

**(10X2=20)**

1. Chelation with examples.
2. Define antitussive and Write the structure of any two drugs?
3. Mechanism of action of Acetazolamide.
4. Structure, Chemical name and Uses of Phenobarbitone.
5. Neuromuscular blocking drugs.
6. Synthesis of Propranolol.
7. Write the structure of any two CNS stimulants.
8. Describe the synthesis and clinical use of thiamylal sodium.
9. Discuss the SAR of phenothiazines.
10. Proton pump inhibitors

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(LE 4262)

FEBRUARY 2014

Sub. Code: 4262

THIRD YEAR B.PHARM. EXAM  
PAPER II – MEDICAL CHEMISTRY -I  
Q.P. Code: 564262

Time: Three Hours

Maximum: 100 marks

**I. Elaborate on:**

(2X20=40)

1. a) Classify local anaesthetics with examples. Write the synthesis for procaine and dibucaine.  
b) Explain the structure activity relationship of barbiturates.
2. a) What is prodrug. Explain the various applications of prodrug design with suitable Examples.  
b) Explain the following physicochemical properties relation to biological activity of drugs.
  - I. Chelation
  - II. Hydrogen bonding

**II. Write notes on:**

(8X5=40)

1. Write a brief note on phase II biotransformation pathway.
2. Outline the synthesis and mechanism of action of acetazolamide.
3. Describe the synthesis and clinical uses of diphenhydramine hydrochloride, promethazine hydrochloride.
4. Classify general anaesthetics with examples and write the synthesis of ketamine.
5. Explain the adnergic blocking agents and give the synthesis of propranolol.
6. Explain isosterism and steric effect.
7. Write the synthetic route for anyone narcotic analgesic compound.
8. Write the structure and mechanism of action of carbamazipine and primidone.

**III. Short Answers on:**

(10X2=20)

1. Prostaglandins
2. Define anti-tussive agent with examples.
3. Enumerate the biosynthesis of nor adrenaline.
4. Write the structure and use of salbutamol and ephedrine.
5. Loop diuretics.
6. H<sub>2</sub> receptor antagonist.
7. Give the structure and use of gallamine triethiodide.
8. Write the structure for carbachol, tropicamide.
9. CNS stimulants.
10. Mechanism of action of methohexitol.

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(LF 4262)

AUGUST 2014

Sub. Code: 4262

**THIRD YEAR B.PHARM. EXAM  
PAPER II – MEDICINAL CHEMISTRY -I**

*Q.P. Code: 564262*

**Time: Three hours**

**Maximum: 100 marks**

**I. Essay:**

**(2X20=40)**

1. a) Discuss the basic concept and application of Prodrug design.  
b) Write a brief note on phase –II biotransformation pathway.
2. a) What are sedative and Hypnotics? Classify with examples.  
b) Explain the synthesis for the following:  
i) Barbitol ii) Diazepam iii) Chlorpromazine hydrochloride  
iv) Valproic acid.  
c) Discuss the structure activity relationship of Barbiturates.

**I. Short notes:**

**(8X5=40)**

1. Write the structure and clinical uses of a) Indomethacin b) Ibuprofen  
c) Haloperidol d) Cyclizine hydrochloride.
2. Outline the synthetic steps involved in a) Meperidine b) Methadone
3. Classify Diuretics and write the synthesis and SAR of Chlorthiazide.
4. Discuss about types of receptors.
5. Describe the synthesis and clinical use of the following:  
a) Imipramine hydrochloride b) Dextroamphetamine sulphate.
6. Name the cholinergic agents and explain the synthesis of any one of them.
7. How does chelation affect biological activity? Explain with example.
8. Classify adrenergic blocking agents. Outline the synthesis of metoprolol.

**III. Short Answers:**

**(10X2=20)**

1. Hydrogen bonding with examples.
2. Define general anaesthetics and write the structure of any two drugs.
3. Mechanism of action of procaine.
4. Structure, Chemical Name and uses of Diphenhydramine.
5. Prostaglandins.
6. Give synthesis and uses of Phenyl ephrine.
7. Write the structure of any two cholinergic blocking agents.
8. Protein Binding.
9. Discuss the SAR of Tricyclic antidepressants.
10. H<sub>2</sub> receptor antagonists.

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(LG 4262)

FEBRUARY 2015

Sub. Code: 4262

**THIRD YEAR B.PHARM. EXAMINATION  
PAPER II – MEDICINAL CHEMISTRY -I**

*Q.P. Code: 564262*

**Time: Three hours**

**Maximum: 100 marks**

**I. Essay:**

**(2 x 20 = 40)**

1. a) Define and classify CNS stimulants with suitable examples.  
b) Explain the mechanism, structure activity relationship and synthesis of  
i) Imipramine ii) Amitriptyline  
c) Write the synthesis of metoprolol and chlorcyclicine
2. a) Define and classify analgesics and anti-inflammatory agents. Write the synthesis and Mechanism of action of Ibuprofen.  
b) Outline the structure, physiochemical properties and biosynthesis of adrenergic Neurotransmitters.

**II. Short notes:**

**(8 x 5 = 40)**

1. Classify antipsychotics and write a note on SAR of chlorpromazine.
2. Describe about surface activity in relation to biological action.
3. Outline the stereochemistry of cholinergics with examples
4. Write the synthesis of i) Furosemide i) Naloxone
5. Explain about optical isomerism influencing biological action.
6. Distinguish between the structure and structure activity relationship of omeprazole and lansoprazole.
7. Explain the mechanism of action and use of i) Ketamine ii) Dextroamphetamine  
iii) Amiloride iv) Loratidine v) Acetaminophen
8. Define and classify anxiolytics. Write the synthesis of barbital.

**III. Short answers:**

**(10X2=20)**

1. Define the following terms with examples: i) Transquillizer ii) Parasympatholytics
2. Write the structure and use of i) Cimetidine ii) Isoproterenol
3. Explain the structure activity relationship of Noscapine
4. Types of receptor
5. Significance of drug metabolism
6. Structure and uses of Salbutamol
7. Adrenergic receptor hypothesis
8. Write the structure and mode of action of i) Piperocaine ii) Tetracaine
9. Redox potential
10. Write the structure of i) Salsalate ii) Oxymorphone

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[LH 4262]

AUGUST 2015

Sub. Code: 4262

**B.PHARM. DEGREE EXAMINATION**  
**THIRD YEAR**  
**PAPER II – MEDICINAL CHEMISTRY - I**

*Q.P. Code: 564262*

**Time : Three Hours**

**Maximum : 100 marks**

**Answer All Questions**

**I. Essay:**

**(2 x 20 = 40)**

1. a) Derive the synthesis for (i) Halothane (ii) Methohexital sodium.  
b) Describe the Structure Activity Relationship of Phenothiazine.  
c) Define antiepileptics and Classify with example.
2. Explain the following physiochemical parameters related to biological activity with Example.  
a) Bioisosterism b) Ionization c) Geometrical isomerism d) Chelation.

**II. Short notes :**

**(8 x 5 = 40)**

1. Describe the isomers and synthesis of Ephedrine.
2. Classify adrenergic antagonists with at-least one structure for each class.
3. Give the Structure Activity Relationship of Morphine.
4. Explain about drug latentiation.
5. Classify local anaesthetics with at-least one structure for each class.
6. Give the Structure Activity Relationship of antihistaminic agents.
7. Give the synthesis and mechanism of actions of Hydrochlorthiazide.
8. Describe the chemistry and clinical uses of Eicosanoids.

**III. Short answers:**

**(10 x 2 = 20)**

1. Draw the structure and medicinal uses of Nalorphine HCl.
2. Define the term Signal transduction.
3. Sketch the structure and medicinal uses of Phenylbutazone.
4. Add a note on Phase-I reaction.
5. Outline the structure and medicinal uses of Galamine triethiodide.
6. Give two examples for Proton pump inhibitors.
7. Draw the structure and medicinal uses of Diazepam.
8. Give any two structures of Cholinergic drug.
9. Sketch the structure and medicinal uses of Nikethamide.
10. Define Anti-tussives and draw any one structure.

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(LI 4262)

FEBRUARY 2016

Sub. Code: 4262

**THIRD YEAR B.PHARM. EXAMINATION  
PAPER II – MEDICINAL CHEMISTRY -I**

*Q.P. Code: 564262*

**Time: Three hours**

**Maximum: 100 Marks**

**I. Essay:**

**(2 x 20 = 40)**

1. a) Derive the synthesis for (i) Diazepam (ii) Triclofos sodium.  
b) Explain the structure activity relationship of Barbiturate.  
c) Define antipsychotics and classify with example.
2. Explain the following physiochemical parameters related to biological activity with example.  
a) Drug distribution and pKa Values    b) Hydrogen bonding  
c) Geometrical isomerism    d) Drug-receptor interaction.

**II. Short notes:**

**(8 x 5 = 40)**

1. Give the synthesis and uses of Mephenytoin.
2. Give the structure activity relationship of Local Anaesthetics.
3. Give the Structure Activity Relationship of Thiazides.
4. Describe the different types of reaction in Phase - I.
5. Classify antihistaminic agents with at-least one structure for each class.
6. Draw the structure and give the uses of Morphine, Codeine, Meperidine and Nalorphine.
7. Outline the synthesis of Promethazine HCl and Diphenhydramine HCl.
8. Describe the biosynthesis of Eicosanoids.

**III. Short answers:**

**(10 x 2 = 20)**

1. Draw the structure and medicinal uses of Doxapram HCl.
2. Define the term Neuromuscular blockers.
3. Sketch the structure and medicinal uses of Oxyphenbutazone.
4. Add a note on Prodrugs.
5. Outline the structure and medicinal uses of Tropicamide.
6. Give two examples as Anti-asthmatic drugs.
7. Draw the structure and medicinal uses of Propranolol.
8. Give any two structures of General Anaesthetics.
9. Sketch the structure and medicinal uses of Pyridostigmine.
10. Define Bioisosterism and give one example.

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(LJ 4262)

AUGUST 2016

Sub. Code: 4262

**B.PHARM. EXAMINATION  
THIRD YEAR  
PAPER II – MEDICINAL CHEMISTRY - I**

*Q.P. Code: 564262*

**Time: Three hours**

**Maximum: 100 Marks**

**I. Elaborate on :**

**(2 x 20 = 40)**

1. Illustrate phase II reaction of Drug Metabolism with suitable example. Discuss the factors affecting Drug Metabolism.
2. Classify H<sub>1</sub> Receptor anti-histamines with example. Explain the SAR of anti-histamines and write the synthesis of Promethazine and Diphenhydramine.

**II. Short notes on :**

**(8 x 5 = 40)**

1. Write synthesis, mechanism and uses of chlorpromazine and prochlorperazine.
2. Write a note on adrenergic neurotransmitters.
3. Explain the synthesis of propranolol, carbachol.
4. Classify general anesthetics and give the synthesis of any one.
5. Write a note on anticonvulsants.
6. Discuss briefly about Thiazide diuretics.
7. Discuss briefly the methods of development of prodrugs.
8. Explain the chemistry and biological significance of prostaglandins.

**III. Short answers on :**

**(10 x 2 = 20)**

1. Define sedative and hypnotics and give one drug as example for each.
2. Write the SAR of tricyclic anti-depressant.
3. Write the structure, mechanism and uses of Haloperidol.
4. Define optical and geometrical isomerism in biological action of drugs.
5. Structure and use of pilocarpine, acetylcholine.
6. Write two structures of opioid analgesic.
7. Write the structure and use of Salsalate and Phenylbutazone.
8. Write the synthesis of procaine.
9. Define anti-tussive agent with examples.
10. Mechanism of action of Acetazolamide.

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(LK 4262)

FEBRUARY 2017

Sub. Code: 4262

**B.PHARM. EXAMINATION  
THIRD YEAR  
PAPER II – MEDICINAL CHEMISTRY - I**

*Q.P. Code: 564262*

**Time: Three hours**

**Maximum: 100 Marks**

**I. Elaborate on:**

**(2 x 20 = 40)**

1. Explain the following physiochemical parameters related to biological activity with example.  
a) Isosterism    b) Hydrogen bonding    c) Ionization    d) Redox potential.
2. a) Sketch the synthesis for i) Imipramine    ii) Nikethamide.  
b) Give detailed account of structure activity relationship of Phenothiazine.  
c) Define general anaesthetics and classify with example.

**II. Write notes on:**

**(8 x 5 = 40)**

1. Give the route of synthesis and mechanism of action of Clonazepam.
2. Classify diuretics with at-least one structure for each class.
3. Give the structure, synthesis and uses of Dibucaine.
4. Describe the factors affecting metabolism of drugs.
5. Illustrate the structure, synthesis and uses of Chlorcyclizine HCl.
6. Draw any four structures from NSAID's.
7. Describe the chemistry of Eicosanoids.
8. Describe the structure activity relationship of Morphine.

**III. Short answers on:**

**(10 x 2 = 20)**

1. Draw two structures of adrenergic neurotransmitters.
2. Give two examples for neuromuscular blockers and mention their uses.
3. Sketch the structure and medicinal uses of Salbutamol and Terbutaline.
4. Give two examples for Prodrugs.
5. Outline the structure and medicinal uses of Atenolol and Prazosin.
6. Add a note on neurochemistry of cholinergics.
7. Give the reaction product of malonic ester and urea.
8. Give any two structures of drugs used as anti-ulcer.
9. Sketch the structure and medicinal uses of Homatropine HBr.
10. Outline the structure and uses of Noscapine.

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(LL 4262)

AUGUST 2017

Sub. Code: 4262

**B.PHARM. DEGREE EXAMINATION  
THIRD YEAR  
PAPER II – MEDICINAL CHEMISTRY – I**

*Q.P. Code: 564262*

**Time: Three hours**

**Maximum: 100 Marks**

**I. Elaborate on:**

**(2 x 20 = 40)**

1. a) Define Receptor and discuss the theories involved in Drug Receptor complex.  
b) Explain the different types of reaction in phase I metabolic pathways.
2. a) Discuss the classification, mode of action and SAR of NSAIDs.  
b) Give the synthesis for Indomethacin, Ibuprofen and Phenylbutazone.

**II. Write notes on:**

**(8 x 5 = 40)**

1. Write about applications of prodrug design.
2. Classify sedative and hypnotics with examples and give the synthesis of diazepam.
3. Write a note on: i) Isosterism ii) Hydrogen bonding.
4. Define CNS stimulants and give the synthesis for:  
i) Nikethamide ii) Imipramine HCL.
5. Discuss Sympathomimetic agents and give the synthesis of salbutamol.
6. Explain in detail about antihistaminic agents.
7. Discuss SAR of barbiturates.
8. Define and classify diuretics with suitable examples.

**III. Short answers on:**

**(10 x 2 = 20)**

1. Define the term Tranquilliser.
2. Structure and uses of methohexital sodium.
3. Synthesis of Mephentoin.
4. Write the structures of Homatropine HBr and Tropicamide.
5. Note on Neuromuscular blockers.
6. Define Anti-tussive agents.
7. Mode of action of Halothane.
8. Structure and use of Naproxen.
9. Note on Prostaglandins.
10. H<sub>2</sub> receptor antagonists.

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(LM 4262)

FEBRUARY 2018

Sub. Code: 4262

**B.PHARM. DEGREE EXAMINATION**  
**0THIRD YEAR**  
**PAPER II – MEDICINAL CHEMISTRY – I**

*Q.P. Code: 564262*

**Time: Three hours**

**Maximum: 100 Marks**

**I. Elaborate on:**

**(2 x 20 = 40)**

1. Explain the following physicochemical parameters related to biological activity with example.  
a) Chelation    b) Steric effect    c) Optical isomerism    d) Surface activity
2. a) Define Sedative and Hypnotics? Classify with example.  
b) Give detailed account of structure activity relationship of Sympathomimetics.  
c) Outline the synthesis for: (i) Prochlorperazine Maleate    ii) Ketamine HCl.

**II. Write notes on:**

**(8 x 5 = 40)**

1. Describe the metabolism of adrenergic neurotransmitters.
2. Relate the structural features of Acetylcholine, Carbachol, Bethanechol and Methacholine.
3. Give four structures of Neuromuscular blockers.
4. Outline the synthesis of Naproxen and Ibuprofen.
5. Give the route of synthesis of Amiloride and Frusemide.
6. Draw any four structures of anti-histamines.
7. Give the synthesis and mechanism of action of Doxapram HCl.
8. Classify anti-convulsants with at-least one structure for each class.

**III. Short answers on:**

**(10 x 2 = 20)**

1. Draw the structure and medicinal uses of Meperidine HCl.
2. Define the term Eicosanoids.
3. Sketch the structure and medicinal uses of Morphine analogues.
4. Write a note on Omeprazole and Lansoprazole.
5. Outline the structures of Mephentoin and Trimethadione.
6. Explain about Prodrugs.
7. Draw two structures of Cholinergic blocking agents.
8. Define the term Local anaesthetics with two examples.
9. Sketch two structures of anti-hypertensive.
10. Give two reactions of Phase-I Metabolism.

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THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

(LN 4262)

AUGUST 2018

Sub. Code: 4262

**B.PHARM. DEGREE EXAMINATION  
THIRD YEAR  
PAPER II – MEDICINAL CHEMISTRY – I**

*Q.P. Code: 564262*

**Time: Three hours**

**Maximum: 100 Marks**

**I. Elaborate on:**

**(2 x 20 = 40)**

1. Discuss the various types of Phase-I biotransformation pathways and the role of Cytochrome P450 enzyme system in Phase-I biotransformation.
2. a) Classify local anaesthetic agents and discuss the SAR of Local anaesthetic agents.  
b) Illustrate the structure, synthesis, and uses of Atenolol and Acetazolamide.

**II. Write notes on:**

**(8 x 5 = 40)**

1. Discuss the drug-receptor theory.
2. Write the structure, synthesis and uses of Carbamazepine.
3. Classify Diuretics with examples.
4. Illustrate the synthesis of Cyclizine hydrochloride and SAR of Piperazine derivatives.
5. Illustrate the structure, synthesis and uses of Fentanyl citrate.
6. Discuss biosynthesis and metabolism of Adrenergic Neurotransmitters.
7. Write the structure, synthesis and uses of Cimetidine.
8. Illustrate the structure, synthesis, and uses of Dextroamphetamine.

**III. Short answers on:**

**(10 x 2 = 20)**

1. Give the structure and uses of Halothane.
2. Structure and uses of Methyldopa.
3. Write structure, and uses of Pheniramine maleate.
4. Eicosanoids.
5. Structure and uses of Noscapine.
6. General Anaesthetics.
7. Structure and uses of Piroxicam.
8. Define Antipsychotics agents with examples.
9. Cholinergic Blocking agents.
10. Catechol derivatives.

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THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

(LO 4262)

FEBRUARY 2019

Sub. Code: 4262

**B.PHARM. DEGREE EXAMINATION  
THIRD YEAR  
PAPER II – MEDICINAL CHEMISTRY – I**

*Q.P. Code: 564262*

**Time: Three hours**

**Maximum: 100 Marks**

**I. Elaborate on:**

**(2 x 20 = 40)**

1. a) Explain the physicochemical parameters related to biological activity with examples for the following: a) Bio-isosterism b) Ionization  
b) Summarize stereochemistry of acetyl choline and its analogue.
2. a) Classify Antihistaminic agents. Describe the SAR of Ethylene diamine derivatives.  
b) Discuss the SAR of Benzodiazepines and Barbiturates derivatives as sedatives and hypnotics agents.

**II. Write notes on:**

**(8 x 5 = 40)**

1. Illustrate the structure, synthesis and uses of Nikethamide.
2. Write the structure, synthesis and uses of Procaine.
3. Outline the Prostaglandin Biosynthesis pathway.
4. Discuss the applications of Prodrug.
5. Illustrate the synthesis of Phenylbutazone and SAR of Pyrazolone derivatives.
6. Discuss the factors that influence the metabolic rate of drug.
7. Write the structure, synthesis and uses of Meperidine hydrochloride.
8. Illustrate the structure, synthesis and uses of Diphenhydramine hydrochloride.

**III. Short answers on:**

**(10 x 2 = 20)**

1. Give the structure and uses of Valproic Acid.
2. Define seizures and its types.
3. Phase-I biotransformation.
4. Write structure, and uses of Salbutamol.
5. Ganglionic Blockers.
6. Imipramine hydrochloride.
7. General Anaesthetics.
8. Thiazide derivatives.
9. Sedatives and hypnotics agents.
10. Anti-tussive.

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THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

(LP 4262)

AUGUST 2019

Sub. Code: 4262

**B.PHARM. DEGREE EXAMINATION  
THIRD YEAR  
PAPER II – MEDICINAL CHEMISTRY – I**

*Q.P. Code: 564262*

**Time: Three hours**

**Maximum: 100 Marks**

**I. Elaborate on:**

**(2 x 20 = 40)**

1. How do the following physiochemical properties influence the drug's biological action?
  - a) Surface activity
  - b) Hydrogen bonding
  - c) Geometrical Isomerism
  - d) Chelation
2. a) Classify NSAIDs with examples. Write the synthesis for Ibuprofen and Indomethacin.  
b) Explain the structure activity relationship of Morphine.

**II. Write notes on:**

**(8 x 5 = 40)**

1. Write a note on Proton pump inhibitors.
2. Outline the stereochemistry of cholinergics with examples.
3. Summarize Phase II metabolic reactions with examples.
4. Describe briefly about thiazide diuretics and give the synthesis of hydrochlorothiazide.
5. Explain the mechanism of action, use of Ketamine.HCL and Piperocaine.
6. Discuss the SAR of Tricyclic antidepressants.
7. Write the synthesis and use of Propranolol and carbachol.
8. Classify anticonvulsants with at least one structure for each class.

**III. Short answers on:**

**(10 x 2 = 20)**

1. Sketch the structure and use of Haloperidol.
2. Types of receptors.
3. List any two anti-tussive agents.
4. Draw the structure of Atropine sulfate and Mecamylamine.
5. Mode of action of Amphetamine.
6. Anticholinesterases.
7. Give any two structures of H<sub>2</sub> blockers.
8. Write about the chemistry of Prostaglandins.
9. Give the reaction product of Malonic ester and urea.
10. SAR of Chlorpromazine.

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**B.PHARM. DEGREE EXAMINATION  
THIRD YEAR  
PAPER II – MEDICINAL CHEMISTRY – I**

*Q.P. Code: 564262*

**Time: Three hours**

**Maximum: 100 Marks**

**I. Elaborate on:**

**(2 x 20 = 40)**

1. Explain the following physiochemical parameters related to biological activity with example.  
a) Optical isomerism    b) Surface activity    c) Chelation    d) pKa values.
2. a) Sketch the synthesis for:    (i) Amitriptyline HCl    (ii) Mephenytoin.  
b) Give the detailed account of structure activity relationship of Barbiturates.  
c) Define Antipsychotics and classify with examples.

**II. Write notes on:**

**(8 x 5 = 40)**

1. Give the route of synthesis and mechanism of action of Diazepam.
2. Classify local anesthetics with at least one structure for each class.
3. Give the structure, synthesis and uses of Acetazolamide.
4. Describe the significance of drug metabolism.
5. Illustrate the structure, synthesis and uses of Meclizine HCl.
6. Draw any four structures as Antitussives.
7. Describe the biosynthesis of Eicosanoids.
8. Explain the structure activity relationship of morphine analogues.

**III. Short answers on:**

**(10 x 2 = 20)**

1. Draw two structures of metabolized products of adrenergic neurotransmitters.
2. Give two examples for Neuromuscular blockers and mention their uses.
3. Sketch the structure and medicinal uses of Phenylephrine and Etomidate.
4. Give two examples for Prodrugs.
5. Outline the structure and medicinal uses of Metoprolol and Phenoxybenzamine.
6. Add a note on Cholinergic Neurochemistry.
7. Give the reaction product of Diphenylamine with sulphur in the presence of Iodine.
8. Give any two structures of drugs used as proton pump inhibitor.
9. Sketch the structure and medicinal uses of Tropicamide.
10. Outline the structure and uses of Zomepirac sodium.

THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

[LR 1220]

DECEMBER 2020

Sub. Code: 4262

(AUGUST 2020 EXAM SESSION)

B. PHARMACY DEGREE EXAMINATION

THIRD YEAR – (Regulation from 2009-2010)

PAPER II – MEDICINAL CHEMISTRY - I

*Q.P. Code: 564262*

**Time: Three hours**

**Answer ALL questions**

**Maximum: 100 Marks**

**I. Elaborate on:**

**(2 x 20 = 40)**

1. Explain the following physiochemical parameters related to biological activity with Example (**4x5=20**)  
a) Steric effect b) Protein binding c) Geometrical isomerism d) Hydrogen bonding.
2. a) Define anticonvulsants? Classify with examples. (**6**)  
b) Give detailed account of Structure Activity Relationship of Local anesthetics. (**6**)  
c) Outline the synthesis for (i) Chlorpromazine HCl (ii) Thiamylal sodium. (**4+4**)

**II. Write notes on:**

**(8 x 5 = 40)**

1. Describe the biosynthesis of adrenergic neurotransmitters.
2. Relate the structural features of any four drugs from cholinergic.
3. Give four structures of quaternary ammonium compounds as Ganglionic blockers.
4. Outline the synthesis and uses of Indomethacin.
5. Give the route of synthesis of Chlorthiazide and Procaine.
6. Draw any four structures of antihistamines under amino alkyl ethers.
7. Give the synthesis and mechanism of action of Doxepin HCl.
8. Classify Sedatives and Hypnotics with at-least one structure for each class.

**III. Short answers on:**

**(10 x 2 = 20)**

1. Draw the structure and medicinal uses of Methadone HCl.
2. Summarize at-least three points about chemistry of Eicosanoids.
3. Sketch the structure and medicinal uses of Codeine and Morphine.
4. Write a note on Ranitidine and Famotidine in terms of chemistry.
5. Outline the structures of Halothane and Enflurane.
6. Give two examples as Prodrugs.
7. Draw the structure and uses of Propantheline.
8. Give two examples of potassium sparing diuretics.
9. Sketch two structures of bronchodilator.
10. Give two reactions of Phase-I Metabolism.

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[BPHARM 0921]

SEPTEMBER 2021  
(FEBRUARY 2021 EXAM SESSION)

Sub. Code: 4262

**B. PHARMACY DEGREE EXAMINATION**  
**THIRD YEAR – (NON-SEMESTER)**  
**PAPER II – MEDICINAL CHEMISTRY - I**  
*Q.P. Code: 564262*

**Time: Three hours**

**Answer ALL questions**

**Maximum: 100 Marks**

**I. Elaborate on:**

**(2 x 20 = 40)**

1. a) What are anticonvulsants? Classify it with examples.(5)  
b) Write the synthesis for the following drugs.(10)  
i) Triclofos Sodium ii) Diazepam iii) Chlorpromazine.HCL iv) Valproic Acid  
c) Describe the Structure Activity Relationship of Benzodiazepines.(5)
2. a) Explain the following physiochemical parameters related to biological activity with example.  
i) Bioisosterism ii) Protein binding iii) Ionisation iv) Drug-Receptor interaction.

**II. Write notes on:**

**(8 x 5 = 40)**

1. Classify Diuretics with suitable examples.
2. Synthesis of Procaine and Dibucaine.
3. SAR of Tricyclic antidepressants.
4. Name some cholinergic blocking agents and write synthesis of Tropicamide.
5. Write the Synthetic route of Furosemide and Amiloride.
6. Add a note on COX 1 and COX II inhibitors with mechanism.
7. Give some reactions of Phase I Metabolism.
8. Explain the theories of Drug-Receptor interaction.

**III. Short answers on:**

**(10 x 2 = 20)**

1. Signal transduction.
2. Structure and use of Mecamylamine Hcl.
3. Reaction product of Malonic ester and urea.
4. Write synthetic route of Ketamine Hcl.
5. Give the structure of any two anti-ulcer drugs.
6. Define Drug Latentiation.
7. SAR of Barbitol.
8. Write about Eicosanoids.
9. Explain Neuromuscular blockers.
10. Write the synthesis of Promethazine Hcl.

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[BPHARM 0122]

JANUARY 2022  
(AUGUST 2021 EXAM SESSION)

Sub. Code: 4262

**B.PHARMACY DEGREE COURSE (NON-SEMESTER EXAMINATIONS)**  
**THIRD YEAR (Regulation 2009-2010)**  
**PAPER II – MEDICINAL CHEMISTRY - I**  
*Q.P. Code: 564262*

**Time: Three hours**

**Answer ALL questions**

**Maximum: 100 Marks**

**I. Elaborate on:**

**(2 x 20 = 40)**

1. a) Outline the Biosynthesis and also explain the functions of neurotransmitters with example(10)  
b) Discuss the stereochemistry of Cholinergics with examples.(5)  
c) Write the synthesis of Salbutamol and Propranolol.(5)
2. a) Explain the various types of Phase II Biotransformation pathways with suitable examples.(12)  
b) Discuss the factors affecting Drug Metabolism.(8)

**II. Write notes on:**

**(8 x 5 = 40)**

1. Discuss the Structure activity relationship of Morphine.
2. Define and classify Tranquillisers with suitable examples.
3. Write the synthesis of Imipramine and Dextroamphetamine.
4. Elucidate the Prostaglandins from Arachidonic acid.
5. Describe the basic concepts of Prodrug and its applications.
6. Give the structure and medicinal uses of the following.  
i) Carbamazepine ii) Haloperidol iii) Halothane
7. What are Carbonic anhydrase inhibitors and write the synthesis of Acetazolamide.
8. Explain the chemistry of Histamine and its receptors.

**III. Short answers on:**

**(10 x 2 = 20)**

1. MAO Inhibitors.
2. Structure and use of Nalorphine Hcl and Fentanyl citrate.
3. Adrenergic Receptor hypothesis.
4. Define Local anaesthetics with examples.
5. Proton pump inhibitors.
6. SAR of Phenothiazines.
7. Synthesis of Cyclizine Hcl.
8. Define Antitussives with examples.
9. Opioid antagonist.
10. Synthesis of Meperidine Hcl.

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[BPHARM 0522]

MAY 2022  
(FEBRUARY 2022 EXAM SESSION)

Sub. Code: 4262

**B. PHARMACY DEGREE EXAMINATION  
THIRD YEAR – (NON-SEMESTER)  
PAPER II – MEDICINAL CHEMISTRY - I  
Q.P. Code: 564262**

**Time: Three hours**

**Answer ALL questions**

**Maximum: 100 Marks**

**I. Elaborate on:**

**(2 x 20 = 40)**

1. a) Discuss the classification mode of action of CNS Stimulants.  
b) Write a note on MAO inhibitors with suitable examples.  
c) Write the synthesis of Doxapram and Imipramine.
2. a) Explain the structural Activity relationship for the Mercurial Diuretics.  
b) Derive the synthesis for a) Acetazolamide b) Furosemide.

**II. Write notes on:**

**(8 x 5 = 40)**

1. Discuss the Synthesis and SAR of Barbitol.
2. Define and classify Tranquillisers with suitable examples.
3. Write the synthesis of Chlorcyclizine and Dextroamphetamine.
4. Elucidate the Prostaglandins from Arachidonic acid.
5. Describe the basic concepts of Prodrug and its applications.
6. Give the structure and medicinal uses of the following.  
i) Carbamazepine ii) Haloperidol iii) Halothane
7. Summarize the different types of Phase metabolic reactions.
8. Explain the chemistry of Histamine and its receptors.

**III. Short answers on:**

**(10 x 2 = 20)**

1. MAO of NSAIDs.
2. Structure and use of Fentanyl citrate.
3. Adrenergic Receptor hypothesis.
4. Define Local anesthetics.
5. Proton pump inhibitors.
6. Drug Latentiation.
7. Synthesis of Cyclizine Hcl.
8. Define Anti-asthmatic drugs.
9. Morphine analogues.
10. Synthesis of Sodium valproate.

**THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY**

**[BPHARM 1022]**

**OCTOBER 2022**

**Sub. Code: 4262**

**(AUGUST 2022 EXAM SESSION)**

**B.PHARMACY DEGREE COURSE (NON-SEMESTER EXAMINATIONS)**

**THIRD YEAR (Regulation 2009-2010)**

**PAPER II – MEDICINAL CHEMISTRY - I**

***Q.P. Code: 564262***

**Time: Three hours**

**Answer ALL questions**

**Maximum: 100 Marks**

**I. Elaborate on:**

**(2 x 20 = 40)**

1. Explain in detail about various physicochemical parameters which are important for biological activity with emphasis to
  - a) Protein binding
  - b) Isosterism
  - c) Chelation
  - d) Hydrogen Bonding.
2. Describe the types of histamine receptors. Classify antihistaminics and emphasize on the structure activity relationship with examples of any one class.

**II. Write notes on:**

**(8 x 5 = 40)**

1. Write a note on signal transduction mechanism.
2. Define and classify non steroidal anti inflammatory drugs. Give the synthesis of any two drugs.
3. Give an account on the SAR of phenothiazines.
4. Differentiate with examples about adrenergic and cholinergic antagonists.
5. Brief out on injectable general anaesthetics.
6. Explain briefly on opioid receptors.
7. Depict the mechanism of action of carbonic anhydrase inhibitors.
8. Brief out on curare neuromuscular agents.

**III. Short answers on:**

**(10 x 2 = 20)**

1. Differentiate between sedative and hypnotics.
2. Write a short note on drug distribution and pKa values.
3. Give a short account on drug latentiation.
4. Write the structure and use of methohexital.
5. Write a short note on morphinans.
6. Write the structure and use of one clinically important prostaglandins.
7. Define anti-tussives with examples.
8. Write briefly on MAO Inhibitors.
9. Sketch the general structure of barbiturates and write the name of one drug containing phenyl substituent at 5' position.
10. Write a brief note on stereo chemical aspects of drug metabolism.

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**B.PHARMACY DEGREE COURSE (NON-SEMESTER EXAMINATIONS)**  
**THIRD YEAR (Regulation 2009-2010)**  
**PAPER II – MEDICINAL CHEMISTRY – I**

*Q.P. Code: 564262*

**Time: Three hours**

**Answer ALL questions**

**Maximum: 100 Marks**

**I. Elaborate on:**

**(2 x 20 = 40)**

1. Define drug metabolism. Explain briefly about different reactions of drug metabolism and factors affecting drug metabolism.
2. Describe and classify sedatives and hypnotics with examples. Give the synthesis of any two drugs.

**II. Write notes on:**

**(8 x 5 = 40)**

1. Describe briefly about the mechanism of action of aryl- and hetero aryl acetic acids as anti-inflammatory agents.
2. Give an account on the SAR of morphine.
3. Write a note on adrenergic receptors.
4. Depict the mechanism of action of local anaesthetics.
5. Give an account on first generation antihistamines.
6. Give a brief note on cyclo oxygenase inhibitors.
7. Write a note on potassium sparing diuretics.
8. Enumerate the synthesis of mephentoin and ethosuximide.

**III. Short answers on:**

**(10 x 2 = 20)**

1. Write the structure and use of atenolol.
2. Give a brief account on NSAID induced side effects.
3. Write importance of the concepts and applications of prodrug design.
4. Sketch the structure of one phenothiazine drug with alkyl piperidinyl side chain.
5. Write briefly on antipsychotics with examples.
6. Write the structure of any two ester type local anaesthetics.
7. Write a note on voltage-gated calcium channels as anticonvulsants.
8. Write a note on ganglionic blockers.
9. Give a brief account on H3 receptor antagonists.
10. Brief out on eicosanoid chemistry.

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**B.PHARMACY DEGREE COURSE (NON-SEMESTER EXAMINATIONS)  
THIRD YEAR (Regulation 2009-2010)  
PAPER II – MEDICINAL CHEMISTRY – I**

*Q.P. Code: 564262*

**Time: Three hours**

**Answer ALL questions**

**Maximum: 100 Marks**

**I. Elaborate on:**

**(2 x 20 = 40)**

1. Describe briefly about the types of receptors and the forces involved in drug receptor interactions.
2. Enumerate briefly about the types with mechanism of diuretics. Give the synthesis of furosemide.

**II. Write notes on:**

**(8 x 5 = 40)**

1. Depict the SAR of benzodiazepines.
2. Write a note on stereochemistry of cholinergics.
3. Write a note on inhalant general anaesthetics.
4. Brief out on proton pump inhibitors.
5. Write a note on depolarizing ganglionic blocking agents.
6. Write a note on tricyclic antidepressants and write the structure of any one drug.
7. Give an account on the clinically important anticonvulsants with the synthesis of any one.
8. Write a brief note about prostaglandins used for ophthalmic purpose.

**III. Short answers on:**

**(10 x 2 = 20)**

1. Write a note on osmotic diuretics.
2. Write the structure and use of Methyldopa.
3. Write briefly on narcotic analgesics with examples.
4. Write a note on redox potential.
5. Give a brief account H<sub>2</sub> receptor antagonist.
6. Give a brief account on acetyl cholinesterase enzyme.
7. Brief out the role of geometrical isomerism in biological activity.
8. Write on the biochemical effects of muscarinic stimulation.
9. Write a short note on anxiolytics with examples.
10. Brief a short note on the mechanism of termination of histamine action.

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