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

(LP 2039) SEPTEMBER 2019 **Sub. Code: 2039**

B.PHARM. DEGREE EXAMINATION
PCI Regulation – SEMESTER IV
PAPER I – PHARMACEUTICAL ORGANIC CHEMISTRY – III

Q.P. Code: 562039

Time: Three hours **Maximum: 75 Marks**

I. Elaborate on: Answer any TWO questions. **(2 x 10 = 20)**

1. Discuss the sequence rules and RS system of optical isomers.
2. Explain the determination of configuration of geometrical isomers.
3. Write the synthesis, properties and medicinal uses of pyridine.

II. Write notes on: Answer any SEVEN questions. **(7 x 5 = 35)**

1. Element of symmetry.
2. Stereoisomerism of biphenyl compounds.
3. Relative aromaticity and reactivity of pyrrole, furan, and thiophene.
4. Dakin reaction.
5. Beckmann's rearrangement.
6. Stereospecific and stereoselective reaction.
7. Racemic modification.
8. Write the synthesis and medicinal uses of imidazole.
9. Explain electrophilic reaction of oxazole.

III. Short answers on: Answer ALL questions. **(10 x 2 = 20)**

1. Explain the stability of axial and equatorial substitution of cyclohexane.
2. Define configurational and conformational isomers.
3. Explain the optical activity of meso and racemic form.
4. Write the Paalknoor synthesis of pyrrole.
5. Write the Skraup synthesis of quinoline.
6. Write the Chichibabin reaction.
7. Write the medicinal uses of indole.
8. Write the reduction by Zn-Hg.
9. What is Wolff Kishner reduction?
10. Write the importance of Birch reduction.

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

(LQ 2039) MARCH 2020 **Sub. Code: 2039**

B.PHARM. DEGREE EXAMINATION
PCI Regulation – SEMESTER IV
PAPER I – PHARMACEUTICAL ORGANIC CHEMISTRY – III

Q.P. Code: 562039

Time: Three hours **Maximum: 75 Marks**

I. Elaborate on: Answer any TWO questions. (2 x 10 = 20)

1. Describe the synthesis, chemical reactions and medicinal uses of Indole.
2. Discuss the mechanism of reaction and applications of Oppenauer-oxidation and Clemmensen reduction.
3. Summarize the criteria for a compound to be optically active and the methods used in resolution of racemic mixtures with examples.

II. Write notes on: Answer any SEVEN questions. (7 x 5 = 35)

1. Explain the Canh Ingold Prelog (CIP) sequence rule system of nomenclature of Optical isomers.
2. Discuss in detail the partial and absolute asymmetric synthesis.
3. Describe about the stereochemistry of Biphenyl compounds.
4. Illustrate the conformational analysis of ethane.
5. Describe the structure and reactivity of Pyrrole.
6. Discuss the Skraup's synthesis of Quinoline and its derivatives.
7. Illustrate the synthesis and medicinal uses of Purine and its derivatives.
8. Outline the preparation and chemical reactions of Acridine.
9. Enumerate the applications of lithium aluminium hydride with examples.

III. Short answers on: Answer ALL questions. (10 x 2 = 20)

1. Sketch the medicinal uses of Thiazole derivatives with its structure.
2. State the applications of Dakin reaction with examples.
3. What is absolute Asymmetric synthesis? Give example.
4. Recall the applications of sodium borohydride.
5. Sketch the conformers of Cyclohexane.
6. Define with the example of Schmidt reaction.
7. List out the elements of symmetry with example.
8. Recall any two methods of preparation of oxazole.
9. Sketch any two medicinal derivatives of the quinoline with its structure.
10. State the applications of Beckmann rearrangement.

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

[BPHARM 0321] MARCH 2021 Sub. Code: 2039

(SEPTEMBER 2020 EXAM SESSION)

B. PHARMACY DEGREE EXAMINATION

PCI Regulation SEMESTER – IV

PAPER I – PHARMACEUTICAL ORGANIC CHEMISTRY III

Q.P. Code : 562039

Time: Three hours **Maximum: 75 Marks**

I. Elaborate on: Answer any TWO questions. (2 x 10 = 20)

1. Discuss the conformational isomerism in monosubstituted and disubstituted cyclohexane.
2. a) Skraup synthesis (5 marks)
   b) Fischer Indole synthesis (2½ marks)
   c) Pall-Knorr synthesis (2½ marks)
3. What are rearrangement reactions? Write a detailed account on Schmidt rearrangement.

II. Write notes on: Answer any SEVEN questions. (7 x 5 = 35)

1. Explain DL system of nomenclature. List out its disadvantages.
2. What are the conditions for a compound to be optically active? Explain optical activity in compounds containing two different chiral carbon atoms.
3. Write a brief note on Atropisomerism.
4. Write any two methods of preparation of pyridine? Add a note on its basicity.
5. Write the methods of synthesis and reactions of isoquinoline.
6. Explain the methods of preparation and any three reactions of thiophene.
7. What is asymmetric synthesis? Describe the types of asymmetric synthesis with suitable examples.
8. Explain with mechanism any one reaction which is used for the reduction of carbonyl compounds to hydrocarbons.
9. Write the reaction, mechanism and applications of Dakin reaction?

III. Short answers on: Answer ALL questions. (10 x 2 = 20)

1. Which of the following is optically active-lactic acid or propionic acid. Give reason.
2. What are syn and anti forms?
3. Define racemic mixture. List out any five methods for the resolution of racemic modification.
4. Write all the conformers of 1,2-dichloro ethane.
5. What is the product obtained on treating pyrrole and furan with maleic anhydride?
6. Write any one method of synthesis of azepines and give their medicinal uses.
7. Write any one method of synthesis and any one reaction of thiazole.
8. Why is nitrobenzene generally used as the oxidizing agent in Skraup synthesis?
9. Write the reaction showing an aldoxime undergoing Beckmann rearrangement.
10. With a suitable example explain centre of symmetry.

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

[BPHARM 0122] JANUARY 2022 Sub. Code: 2039
(MARCH 2021 EXAM SESSION)

B.PHARMACY DEGREE COURSE (SEMESTER EXAMINATIONS)
PCI Regulation 2017 – SEMESTER IV
PAPER I – PHARMACEUTICAL ORGANIC CHEMISTRY III
Q.P. Code : 562039

Time: Three hours **Maximum: 75 Marks**

I. Elaborate on: Answer any TWO questions. (2 x 10 = 20)

1. What are geometrical isomers? Explain the methods to determine the configuration of geometrical isomers?
2. Discuss the methods of preparation and electrophilic substitution reactions of pyrrole.
3. Classify rearrangement reactions? Describe the reaction, mechanism, salient features and applications of Beckmann rearrangement.

II. Write notes on: Answer any SEVEN questions. (7 x 5 = 35)

1. Applying sequence rules explain RS System of nomenclature.
2. Explain the stereochemistry of biphenyls.
3. Explain the elements of symmetry with suitable examples.
4. Define and classify heterocyclic compounds. Explain the nomenclature of monocyclic and fused heterocyclic compounds.
5. Write the methods of preparation and any two reactions of imidazole.
6. Write the structure and name of monocyclic heterocyclic compounds with two different heteroatoms. Explain the methods of preparation of any one of them.
7. Summarize the synthetic applications of lithium aluminium hydride.
8. Write a brief note on Dakin reaction.
9. Compare and contrast Clemmensen reduction and Wolf Kishner reduction.

III. Short answers on: Answer ALL questions. (10 x 2 = 20)

1. What do you mean by Partial and Absolute asymmetric synthesis?
2. What do you mean by a mesocompound?
3. Define stereoselective reactions and give a suitable example.
4. What is enzymatic resolution of racemic modification?
5. Write the structure and numbering for the following heterocyclic compounds
   a) Aziridine b) 1,3-diazocine
6. What are purines? Write the structure and use of any one medicinal compound belonging to this category.
7. What is Chichibabin reaction?
8. What is the purpose of liquid ammonia and alcohol in Birch reduction?
9. Write the reduction reactions of pyridine.
10. What is Claisen-Schmidt condensation?

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

[BPHARM 0522] MAY 2022 Sub. Code: 2039

(SEPTEMBER 2021 EXAM SESSION)

B. PHARMACY DEGREE EXAMINATION

PCI Regulation SEMESTER - IV

PAPER I – PHARMACEUTICAL ORGANIC CHEMISTRY III

Q.P. Code : 562039

Time: Three hours **Maximum: 75 Marks**

I. Elaborate on: Answer any TWO questions. (2 x 10 = 20)

1. Define racemic modification? Discuss the method of resolution of racemic modification by formation of diastereomers.
2. Discuss the methods of preparation and chemical reactions of pyridine.
3. Describe the reaction and mechanism of
   (a) Birch reduction (b) Wolf Kishner reduction.

II. Write notes on: Answer any SEVEN questions. (7 x 5 = 35)

1. Explain asymmetric synthesis.
2. Explain the nomenclature of geometrical isomers.
3. Discuss the conformational isomerism in n-butane.
4. Compare the aromaticity and reactivity of pyrrole, furan and thiophene.
5. Write the methods of synthesis and medicinal uses of pyrimidine.
6. Write the electrophilic substitution reactions of indole.
7. Explain the synthetic applications of sodium borohydride.
8. Write a brief note on Oppenauer oxidation?
9. Explain with mechanism Claisen-Schmidt condensation. Add a note on its application.

III. Short answers on: Answer ALL questions. (10 x 2 = 20)

1. Distinguish between enantiomers and diastereomers.
2. What are the disadvantages of biochemical method of resolution of racemic mixture?
3. Define stereospecific reactions and give a suitable example.
4. Compound A has melting point 300˚C and boiling point 40˚C. Compound B has melting point 130˚C and boiling point 60˚C. Determine whether compounds A and B are cis or trans isomers.
5. What are fused heterocyclic compounds? Give examples.
6. Why is pyrrole weakly basic?
7. Write any one method of synthesis and any one reaction of acridine.
8. What happens when.
   a) Quinoline reacts with potassium permanganate.
   b) Pyrazole reacts with concentrated nitric acid.
9. What is Schmidt rearrangement?
10. Write any two applications of Clemmensen reduction?

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

[BPHARM 1022] OCTOBER 2022 Sub. Code: 2039
(MARCH 2022 EXAM SESSION)

B.PHARMACY DEGREE COURSE (SEMESTER EXAMINATIONS)
PCI Regulation 2017 – SEMESTER IV
PAPER I – PHARMACEUTICAL ORGANIC CHEMISTRY III
Q.P. Code : 562039

Time: Three hours **Maximum: 75 Marks**

I. Elaborate on: Answer any TWO questions. (2 x 10 = 20)

1. Describe racemic modification and explain different methods of resolution.
2. Explain the nomenclature and classification of heterocyclic compounds.
3. Write down the mechanism of Beckmann rearrangement with any four synthetic applications.

II. Write notes on: Answer any SEVEN questions. (7 x 5 = 35)

1. Distereoisomerism.
2. Compare and discuss aromaticity of pyrrole and thiophene.
3. Wolff Kishner reduction.
4. Explain E Z system of nomenclature of geometrical isomerism with examples.
5. Conformational isomerism of n Butane.
6. Electrophilic aromatic substitution reactions of quinoline.
7. Elements of symmetry.
8. Paul knorr synthesis of pyrrole.
9. Stereospecific reactions.

III. Short answers on: Answer ALL questions. (10 x 2 = 20)

1. Define optical isomerism.
2. One reaction for Claisen Schidmt condensation.
3. Draw only the conformations of ethane.
4. Define sequence rules.
5. Structure of maleic acid and fumaric acid.
6. What are enantiomers?
7. Medicinal uses of pyrimidine.
8. Wolff Kishner reduction.
9. Define atrop isomerism.
10. Syn and Anti system of nomenclature.

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

[B.PHARM 0323] MARCH 2023 Sub. Code: 2039
(SEPTEMBER 2022 EXAM SESSION)

B.PHARMACY DEGREE COURSE (SEMESTER EXAMINATIONS)
PCI Regulation 2017 – SEMESTER IV
PAPER I – PHARMACEUTICAL ORGANIC CHEMISTRY III

Q.P. Code: 562039

Time: Three hours **Maximum: 75 Marks**

I. Elaborate on: Answer any TWO questions. (2 x 10 = 20)

1. Describe in detail the RS system of nomenclature of optical isomers.
2. Explain various reactions and medicinal uses of furan and its derivatives.
3. Explain the mechanism for birch reduction and discuss any four synthetic applications.

II. Write notes on: Answer any SEVEN questions. (7 x 5 = 35)

1. Explain partial asymmetric synthesis.
2. Basicity of pyridine.
3. Dakin reaction.
4. Any three methods of determination of configuration of geometrical isomerism.
5. Conformational isomerism of cyclohexane.
6. Electrophilic aromatic substitution reactions of pyrrole.
7. Reactions of chiral molecules.
8. Chemical reactions of thiophene.
9. Stereoselective reactions.

III. Short answers on: Answer ALL questions. (10 x 2 = 20)

1. Schmidt rearrangement.
2. Reduction reaction of thiazole.
3. Conformers of ethane.
4. Define optical isomers.
5. Medicinal uses of purine.
6. Aromaticity of furan.
7. Structure and uses of acridine.
8. Optical isomers of tartaric acid.
9. Any one reduction reaction using sodium boro hydride.
10. Oxidation of pyridine.

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