

Printed Pages: 01

Sub Code: BP401T

Paper Id: **150299**

Roll No. 

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**B PHARM**  
**(SEM IV) THEORY EXAMINATION 2018-19**  
**PHARMACEUTICAL ORGANIC CHEMISTRY –III**

**Time: 3 Hours**

**Total Marks: 75**

**Note:** Attempt all Sections. If you require any missing data, choose suitably.

**SECTION A**

**1. Attempt all questions in brief**

**10 x 2 = 20**

- a) Give the structure and uses of imidazole and indole
- b) Why study of stereochemistry in chemistry is important.
- c) Write about dakin reaction
- d) Discuss about the basicity of pyridine
- e) What are meso compounds
- f) What is partial and absolute symmetric synthesis
- g) What are stereospecific and stereoselective reactions
- h) What is D and L nomenclature
- i) Write the synthesis of furan
- j) What are the conditions of optical isomerism

**SECTION B**

**2. Attempt any two parts of the following:**

**2 X 10 = 20**

- a) Write about nomenclature and methods of determination of geometrical isomerism with examples
- b) Discuss with examples the rules of nomenclature and classification of heterocyclic compounds
- c) Give synthesis and reactions of i) thiophene ii) imidazole

**SECTION C**

**3. Attempt any five parts of the following:**

**7 X 5 = 35**

- a) Give short note on wolf-kishner reduction
- b) Explain the Beckmann rearrangement reaction with examples
- c) Write the synthesis and medicinal uses of pyrimidines and purine derivatives
- d) Discuss about stereoisomerism in biphenyl compounds
- e) Give synthesis of oxazole and thiazole with their medicinal uses
- f) Compare aromaticity and reactivity of pyrrole and furan
- g) Discuss optical isomerism with examples

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**B. PHARM**  
**(SEM-IV) THEORY EXAMINATION 2019-20**  
**PHARMACEUTICAL ORGANIC CHEMISTRY III**

**Time: 3 Hours****Total Marks: 75**

**Note:** 1. Attempt all Sections. If require any missing data; then choose suitably.  
 2. Any special paper specific instruction.

**SECTION A****1. Attempt all questions in brief.****10 x 2 = 20**

|    |                                                                              |
|----|------------------------------------------------------------------------------|
| a. | Differentiate chiral and achiral molecule.                                   |
| b. | Explain E and Z isomers with suitable example.                               |
| c. | Draw conformers of ethane.                                                   |
| d. | Write any two synthetic procedures for preparation of pyrrole.               |
| e. | Why meso compounds are optically inactive?                                   |
| f. | Draw structure of any two five member heterocyclic compound and their use.   |
| g. | Name the reducing agent used in Clemmensen reduction.                        |
| h. | Give chemical reaction used for conversion of Aldehyde directly into Alkane. |
| i. | Give structure and use of imidazole.                                         |
| j. | Define term d, l, D and L                                                    |

**SECTION B****2. Attempt any two parts of the following:****2 x 10 = 20**

|    |                                                                              |
|----|------------------------------------------------------------------------------|
| a. | What is racemic modification? How can you resolve racemic mixture?           |
| b. | Give definition and reaction mechanism for Wolff kishner and Dakin reaction. |
| c. | Give preparation, properties and medicinal uses of pyridine.                 |

**SECTION C****3. Attempt any five parts of the following:****7 x 5 = 35**

|    |                                                                                 |
|----|---------------------------------------------------------------------------------|
| a. | Give RS system of nomenclature of optical isomers with sequence rules.          |
| b. | Write a note on stereospecific and stereoselective reaction.                    |
| c. | Explain partial and absolute asymmetric synthesis.                              |
| d. | Give synthesis and medicinal uses of pyrrole.                                   |
| e. | Give importance of LiAlH <sub>4</sub> in metal hydride reduction.               |
| f. | Give reaction and mechanism for Schmidt rearrangement.                          |
| g. | Give synthesis, properties and medicinal use of azepines and their derivatives. |

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**BPHARM**  
**(SEM IV) THEORY EXAMINATION 2021-22**  
**PHARMACEUTICAL ORGANIC CHEMISTRY III – THEORY**

**Total Marks: 75***Time: 3 Hours***Note:** 1. Attempt all Sections. If require any missing data; then choose suitably.**SECTION A**

1. Attempt all questions in brief.

**10 x 2 = 20**

- |    |                                                                         |
|----|-------------------------------------------------------------------------|
| a. | Define enantiomers with examples.                                       |
| b. | Define meso compounds with examples.                                    |
| c. | Distinguish between E and Z isomers with examples.                      |
| d. | Discuss sequence rules.                                                 |
| e. | Compare the reactivity and aromaticity of pyrrole, furan and thiophene. |
| f. | What is the reduction product of furan? Give its reaction.              |
| g. | Discuss the structure and pharmaceutical uses of Oxazole.               |
| h. | Write the pharmaceutical uses of quinoline and isoquinoline.            |
| i. | Write the synthetic importance of Birch reduction.                      |
| j. | Discuss the Claisen Schmidt condensation reaction.                      |

**SECTION B**

2. Attempt any two parts of the following:

**2 x 10 = 20**

- |    |                                                                                                             |
|----|-------------------------------------------------------------------------------------------------------------|
| a. | Outline the various conformations of cyclohexane in detail.                                                 |
| b. | Classify heterocyclic compounds. Discuss the nomenclature of heterocyclic compounds with suitable examples. |
| c. | Write down the synthesis, reactions and medicinal uses of Imidazole and Thiazole.                           |

**SECTION C**

3. Attempt any five parts of the following:

**5 x 7 = 35**

- |    |                                                                                            |
|----|--------------------------------------------------------------------------------------------|
| a. | Describe DL system of nomenclature of optical isomers with suitable example.               |
| b. | Describe stereo isomerism in biphenyl compounds and its conditions for optical activity.   |
| c. | Write down the synthesis, reactions, and medicinal uses of Pyrrole and Thiophene.          |
| d. | Describe in detail about the stereospecific and stereoselective reactions with examples.   |
| e. | Write down the synthesis and medicinal uses of Pyridine also discuss basicity of Pyridine. |
| f. | Discuss in detail about the synthesis and pharmaceutical uses of pyrimidine and purine.    |
| g. | Discuss the reaction and mechanism of Metal hydride reduction.                             |

**B PHARM**  
**(SEM IV) THEORY EXAMINATION 2022-23**  
**PHARMACEUTICAL ORGANIC CHEMISTRY-III**

*Time: 3 Hours**Total Marks: 75*

**Note:** Attempt all Sections. If require any missing data; then choose suitably.

**SECTION A**

**1. Attempt all questions in brief.** **10 x 2 = 20**

- (a) Differentiate between DL and dl system of nomenclature.
- (b) Define the term chiral compound and chiral carbon.
- (c) Write the necessary conditions for any compound to show GI.
- (d) Illustrate the Newmann projection of cyclohexane.
- (e) What are heterocyclic compounds? Give examples.
- (f) Give the reactivity order of Pyrrole, Furan and Thiophene.
- (g) Why pyridine is basic in nature?
- (h) Give the reaction involved in birch reduction.
- (i) Give the reaction involved in Dakin's reaction.
- (j) Draw the structure of any two heterocyclic compounds containing two hetero atoms.

**SECTION B**

**2. Attempt any two parts of the following:** **2 x 10 = 20**

- (a) Write synthesis, reaction and medicinal uses of pyrrole. Also comment on its resonance.
- (b) Discuss nomenclature of heterocyclic compounds with proper examples.
- (c) Explain the terms: enantiomers, mesomers, diastereomers, racemic modification and atropisomers.

**SECTION C**

**3. Attempt any five parts of the following:** **7 x 5 = 35**

- (a) Give the reaction, mechanism and synthetic importance of metal hydride reduction.
- (b) Give the reaction, mechanism and synthetic importance of Clemmensen reduction or Oppenauer oxidation.
- (c) Write synthesis, reaction and medicinal uses of pyridine.
- (d) Discuss the ESRs and medicinal uses of pyrazole and imidazole.
- (e) Classify heterocyclic compounds as per aromaticity and ring size.
- (f) What are the various naming systems of geometrical isomers? Explain with example.
- (g) Comment on the nomenclature of optical isomers.



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**BPHARMA**  
**(SEM IV) THEORY EXAMINATION 2023-24**  
**PHARMACEUTICAL ORGANIC CHEMISTRY III – THEORY**

TIME: 3 HRS

M.MARKS: 75

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

**SECTION A**

1. Attempt *all* questions in brief.

10 x 2 = 20

|    |                                                                           |
|----|---------------------------------------------------------------------------|
| a. | Define diastereoisomers with example.                                     |
| b. | Why propionic acid is not optically active?                               |
| c. | Illustrate newmann projection for ethane.                                 |
| d. | What are the conditions for biphenyl compounds to show optical isomerism? |
| e. | Define heterocyclic compounds with proper example.                        |
| f. | Give the main reaction involved in dakin's reaction.                      |
| g. | Write Pall-Knorr synthesis of pyrrole.                                    |
| h. | Illustrate the reaction based on birch reduction.                         |
| i. | Discuss medicinal uses of furan.                                          |
| j. | What is chirality?                                                        |

**SECTION B**

2. Attempt any *two* parts of the following:

2 x 10 = 20

|    |                                                                                                       |
|----|-------------------------------------------------------------------------------------------------------|
| a. | Explain reaction, mechanism and medicinal uses of wolf kischner reaction or beckmann's rearrangement. |
| b. | Discuss nomenclature of heterocyclic compounds with proper examples.                                  |
| c. | How imidazole is amphoteric? Discuss its synthesis, reactions and medicinal uses.                     |

**SECTION C**

3. Attempt any *five* parts of the following:

7 x 5 = 35

|    |                                                                                        |
|----|----------------------------------------------------------------------------------------|
| a. | Classify heterocyclic compounds with suitable examples.                                |
| b. | Write synthesis, reactions and uses of thiophene.                                      |
| c. | Discuss reaction and mechanism involved in clemmensen reduction.                       |
| d. | Give various <u>naming systems used</u> for <u>naming geometrical isomers</u> .        |
| e. | Chair form of <u>cyclohexane</u> is more stable than boat form. Explain in detail.     |
| f. | Discuss various methods used in determination of configuration of Geometrical isomers. |
| g. | Comment on any two: a) basicity of pyridine, b) optical activity and c) mesomer        |

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**BPHARM**  
**(SEM IV) THEORY EXAMINATION 2024-25**  
**PHARMACEUTICAL ORGANIC CHEMISTRY III – THEORY**

**TIME: 3 HRS**

**M.MARKS: 75**

**Note:** 1. Attempt all Sections. If require any missing data; then choose suitably.

**SECTION A**

**1. Attempt all questions in brief. 10 x 2 = 20**

|    |                                                                     |
|----|---------------------------------------------------------------------|
| a. | What is the difference between diastereomers and enantiomers?       |
| b. | Explain the structural features that define a meso compound.        |
| c. | What is the difference between cis and trans isomerism?             |
| d. | What is conformational isomerism in ethane?                         |
| e. | How does the presence of sulfur in thiophene affect its reactivity? |
| f. | What are the common uses of Oxazole?                                |
| g. | How is Acridine used in the synthesis of dyes?                      |
| h. | How is Quinoline synthesized?                                       |
| i. | Why is pyridine less basic than alkylamines?                        |
| j. | How is a racemic mixture different from a pure enantiomer?          |

**SECTION B**

**2. Attempt any two parts of the following: 2 x 10 = 20**

|    |                                                                                                                                                 |
|----|-------------------------------------------------------------------------------------------------------------------------------------------------|
| a. | What is the DL system of nomenclature in stereochemistry, and how is it applied to optical isomers?                                             |
| b. | Explain the reactivity of pyrrole towards electrophilic substitution reactions. What factors influence the regioselectivity of these reactions? |
| c. | Explain the concept of atropisomerism in biphenyl compounds. How does it differ from other types of stereoisomerism?                            |

**SECTION C**

**3. Attempt any five parts of the following: 7 x 5 = 35**

|    |                                                                                                                                                                      |
|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| a. | Explain the role of chirality in optical isomerism and why chiral compounds exhibit optical activity.                                                                |
| b. | What is the Cahn-Ingold-Prelog priority rules, and how is it applied to determine the configuration of isomers?                                                      |
| c. | How can pyrazole be synthesized using 1,3-dipolar cycloaddition reactions, and what are the advantages of this method?                                               |
| d. | What are the common synthetic methods for preparing furan and its derivatives? Provide a detailed reaction mechanism for one of the methods.                         |
| e. | What is a racemic mixture, and how does it differ from an optically active compound?                                                                                 |
| f. | Define the concept of symmetry in the context of molecular and crystallography studies. How do symmetry operations play a role in understanding molecular structure? |
| g. | How do the reactivity patterns of chiral molecules differ from those of their achiral counterparts in stereoselective reactions?                                     |



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Roll No:

BPHARM

(SEM. IV) THEORY EXAMINATION 2025-26

PHARMACEUTICAL ORGANIC CHEMISTRY III – THEORY

TIME: 3 HRS

M.MARKS: 75

**Note:** 1. Attempt all Sections. If require any missing data; then choose suitably.

## SECTION A

1. Attempt *all* questions in brief.

2x10 = 20

|     |                                                                                |
|-----|--------------------------------------------------------------------------------|
| (a) | What do you understand by the relative and absolute system of configuration?   |
| (b) | What are the conditions required for optical isomerism in an organic compound? |
| (c) | Define specific rotation.                                                      |
| (d) | What is the difference between stereospecific and stereoselective reactions?   |
| (e) | Write down the structure and medicinal uses of thiophene.                      |
| (f) | Arrange furan, thiophene, and pyrrole in ascending order of aromaticity.       |
| (g) | Why is oxazole less reactive than imidazole?                                   |
| (h) | Differentiate between the racemic mixture and meso compounds.                  |
| (i) | Compare the basicity of pyridine with that of aliphatic amines.                |
| (j) | Write down the synthetic applications of the Birch reaction.                   |

## SECTION B

2. Attempt any *two* of the following:

10 x 2 = 20

|     |                                                                                                     |
|-----|-----------------------------------------------------------------------------------------------------|
| (a) | Define racemic modification and explain various methods for the resolution of racemic modification. |
| (b) | Explain in detail the nomenclature in heterocyclic compounds.                                       |
| (c) | Discuss in detail the structure, synthesis, properties, and medicinal uses of pyridine.             |

## SECTION C

3. Attempt any *five* part of the following:

7 x 5 = 35

|     |                                                                                               |
|-----|-----------------------------------------------------------------------------------------------|
| (a) | Write a detailed note on the element of symmetry in an organic compound.                      |
| (b) | Explain conformational isomerism in cyclohexane.                                              |
| (c) | Explain the following in detail.<br>i. Fisher indole synthesis<br>ii. Wolff-Kishner reduction |
| (d) | Discuss the structure and reactions of furan.                                                 |
| (e) | Discuss in detail the Clemmensen reduction and its synthetic applications.                    |
| (f) | Explain the following in detail.<br>i. Birch Reduction<br>ii. Hantzsch pyridine synthesis     |
| (g) | Write a detail about the Oppenauer oxidation along with its synthetic applications.           |