

APRIL - 1990

014

SECOND B.Pharm. EXAMINATION, APRIL 1990

ADVANCED PHARMACEUTICAL ORGANIC CHEMISTRY

Time : Three hours

Maximum : 100 marks

- (i) Answer any SIX questions of which Questions 4 and 8 compulsory.
- (ii) Write the structural formulae wherever necessary.

SECTION I

- 1. Mention different methods of preparation and important reactions of pyridine or pyrrole. (15)
- 2. Discuss different methods of synthesis and the chemical reactions of diphenyl methane and thiophen. (15)
- 3. Discuss the isomerism of the tartaric acids. (15)
- 4. Write explanatory notes on the following and mention their uses :
 - (a) Hantzsch synthesis.
 - (b) Fischer's synthesis.
 - (c) Friedlander synthesis.
 - (d) Elb's reaction. (20)

5. Give an important synthetic method for preparing pyrimidine. Explain the structures of its three isomers. Mention the physiological importance of the derivatives of pyrimidines. (15)

6. Discuss three different methods of synthesis of anthracene. Mention some of its important properties. How can anthracene be converted to anthraquinone and dithranol ? (15)

7. Discuss geometrical isomerism with examples. What are the specific properties, which are essential in the molecules of compounds, to exhibit geometrical isomerism ?

8. Write notes on the following :

- (a) Optical activity.
- (b) Configurational formula.
- (c) Resolution of racemic modifications.
- (d) Walden inversion. (20)

OCTOBER - 1990

014

SECOND B.Pharm. DEGREE EXAMINATION,
OCTOBER 1990.

Paper II — ADVANCED PHARMACEUTICAL ORGANIC
CHEMISTRY

Time : Three hours. Maximum : 100 marks.

Answer SIX questions.

Questions No. 1 and 5 are compulsory.

Write the structural formulae wherever necessary.

1. Define and classify Heterocyclic compounds, giving examples for each class with the structural formulae. Explain various methods (reactions) used to open the ring (Ring fission) of heterocyclic compounds. (18 marks)
2. Mention different methods of preparation and important reactions of QUINOLINE (Or) PYRROLE. (16 marks)
3. Discuss different methods of preparation and chemical reactions of TRI-PHENYL METHANE. How can it be converted to Triphenyl carbinol and Triphenyl methyl chloride? Give the skeleton structure of Triphenyl methane dyes. (16 marks)
4. Write explanatory notes of the following and mention their uses :
 - (a) Uses of pyridine in organic chemistry.
 - (b) Skraup's synthesis.
 - (c) Paal-Knorr synthesis.
 - (d) Friedel-Crafts condensation. (4 × 4 = 16 marks)

5. Discuss the preparation and various chemical reactions of NAPHTHALENE. (18 marks)

6. Write explanatory notes of the following. Give their uses.

(a) Azoles.

(b) Indole.

(c) Elbs reaction.

(d) Walden inversion. (4 × 4 = 16 marks)

7. Explain stereo-isomerism. Discuss the two different types of isomerism under this head with various examples. Mention the specific properties, which are essential in the molecules of compounds, to exhibit these types of isomerism. (16 marks)

8. Write short notes on :

(a) Uses of pyridine in organic chemistry.

(b) Hofmann exhaustive methylation.

(c) Physiological importance of the derivatives of pyrimidines.

(d) Diphenyl ethane. (4 × 4 = 16 marks)

039

SECOND B.PHARM. DEGREE EXAMINATION, APRIL 1991

Paper II — ADVANCED PHARMACEUTICAL ORGANIC
CHEMISTRY

Time : Three hours.

Maximum : 100 marks.

Answer SIX questions.

Questions No. 1 and 5 are compulsory.

Write chemical equations and structural formulae
wherever necessary.

1. (a) Briefly explain the systematic method of Nomenclature of Heterocyclic compounds, with suitable examples. (6 marks)
(b) Write name and structure of any three heterocyclic rings having "oxygen" as hetero atom. (3 marks)
(c) Give an account of the synthesis and reactions of pyrrole. (9 marks)
2. Write notes on the followings :
(a) Friedel Crafts reaction and its use in the synthesis of polynuclear hydrocarbons. (5 marks)
(b) Fisher's Indole synthesis. (5 marks)
(c) Elements of symmetry. (6 marks)
3. Explain the preparation and chemical reactions of Naphthalene. (16 marks)

4. (a) Explain the chemistry of Diphenyl Methane. (10 marks)
(b) Name the pharmaceutically important compounds of Triphenyl methane derivatives. Write their skeleton structure and use. (6 marks)
5. (a) Define stereo isomerism. Name the types of stereo isomerisms you have studied. (4 marks)
(b) What are enantiomers? Give two examples. Compare the physical, chemical and Biological properties of enantiomers. (7 marks)
(c) What are diastereomers? Give two examples. Compare the physical, chemical and biological properties of diastereomers. (7 marks)
6. Write notes on the followings :
(a) Meso compounds. (5 marks)
(b) Partial Asymmetric synthesis. (5 marks)
(c) Atropi isomerism. (6 marks)
7. Write an essay on the chemistry of Quinoline and Isoquinoline. (16 marks)
8. Write note on the followings :
(a) Phenothiazine. (6 marks)
(b) Conformation. (5 marks)
(c) 'Z' and 'E' configuration. (5 marks)

APRIL - 1993

[RS 537]

SECOND B.Pharm. DEGREE EXAMINATION.

(Old Regulations)

Paper II — ADVANCED PHARMACEUTICAL
ORGANIC CHEMISTRY

Time : Three hours

Maximum : 100 marks

Answer SIX questions.

Question No.1 and 5 are compulsory.

Give chemical equations wherever necessary.

1. (a) Give a general classification of Heterocyclic compounds with examples, add a note on their nomenclature.

(b) Explain the synthesis of quinoline and main reaction.

(c) Name the compounds of quinoline of medical importance and uses. (8 + 6 + 4)

2. (a) Discuss the synthesis and chemistry of Anthracene, with important reactions.

(b) Give the names and structures of medically important compounds of Anthracene. (12 + 4)

3. (a) Discuss the stereochemistry of (i) Diphenyl molecule and (ii) Nitrogen compounds.

(b) Write a brief account of Hybridization of orbitals. (10 + 6)

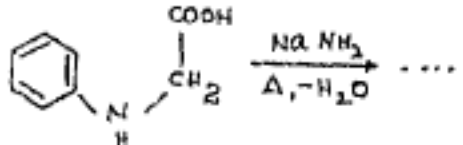
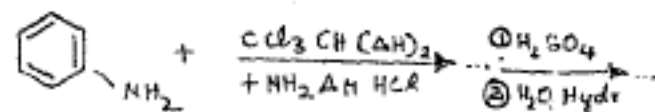
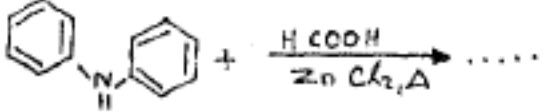
4. Write short notes on :

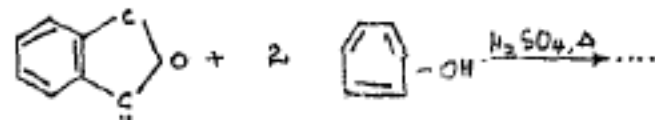
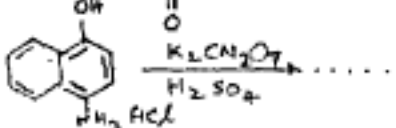
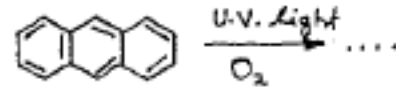
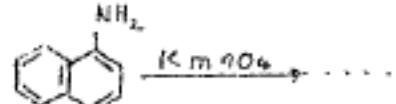
- Optical isomerism and optical activity.
- Geometrical isomerism.
- Steric hindrance in organic compounds.
- Conformational analysis. (4 × 4 = 16)

5. (a) What is inversion of configuration? Explain with examples using Walden Inversion reaction.

- How is resolution of racemic mixtures achieved?
- What is asymmetric synthesis? Give example. (6 × 3 = 18)

6. Explain the reactions, conditions and name the products in the following cases : (2 × 8 = 16)

-  (a) Nc1ccccc1CC(=O)O $\xrightarrow[\Delta, -H_2O]{NaNH_2}$
-  (b) Nc1ccccc1 + CC(Cl)(Cl)C(=O)O $\xrightarrow[+ NH_2\Delta H\ HCl]{CCl_3CH(\Delta H)_2}$ $\xrightarrow[②\ H_2O\ Hydr]{①\ H_2SO_4}$
-  (c) Nc1ccccc1Nc2ccccc2 + O=C(O)O $\xrightarrow[ZnCl_2, \Delta]{HCOOH}$
-  (d) c1ccccc1/C=C/c2ccccc2 $\xrightarrow{\Delta}$

-  (e) C1=CC=C2C(=C1)C=CC2 + 2 C1=CC=CC=C1O $\xrightarrow[H_2SO_4, \Delta]{}$
-  (f) Nc1ccc(O)cc2ccccc12 $\xrightarrow[H_2SO_4]{K_2CN_2O_7}$
-  (g) c1ccc2cc3ccccc3cc2c1 $\xrightarrow[O_2]{U.V. Light}$
-  (h) Nc1ccc(O)cc2ccccc12 $\xrightarrow{KMnO_4}$

7. (a) What is Keto-enol interconversion? How does it differ from resonance structures?

(b) Why Mesotartaric acid does not show optical activity? How does it differ from dil. tartaric acid?

(c) What is Diels Alder Reaction? Explain its mechanism with example. (4 + 6 + 6)

8. (a) Give all possible isomers of the following compounds :

(i) CH_3-CH(OH)COOH.

(ii) $\begin{array}{c} \text{CHOH COOH} \\ | \\ \text{CHOH COOH} \end{array}$

(iii) $\begin{array}{c} \text{CH-COOH} \\ || \\ \text{CH-COOH} \end{array}$

(b) Discuss the stereochemistry of cyclohexane derivatives. (8 × 2 = 16)

APRIL - 1993

[RS 542]

SECOND B.Pharm. DEGREE EXAMINATION,

(New Regulations)

Paper II — ADVANCED PHARMACEUTICAL ORGANIC
CHEMISTRY

Time : Three hours

Maximum : 90 marks

Two and a half hours

for Sections A and B

Sections A and B : 60 marks.

Answer Sections A and B in separate answer books.

Answer Section C in the answer sheet provided.

SECTION A — (2 × 15 = 30 marks)

Answer any TWO questions.

1. What do you understand by the term chirality? Explain with suitable examples. What are the factors that make a molecule dissymmetric? Give one method for asymmetric synthesis.

2. Outline two methods each for the synthesis of the following :

- (a) Indole
- (b) Imidazole
- (c) Isoquinoline.

3. What type of compounds exhibit geometric isomerism? Explain how the configuration of geometric isomers can be established in the case of oximes, with suitable examples.

4. What is resolution? Give different methods that are employed with suitable examples. Write a note on Walden inversion.

SECTION B — (6 × 5 = 30 marks)

Answer any SIX questions.

5. Give three reactions for the following :

- (a) Thiophen
- (b) Acridine
- (c) Pyridine.

6. Explain and compare the aromaticity of the following :

- (a) Pyridine
- (b) Pyrimidine
- (c) Pyrrole.

7. Discuss in brief the conformational isomers arising out of cyclic compounds.

8. Explain the following terms with suitable examples :

- (a) Absolute configuration.
- (b) R & S forms.
- (c) Epimers.

9. Give the preparation and reactions of

- (a) Triphenyl methane.
- (b) Phenothiazine
- (c) Thiazole.

10. Write a note on stereochemistry of biphenyls.

11. Write down the Fisher projection formula for lactic acid. Indicate the different isomers of tartaric acid by drawing structures. What is a diastereomer? Define and explain.

12. Describe the various conformational isomers of n-butane and with energy diagram and Newman's projection formula explain their stabilities.

13. Give the synthesis of phenanthrene. Give examples of medicinally useful compounds belonging to this group.

[PR154]

SECOND B.Pharm. DEGREE EXAMINATION

(Old Regulations)

Paper II — ADVANCED PHARMACEUTICAL
ORGANIC CHEMISTRY

Time : Three hours

Maximum : 100

Answer any SIX questions.

Question No. 1 and 5 are compulsory.

Give chemical equations wherever necessary.

1. (a) Discuss the synthesis and reactions of pyridine.

(b) How is Thiazole synthesised? Give its important reactions and derivative of pharmaceutical importance.

(c) Name with structures the medicinally important compounds of acridine. (6)

2. (a) How is phenothiazine synthesised? How is it numbered? Name important derivatives of phenothiazine and uses.

(b) How will you synthesise acridine? Give its important reactions.

(c) Name medicinally useful compounds of Quinoline and give their uses. (6)

R 154]

(a) Give the synthesis of Indole and its important reactions.

(b) Give the electronic structures and reaction behaviours

(i) Pyrrole (ii) Pyrazole (iii) Imidazole. (10 + 6)

Write short notes on : (6 + 6 + 4)

(a) Mechanism of

(i) Bischler-Napieralski reaction.

(ii) Fischer-Indole synthesis.

(b) Importance of Molecular symmetry in organic compounds.

(c) Classify polynuclear hydrocarbons with examples.

(d) What are triphenyl methane dyes? How will you synthesise (i) Malachite green (ii) Rosaniline. Give their uses.

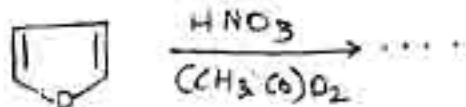
(e) Give the method of preparation and reactions of anthracene.

(f) Give structures and uses of (i) methyl violet (ii) crystal violet (iii) acetanaphthone. (3 + 8 + 4 + 3)

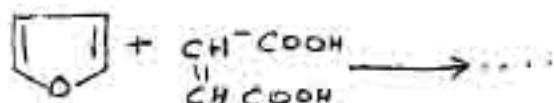
[PR 154]

6. Name the reaction products with conditions : (8 × 2 = 16)

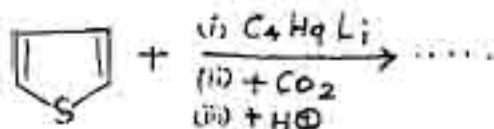
(a)



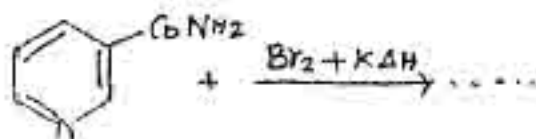
(b)



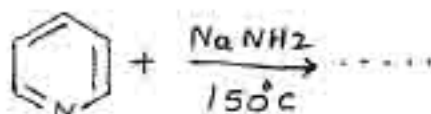
(c)



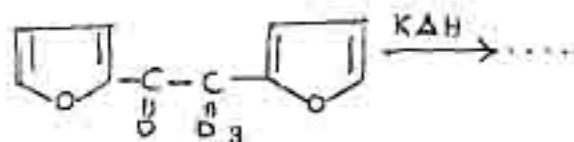
(d)



(e)

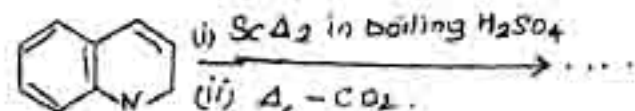


(f)

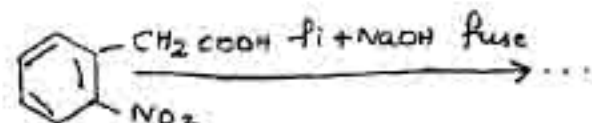


[PR 154]

(g)



(h)



7. (a) Discuss the chemistry of amines and oximes and their importance in synthetic chemistry with example.

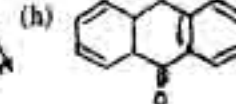
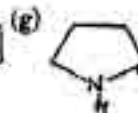
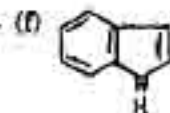
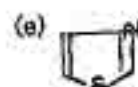
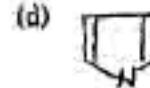
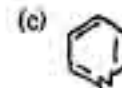
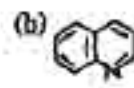
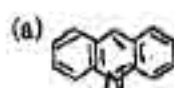
(b) Explain the rules of nomenclature of isomers.

(c) What is optical activity? Discuss the molecular structural requirements so that a compound shows optical activity.

(8 + 8)

8. Name one compound each for the following basic nuclei showing medicinal uses for each one of them.

(8 × 2 = 16)



NOVEMBER - 1993

[PR 159]

SECOND B.Pharm. DEGREE EXAMINATION.

(New Regulations)

Paper II — ADVANCED PHARMACEUTICAL ORGANIC
CHEMISTRY

Time : Three hours

Maximum : 90 marks

Two and a half hours

for Sections A and B

Sections A and B : 60 marks

Answer Sections A and B in separate answer books.

Answer Section C in the answer sheet provided.

SECTION A — (2 × 15 = 30 marks)

Answer any TWO questions.

1. What are enantiomers? What are dia-stereomers? Explain clearly the phenomenon with suitable examples. Explain the conditions that are required for optical activity.

2. Outline the synthetic methods for the following heterocycles. Give two examples of medically useful compounds for each group.

- (a) Thiazole.
- (b) Quinoline.
- (c) Acridine.

PR 159
NOVEMBER - 1993

3. What do you understand by the term restricted rotation? How does this give rise to geometric isomerism? Give all the possible examples to explain the same. Explain the stereochemistry of fused ring compounds.

4. What is aromaticity? Compare the aromaticities of pyrrole, thiophene, furan, pyron and pyridine. Discuss the electrophilic substitution reactions and nucleophilic substitution reactions with regard to indole and pyrrole.

SECTION B -- (6 × 5 = 30 marks)

Answer any SIX questions.

5. Give three reactions each for the following :

- (a) Isoquinoline.
- (b) Pyrazole.
- (c) Phenothiazine.

6. Give the methods of preparation for the following :

- (a) Anthracene.
- (b) Naphthalene.

Give two reactions for each class of compounds.

7. Write notes on the following (any TWO) :

- (a) Asymmetric synthesis.
- (b) Anti and skew conformations.
- (c) Walden inversion.

8. Explain syn and anti forms with suitable example. How do you establish their structures?

9. Describe different methods of resolution of a racemic mixture.

10. Give the structures of boat and chair forms of cyclohexane. Discuss the stabilities of the different conformational isomers of cyclohexane with the help of energy diagram and Newman's projection formula.

11. Describe the synthesis of

- (a) Pyrimidine.
- (b) Imidazole.

12. Write a note on sequence rules to decide R & S configurations.

13. How did taking the configuration of glyceraldehyde molecule help in the configurations of carbohydrates? Explain.

NOVEMBER - 1994

[ND 571]

SECOND B.Pharm. DEGREE EXAMINATION

(Old Regulations)

Paper II — ADVANCED PHARMACEUTICAL
ORGANIC CHEMISTRY

Time: Three hours.

Maximum: 100 marks.

Answer ALL the questions.

All questions carry equal marks.

1. Write a detailed account on aromaticity, basicity, reactivity and the methods of synthesis of (a) pyrrole and
2. Discuss the analytical and synthetic evidences for the establishment of the structures of naphthalene and phenanthrene.
3. What is a racemic modification? How is this obtained? Explain the various methods with examples for the resolution of a racemic mixture.
4. Write a detailed note on :
 - (a) Walden inversion
 - (b) Asymmetric synthesis
 - (c) Stereochemistry of cyclic compounds.

[ND 571]

5.
 - (a) Explain the modern theory of double bonds.
 - (b) Explain the conditions and significance of restriction of rotation about a double bond.
 - (c) Write a note on the methods for the determination of configuration of Geometrical Isomers.
6. Write notes on :
 - (a) Elements of symmetry
 - (b) Evidences for the tetrahedral nature of carbon
 - (c) Configuration of diphenyl molecule.

NOVEMBER - 1994

[ND 576]

SECOND B.Pharm. DEGREE EXAMINATION.

(New Regulation)

Paper II — ADVANCED PHARMACEUTICAL ORGANIC CHEMISTRY

Time : Three hours Maximum : 90 marks
Two and a half hours Section A and B : 60 marks
for Section A and B

Answer Section A and B in separate answer books.

Answer Section C in the answer sheet provided.

SECTION A — (2 × 15 = 30 marks)

Answer any TWO questions.

1. (a) What are heterocyclic compounds? Write a note on classification, nature, numbering and nomenclature of heterocyclic compounds. (5)
- (b) Outline the general method of synthesis for the following : (6)
(i) Furan (ii) Pyrimidine (iii) Indole (iv) Acridine.
- (c) Write the skeleton structure and medicinal uses of one important compound each of above heterocyclics. (4)
2. Discuss the analytical and synthetic evidences for the establishment of the structures of Naphthalene and phenanthrene. (8 + 7)

NOVEMBER - 1994

[ND 576]

3. Explain the following with relevant examples :
- (a) Enantiomers and diastereomers.
 - (b) Elements of symmetry.
 - (c) Absolute configuration of an optical isomer. (15)
4. (a) What are geometrical isomers? Which type of compounds can exhibit this isomerism? (5)
- (b) Write a note on the nomenclature of geometrical isomers with suitable examples. (5)
- (c) Discuss the stereochemistry of cyclic compounds. (5)

SECTION B — (6 × 5 = 30 marks)

Answer any SIX questions.

Each question carries 5 marks.

- 5. Write preparation and reactions of triphenylmethane.
- 6. Discuss the two methods of synthesis of pyridine. Compare its important reactions with Benzene.
- 7. Write a method of synthesis of quinoline. Give the skeletal structure of two important derivatives each of quinoline used as antimalarial and antiamoebic.
- 8. Discuss the conformational analysis of *n*-Butane.
- 9. Write a detailed note on asymmetric synthesis.

[ND 576]

- 10. Resolution methods of a racemate.
 - 11. Explain the methods to determine the configuration of a geometrical isomer.
 - 12. Discuss the stereochemistry of Nitrogen compounds.
-

APRIL - 1995

[SB 578]

Second B. Pharm. Degree Examination

(New Regulations)

**Paper II—ADVANCED PHARMACEUTICAL
ORGANIC CHEMISTRY**

Time : Three hours Maximum : 90 marks
Two and a half hours Sec. A and B : 60 marks
for Sections A and B

Answer Sections A and B in separate answer books

Answer section C in the answer sheet provided

SECTION—A (2X15=30)

Answer any TWO questions

1. Write notes on the synthetic method, structure, aromaticity and reactions of
 - a) Pyrrole
 - b) Furan

($7\frac{1}{2} + 7\frac{1}{2} = 15$)
2. Explain the source, evidence for the structure, synthetic methods, reactions including orientation and important derivatives of Naphthalene. (15)
3. a) What are the methods available for the resolution of racemic modification? Explain them with example.

b) Write notes on the isomerism exhibited by oximes and amines. Mention their nomenclature.

(8+7)

4. a) Explain sequence rule and their use in naming Geometrical isomerism.

b) Write the structure and number the carbons of acridine, phenothiazine, quinoline and iso-quinoline. Name a drug having each of the above nucleus and mention the use. (9+6)

SECTION—B (6X5=30)

Answer any SIX questions

5. Write the synthetic methods for imidazole
6. Write notes on the synthesis of Triphenyl methane and its properties.
7. Define confirmation. Show the types of confirmation in cyclohexane and their relative stability.
8. Explain the mechanism of walden inversion.
9. Explain the absolute asymmetric synthesis. How does it differ from partial asymmetric synthesis.
10. Write the structure of all possible isomers in the following compounds.
 - a) 2 Butene dioic acid
 - b) 2,5—dimethyl cyclopetane
 - c) 2 Methyl-3 penten - 2 - ol
 - d) 2-2' dinitro 6,6' diphenic acid
11. Write the synthetic methods Quinoline
12. Write notes on Atropisomerism
13. Name the element of symmetry. Explain any one of them with suitable examples.

NOVEMBER - 1995

[MB 711]

Second B. Pharm Degree Examination

(New Regulations)

**Paper II - ADVANCED PHARMACEUTICAL
ORGANIC CHEMISTRY**

Time : Three hours Maximum : 90 marks

Two and a half hour Sec. A and B : 60 marks

for Sec. A and B

Answer section A and B in separate answer books

Answer Section C in the answer sheet provided

SECTION—A (2X15 = 30)

Answer any TWO questions

1. Write notes on the synthesis, reactions, structure and basicity of pyridine. Write the structure of three drugs having pyridine ring and mention their use.
2. a) Enumerate the synthetic methods for Diphenyl methane and Triphenylmethane and write notes on the acidic property of these two compounds.
b) Write the structures of important diphenyl ethane and Triphenyl methane derivatives and mention their use. (10+5)
3. a) Explain the mechanism and factors affecting walden Inversion.
b) What are conformations? With diagrams show the different conformations of n - Butane. Discuss the relative stability of different conformation. (8+7)
4. a) What is Atropisomerism? What are the conditions for the same? Give examples.
b) What do you mean by asymmetric synthesis? Explain the partial and absolute asymmetric synthesis with examples. (7+8)

SECTION—B

(6×5 = 30)

Answer any SIX questions.

5. Write notes on the nomenclature of Hetero cyclic rings.
6. Explain the synthetic methods of furan.
7. Write notes on the structure of naphthalene along with evidence.
8. Explain any two elements of symmetry.
9. Write notes on the isomerism exhibited by cyclopentane derivatives.
10. Explain partial asymmetric synthesis
11. Define the following terms :
 - a) Chirality
 - b) Chiral centre
 - c) Racemic mixture
 - d) Diastereomers
12. Write the structure of all possible stereoisomers of Tartaric acid and show which one is optically inactive and why?
13. Write the structure of Indole and pyrimidine and name any one drug having the above nucleus with their use.

NOVEMBER - 1995

[MB 714]

Second B.Pharm Degree Examination

(Revised Regulations)

Paper II - ADVANCED PHARMACEUTICAL ORGANIC CHEMISTRY

Time : Three hours

Max : 90 marks

Two and a half hour

Sec. A and B : 60 marks

for Sec. A and B

Answer Section A and B in separate answer books

Answer Section C in the answer sheet provided

SECTION—A (2×15=30)

Answer any TWO questions

1. a) Write the structure of naphthalene and briefly mention the conventions used in numbering carbons.
- b) What are the evidences for the structure, including the synthesis of naphthalene.
- c) Explain the reaction of naphthalene with orientation. (2+7+6)

2. a) What is the shape of sp^3 hybrid carbon and what are the evidences for the same?
- b) What do you mean by the elements of symmetry? Explain them with examples.
- c) What do you mean by conformations? Explain various conformation of cyclohexane and their relative stability. (3+6+6)
3. a) Define hydrogenation and explain various catalyst used for the same.
- b) Explain the mechanism of catalytic hydrogenation.
- c) Explain the use of following agents in organic synthesis
 - i) Lead tetra acetate
 - ii) Selenium oxide
 - iii) Lithium aluminium hydride (3+3+9)
4. Write notes on the preparation, structure and properties of
 - a) Pyridine
 - b) Pyrrole

MB 714 - NOVEMBER - 1995

SECTION - B (6X5 = 30)

Answer any SIX questions.

5. Write three methods of synthesis of Diphenyl methane.
6. Write notes on acidity of Triphenyl methane.
7. Define the following terms with examples
 - a) Enantiomers
 - b) Diastereomers
 - c) Mesocompounds
8. What is asymmetric synthesis? Explain partial asymmetric synthesis.
9. Explain the mechanism of Beckman rearrangement.
10. Complete the following reactions
 - a) $\text{CH}_3\text{CHO} + \text{SeO}_2 \rightarrow$
 - b) $\text{R}-\text{CO}-\text{R} \xrightarrow[\text{HCl}]{\text{Zn amalgam}}$
 - c) $\text{R}-\text{OH} \xrightarrow{\text{Thionyl Chloride}}$
11. What are heterocyclic compounds? Write notes on their nomenclature.
12. Write the structure and use of
 - a) Sulphathiazole
 - b) Mepacrine
 - c) Diethyl carbamazine
 - d) Isoniazide
 - e) Chloroquine
13. Write notes on Atropisomerism.

APRIL - 1996

[AK 711]

Subject Code : 4167

Second B. Pharm Degree Examination

(New Regulations)

Paper II - ADVANCED PHARMACEUTICAL
ORGANIC CHEMISTRY

Time : Three hours

Max. : 90 marks.

Two and a half hours

for Section A and B

Sec. A and B : 60 marks.

Answer Sections A and B in separate answer books.

Answer Section C in the answer sheet provided.

SECTION—A (2X15=30)

Answer any TWO questions.

1. a) Classify heterocyclic compound with examples.
b) Give the synthesis of any three
 - 1) Thiazole
 - 2) Pyrazole
 - 3) Pyrimidine
 - 4) Thiophene
c) Name with skeletal structures one of the medicinally useful compound belonging to each of the above heterocyclics. (5+6+4)
2. a) Discuss the structural evidences, and synthesis of phenanthrene and anthracene along with some important derivatives of the two, used in medicine. (8+7)

3. Explain the following with suitable examples.

- i) Chirality and optical activity
- ii) Resonance and stability
- iii) Racemic compounds and resolution methods

4. a) Discuss walden inversion with examples
b) Stereochemistry of nitrogen compounds
c) Conformational Analysis

SECTION—B (6X5=30)

Answer any SIX questions.

5. Give Synthesis of Diphenyl methane, its reactions and medicinally important derivative.
6. Compare Pyridine and Benzene on their reactivity
7. Discuss kraup synthesis with mechanism
8. How is diphenyl synthesised? Give its numbering
9. Give examples of geometric isomers and the basic requirement of structural formation.
10. Explain modern concept of double bond formation
11. Explain tetrahedral nature of carbon
12. Give the paal-knor synthesis.
13. Give the structure of phenothiazine and name two of its derivative of medicinal use.

APRIL - 1996

[AK 714]

Subject Code : 4172

Second B. Pharm Degree Examination

(Revised Regulations)

**Paper II - ADVANCED PHARMACEUTICAL
ORGANIC CHEMISTRY**

Time : Three hours Maximum : 90 marks
Two and a half hours Sec. A and B : 60 marks
for Section A and B

Answer Sections A and B in separate answer books.
Answer Section C in the answer sheet provided.

SECTION - A (2×15=30)

Answer any TWO questions.

1. a) What are heterocyclic compounds? Give the various basic nuclei of each compound with name, numbering rules.
b) Give general method of synthesis of
 1. Furan
 2. Pyrrole
 3. Pyridinec) Name with structures two important compounds of pharmaceutical uses each, for the above compounds (5+6+4)
2. Discuss the analytical and synthetic evidences to establish the chemical structures of
 1. Anthracene and
 2. Naphthalene along with examples for these two group of compounds (7+8)

3. Explain the terms with suitable examples
 1. Optical isomerism
 2. Tetrahedral carbon atom
 3. Elements of symmetry (3×5=15)
4. a) Discuss stereochemistry of Biphenyl
b) Hybridization of orbitals
c) Catalytic hydrogenation (3×5=15)

SECTION - B

Answer any SIX (6×5=30)

5. Give the synthesis and important reactions of Triphenyl methane. Name the important derivatives.
6. Discuss the absolute configuration of an optically active compound.
7. Compare enantiomers and diastereomers.
8. Discuss the stereochemistry of Nitrogen compounds.
9. Discuss walden inversion and its importance.
10. Discuss Merwin - Ponudorf reduction with example.
11. Explain the mechanism and application of Backmann management.
12. Discuss the use of perchloric acid as an oxidising agent.

OCTOBER - 1997

[MS 707]

Sub. Code : 4172

SECOND B.Pharm. DEGREE EXAMINATION.

(Common to New/Revised Regulations)

Paper II — ADVANCED PHARMACEUTICAL ORGANIC
CHEMISTRY

Time : Three hours

Maximum : 90 marks

Two and a half hours

Sec. A & Sec. B : 60 marks

for Sec. A and Sec. B

Section C : 30 marks

Answer Sections A and B in separate answer books.

Answer Section C in the answer sheet provided.

SECTION A — (2 × 15 = 30 marks)

Answer any TWO questions.

1. (a) Discuss the structural elucidation of phenanthrene.

(b) Write the different methods for the synthesis and reactions of phenanthrene.

(c) Write the structure and use of any two medicinally important phenanthrene derivatives. (4 + 8 + 3 = 15)

2. Write notes on the following : (5 × 3 = 15)

(a) Backmann rearrangement.

(b) Meerwin-Pondroff Verley reduction.

(c) Birch reduction.

(d) Schmidt rearrangement.

(e) Clemmensen reduction.

[MS 707]

3. (a) Discuss in detail about the stereo-chemistry associated with fumaric and maleic acids.

(b) Write the important methods of resolving a racemic mixture.

(c) Discuss the optical isomerism of diphenyl derivative. (5 + 5 + 5 = 15)

4. (a) Explain the elements of symmetry with example.

(b) Discuss the conformation of Decalin.

(c) Discuss the isomerism of ketoxime. (6 + 5 + 4 = 15)

SECTION B — (6 × 5 = 30 marks)

Answer any SIX questions.

5. Explain the following reactions :

(a) Skraup's synthesis.

(b) Diels Alder synthesis.

6. Write the methods of synthesis and reactions of Furan.

7. Write the structure of

(a) Carbimazole.

(b) Nicotinic acid.

(c) Piperazine.

(d) Sulphathiazole.

(e) Mepacrine.

8. Explain the phenomenon of Walden Inversion with example.

[MS 707]

9. Differentiate the following

(a) Asymmetric and Pseudo asymmetric.

(b) Enantiomers and diastereomers.

10. What is stereo isomerism? Describe the isomerism of Tartaric Acid.

11. Write the synthesis and chemical reaction of triphenyl methane.

12. Write the structure and name any ten heterocyclic rings containing two hetero atoms.

13. Explain catalytic hydrogenation with suitable examples.

APRIL - 1998

[SV 707]

Sub. Code : 4172

SECOND B.Pharm. DEGREE EXAMINATION.

Paper II — ADVANCED PHARMACEUTICAL
ORGANIC CHEMISTRY

Time : Three hours Maximum : 90 marks
Two and a half hours Sec. A & Sec. B : 60 marks
for Sec. A and Sec. B Section C : 30 marks

Answer Sections A and B in separate answer books.

Answer Section C in the answer sheet provided.

SECTION A — (2 × 15 = 30 marks)

Answer any TWO questions only.

1. Write a note on the following : (3 × 5 = 15)
 - (a) Restricted rotation about single bond in cyclohexane.
 - (b) Geometrical isomerism due to C = N.
 - (c) Resolution of racemic mixtures.
2. (a) What are the necessary and sufficient requirements for a Diphenyl derivative to be optically active?
 - (b) Explain Walden inversion and enumerate the factors influencing it.
 - (c) Write a note on geometrical isomerism of OXIMES and methods used for determining their configuration. (3 × 5 = 15)
3. (a) Define and classify heterocyclic compounds with examples.
 - (b) Explain how furan is aromatic. Compare any two reactions undergone by furan with that of benzene.
 - (c) Describe the products obtained when quinoline and isoquinoline are oxidised by potassium permanganate. (3 + 8 + 4 = 15)

4. Give one method of preparation and any two reactions of

- (a) Quinoline (b) Furan (c) Naphthalene
(d) Pyrrole (e) Thiophene. (5 × 3 = 15)

SECTION B — (6 × 5 = 30 marks)

Answer any SIX questions.

5. Indicate the preferred position of attack on pyridine by electrophilic reagents and give reasons.

6. What are polynuclear hydrocarbons? Give examples. Give the different forms in which phenanthrene can exist.

7. Give the howarth synthesis of Naphthalene and give any two important reactions of Naphthalene with mechanisms.

8. What happens when

- (a) Furfuryl alcohol is treated with methanolic HCl
(b) Pyrrole is treated with boiling alkali and CHCl_3 .
(c) Sodium succinate is heated with phosphorus trisulfide.
(d) Quinoline is treated with benzoylchloride in presence of Alkali.
(e) Pyridine - 2, 3-dicarboxylic acid is heated strongly.

9. Compare the reactivity of Benzene, thiophene, furan and pyrrole towards electrophilic substitution.

10. Define the terms (a) Optical activity (b) Plane polarised light (c) Tautomers (d) Conformations (e) Racemic mixture.

11. Differentiate between the following :

- (a) Asymmetric and Disymmetric molecules.
(b) Configuration and conformation.
(c) Absolute and partial asymmetric synthesis.
(d) Enantiomers and diastereoisomers.

12. Give the structure and use of the following :

- (a) Nikethamide (b) Chloroquine (c) Mepyramine
(d) Sulphathiazole.

13. Give the name structure and use of compounds containing the following heterocycles :

- (a) Indole (b) Pyrrole (c) Imidazole (d) Pyrazole.

OCTOBER - 1998

[SM 707]

Sub Code : 4182

SECOND B.Pharm. DEGREE EXAMINATION.

(Revised Regulations)

Paper II — ADVANCED PHARMACEUTICAL
ORGANIC CHEMISTRY

Time : Three hours

Maximum : 90 marks

Two and half hours

Sec. A & Sec. B : 60 marks

for Sec. A and Sec. B

Section C : 30 marks

Answer Section A and B on Separate Answer Books.

Answer Section C in answer sheet provided.

SECTION A — (2 × 15 = 30 marks)

Answer any TWO questions.

1. (a) What is racemic modification? Discuss the factors which lead to the formation of racemic modification. (5)
(b) Mention the various methods available for resolving the racemic modification and describe any one method in detail. (5)
(c) What is asymmetric synthesis? Give examples under appropriate headings. (5)
2. (a) Give the necessary conditions for a compound to exist as enantiomers. Give examples. (5)
(b) Discuss optical isomerism in compounds which do not contain an asymmetric carbon atom. Give examples. (5)
(c) Define the term conformation. Give the different conformations possible for Cyclohexane and discuss their stability. (2 + 3 = 5)
3. With a suitable example, discuss the mechanism involved in the following. (3 × 5 = 15)
 - (a) Meerwein-Ponndorf reduction
 - (b) Schmidt rearrangement
 - (c) Fischer Indole Synthesis.

OCTOBER - 1998

4. Write a detailed note on:
- (a) Hybridisation of orbitals
 - (b) Modern concept of double bond
 - (c) Evidence for Tetrahedral nature of carbon atom.

SECTION B — (6 × 5 = 30 marks)

Answer any SIX questions.

5. Give the mechanism of Howarth Synthesis of Naphthalene and give any two reactions of Naphthalene.
6. (a) Why Pyridine does not respond to Friedel-Craft's reaction?
- (b) Give the mechanism of any one electrophilic substitution reaction answered by THIOPHENE.
7. With the help of suitable example explain the mechanism involved in any two reactions undergone by Isoquinoline.
8. Give the structure and medicinal use of the following drugs.
- (a) Phenetoyn (b) Iodoxyl (c) Methyl thio uracil
(d) Chinioform (e) Diethylcarbamazine.
9. Write a note on the stereochemistry of Diphenyl compounds.
10. (a) Compare the synthetic utility of Clemenson-reduction and Wolf-Kieshner reduction.
- (b) Give reasons for the greater stability of trans isomers than cis isomers in Alkenes.

11. Give the name, structure and medicinal use of drugs containing the following heterocycles.

(a) Isooxazole (b) Thiazole (c) Imidazole
(d) Pyrazole (e) Oxazole.

12. With a suitable example explain why electrophilic substitution readily occurs at the α -carbon in Pyrrole compared to β -carbon.

13. What do you understand by the term aromatic character? Explain why Furan is considered aromatic in nature.
-

APRIL - 1999

[SG 707]

Sub. Code : 4182

SECOND B.Pharm. DEGREE EXAMINATION.

(Revised Regulations)

Paper II — ADVANCED PHARMACEUTICAL
ORGANIC CHEMISTRY

Time : Three hours Maximum : 90 marks

Two and a half hours Sec. A & Sec. B : 60 marks

for Sec. A and Sec. B Section C : 30 marks

Answer Sections A and B in separate answer books.

Answer Section C in the answer sheet provided.

SECTION A — ($2 \times 15 = 30$ marks)

Answer any TWO questions.

1. (a) What are heterocyclic compounds? Write a note on classification nature numbering and nomenclature of heterocyclic compounds.

(b) Outline general method of synthesis for any THREE of the following :

- (i) Pyridine
- (ii) Pyrole
- (iii) Pyrimidine
- (iv) Imidazole.

Write the skeleton structure and medicinal uses of one important compound each of the above heterocyclics.

2. (a) What are geometrical isomers? Which type of compound can exhibit this isomerism? (5)
 (b) Write a note on the nomenclature of geometrical isomers with suitable examples. (5)
 (c) Discuss the stereochemistry of cyclic compounds. (5)
3. Explain the following reactions :
 (a) Birch reduction.
 (b) Beckmann-rearrangement.
 Meerwin - Pondroff reduction.
4. Discuss different methods of preparation and chemical reaction of TRI-PHENYL METHANE. How can it be converted to Tri-phenyl carbinol and Tri-phenyl methyl chloride? Give the skeleton structure of Triphenyl methane dyes. (4 + 4 + 2 + 2 + 3)

SECTION B — (6 × 5 = 30 marks)

Answer any SIX questions.

5. Explain chirality and optical activity.
6. Compare aromaticity of the following with Benzene Pyrole Furan Thiophen.
7. Write a note on stereochemistry of biphenyls.
8. Write down the Fisher projection formula for lactic acid indicate the different isomers of tartaric acid by drawing structures. What is a diastereomers? Define and explain.

9. Describe the various conformational isomers of n butane and with energy diagram and Newmann's projection formula. Explain their stability. (5)
10. Explain the following terms with suitable examples :
 (a) Absolute configuration. (2)
 (b) Resolution and racemisation. (1½)
 (c) Cotton effect. (1½)
11. Write the structure and use of (5 × 1)
 (a) Isoniazid.
 (b) Mepacrine.
 (c) Phenytoin.
 (d) Piperazine.
 (e) Chloroquine.
12. Asymmetric synthesis. (5)
13. Discuss the stereochemistry of nitrogen compounds. (5)

OCTOBER - 1999

[KA 707]

Sub. Code : 4182

SECOND B.Pharm. DEGREE EXAMINATION.

(Revised Regulations)

Paper II — ADVANCED PHARMACEUTICAL
ORGANIC CHEMISTRY

Time : Three hours

Maximum : 90 marks

Two and a half hours

Sec. A & Sec. B : 60 marks

for Sec. A and Sec. B

Section C : 30 marks

Answer Sections A and B in separate answer books.

Answer Section C in separate sheet provided.

SECTION A — (2 × 15 = 30 marks)

Answer any TWO questions only.

1. (a) How do you prepare TRIPHENYL METHANE? Give the mechanism of the reactions involved in this synthesis? Mention any two reactions of TRIPHENYL METHANE. (6)

(b) Give the skeletal structure along with numbering of phenanthrene molecule? Give one method for the synthesis and any two reactions of phenanthrene. (6)

(c) Give the structure and medicinal uses of any one compound each containing (i) Naphthalene (ii) Phenanthrene and (iii) Anthracene. (3)

2. (a) Describe sp^3 hybridisation with a suitable example. Give evidence for tetrahedral structure of methane molecule. (4)

(b) Explain the terms plane of symmetry, centre of symmetry and alternating axis of symmetry with suitable examples. (6)

(c) Write a note on conformational analysis. (5)

3. (a) Give one example for Walden inversion? Describe the various factors which effect the mechanism of Walden inversion. (6)

(b) Write a note on (i) Birch reduction (ii) Lead tetra acetate oxidation (iii) Schmidt rearrangement. (3 × 3 = 9)

4. (a) Give one method of synthesis, any two reactions and any one medicinal compound (along with its use) containing

(i) Pyrazole (ii) Acridine (iii) Phenothiazine (iv) Isoquinoline (v) Isoxazole. (5 × 3 = 15)

SECTION B — (6 × 5 = 30 marks)

Answer any SIX questions only.

5. Enumerate the methods available for resolving a racemic mixture and describe any one of them. (5)

6. (a) Define tautomerism and give any two examples exhibiting tautomerism. (3)

(b) How do you synthesise naphthalene? (2)

7. Describe partial asymmetric synthesis and absolute asymmetric synthesis with the help of one example each. (5)

8. Give one method of synthesis and any two reactions of thiazole. (5)

9. Give the structure and medicinal use of one compound containing the following heterocyclic rings : (5)

- (a) Pyridine
- (b) Indole
- (c) Quinoline
- (d) Piperazine
- (e) Imidazole.

10. Give the structure and medicinal use of the following medicinal agents : (5)

- (a) Methyl thiouracil
- (b) Mepacrine
- (c) Sulfathiazole
- (d) Tolazoline
- (e) Phenytoin.

11. Describe the type of isomerism exhibited by compounds containing $C = N$ and methods to determine their configurations. (5)

12. Explain one method for the synthesis of pyrrole and give reasons for its aromatic character. (5)

13. Write a detailed note on Clemenson reduction and Meerwin Ponderf Reduction. (5)

APRIL - 2000

[KB 707]

Sub. Code : 4182

SECOND B.Pharm. DEGREE EXAMINATION.

(Revised Regulations)

Paper II — ADVANCED PHARMACEUTICAL
ORGANIC CHEMISTRY

Time : Three hours

Maximum : 90 marks

Two and a half hours

Sec. A & Sec. B : 60 marks

for Sec. A and Sec. B

Section C : 30 marks

Answer Sections A and B in separate answer books.

Answer Section C in the answer sheet provided.

SECTION A — ($2 \times 15 = 30$ marks)

Answer any TWO questions.

1. (a) Give one method of synthesising
Naphthalene. (5)

(b) How many resonating structures are there for
Naphthalene? What is Fries Rule? (2 + 3)

(c) What products are obtained when
Naphthalene is ($2 \frac{1}{2} + 2 \frac{1}{2}$)

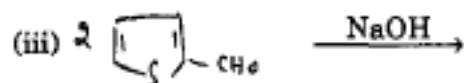
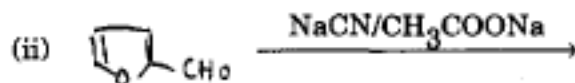
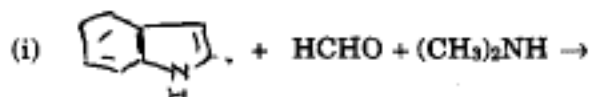
(i) oxidised and

(ii) reduced?

2. (a) What rules are followed in the nomenclature of Heterocyclic compound? (6)

(b) Give the synthesis and reactions of Pyrrole. (6)

(c) Name the reaction and the product that will be formed in the following reactions : (3)



3. Discuss in detail the stereochemistry of cyclohexane and Biphenyls. (7 $\frac{1}{2}$ + 7 $\frac{1}{2}$)

4. (a) How can one decide whether a particular structure is capable of existing in optically active forms? (8)

(b) How can one determine the configuration of geometrical isomers? (7)

SECTION B — (6 × 5 = 30 marks)

Answer any SIX.

5. Write briefly on Triphenyl methane dyes.

6. There is no free rotation about a single bond – Explain.

7. What conventions are followed in nomenclature in Stereochemistry? (both optical and geometrical isomers)

8. Write briefly on 2 Rearrangement reactions.

9. Compare the basicity of Pyrrole, Pyridine and Alkylamines.

10. Discuss the isomerism of Ketoximes.

11. Give the structures and medicinal uses of 2 compounds having a Pyridine ring.

12. What methods may be followed for conversion of alkene to alkane?

13. Give the structures and medicinal uses of :

(a) Primaquine

(b) Naphazoline

(c) Phenytoin

(d) Piperazine

(e) Sulphathiazole.

[KC 707]

Sub. Code : 4182

SECOND B.Pharm. DEGREE EXAMINATION.

(Revised Regulations)

Paper II — ADVANCED PHARMACEUTICAL
ORGANIC CHEMISTRY

Time : Three hours Maximum : 90 marks

Two and a half hours Sec. A & Sec. B : 60 marks

for Sec. A & Sec. B. Section C : 30 marks

Answer Sections A and B in separate answer books.

Answer Section C in the answer sheet provided.

SECTION A — (2 × 15 = 30 marks)

Answer any TWO questions.

1. What are heterocyclic compounds? How are they numbered? Give a brief account of Furan synthesis by various routes.

2. Write notes on :

(a) Hantzsch Pyrrole synthesis.

(b) Knorr Pyrrole synthesis.

(c) Pyrrole via acetylene dicarboxylic acid route.

(d) Chemical reactions of Furan.

(4 + 4 + 4 + 3 = 15)

3. (a) Define and classify with examples the term 'polynuclear hydrocarbons'.

(b) Give physico-chemical evidences based on which the structure of naphthalene was established.

(c) Show with equations, the steps for synthesizing the following (any TWO) :

(i) Decalin from benzene.

(ii) 1-Methylnaphthalene from benzene.

(iii) β -Naphthoic acid from tetralin.

(2 + 10 + 3 = 15)

4. (a) An acid of the formula $C_8H_{10}O_2$ is optically active. What is its structure? (7)

(b) How many optically active forms corresponding to the following formulas are possible? Write their structures. (8)

SECTION B — (6 × 5 = 30 marks)

Answer any SIX questions.

5. Give one example of medically important compound from each of the following series : Triphenyl methane, Anthracene, Phenanthrene, Naphthalene and Diphenylmethane. Write their structure and uses.

6. Write notes on :
 - (a) Walden Inversion.
 - (b) Meerwin-Pondroff reduction.
7. Write products of this following reactions stating their conditions:
 - (a) Piperidine $\xrightarrow{\text{(Oxidation)}}$
 - (b) Pyridine + $\text{SO}_2\text{Cl}_2 \longrightarrow$
 - (c) Pyridine + $\text{NaNH}_2 \longrightarrow$
 - (d) Piperidine + Methylphenylether $\longrightarrow$
 - (e) Pyridine-1-oxide + Acetic anhydride $\longrightarrow$
8. Write short notes on :
 - (a) Catalytic hydrogenation.
 - (b) Beckmann rearrangement.
9. Give the synthesis of :
 - (a) Quinoline (Skranp's method).
 - (b) Fischer's indole synthesis.
10. Write structures and uses of :
 - (a) Phenergan.
 - (b) Chinioform.
 - (c) Nikethamide.
 - (d) Mepacrine.
 - (e) Mepyramine.

11. Give an account of the basicity of heterocyclic compounds containing one nitrogen atom.
12. What are products when furan and thiophen are subjected to
 - (a) the Friedal-Crafts reaction.
 - (b) the Diels-Alder reaction.
13. Enumerate briefly Geometrical Isomerism.