

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

[LL 942]

NOVEMBER 2017

Sub. Code: 2942

**M.PHARM. DEGREE EXAMINATION**  
**(PCI New regulations 2016)**  
**SEMESTER-I**  
**PHARMACEUTICAL CHEMISTRY – MPC**  
**PAPER II – ADVANCED ORGANIC CHEMISTRY – I**

*Q.P. Code : 262942*

**Time : Three hours**

**Maximum : 75 Marks**

**I. Elaborate on:**

**(2 x 20 = 40)**

1. Explain with suitable examples the utility of following in synthesis of medicinal agents:
  - a) Carbanions.
  - b) Carbocations.
  - c) Nitrenes.
2. Explain the detailed mechanism of the following reactions, giving each two synthetic applications:
  - a) Sandmeyer reaction.
  - b) Michael addition reaction.
  - c) Baeyer-Villiger oxidation.

**II. Write notes on:**

**(7 x 5 = 35)**

1. Explain the synthetic applications of Witting reagent and Osmium tetroxide.
2. Discuss about the role of protection in organic synthesis.
3. Outline the synthesis and medicinal uses of Chlorpromazine and Antipyrin.
4. Write about the basic principles and advantages of Retrosynthesis in organic chemistry.
5. Outline with the detailed explanation of Combes Quinoline synthesis and Traube Purine synthesis.
6. Explain in detail about the various strategies for synthesis of heterocycles in Synthon approach.
7. Outline the synthesis and medicinal uses of Alprazolam and Metronidazole.

\*\*\*\*\*

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

[LM 942]

MAY 2018

Sub. Code: 2942

**M.PHARM. DEGREE EXAMINATION**  
**(PCI New regulations 2016)**  
**SEMESTER-I**  
**PHARMACEUTICAL CHEMISTRY – MPC**  
**PAPER II – ADVANCED ORGANIC CHEMISTRY – I**

*Q.P. Code : 262942*

**Time : Three hours**

**Maximum : 75 Marks**

**I. Elaborate on:**

**(2 x 20 = 40)**

1. Discuss briefly the following reactions with mechanism and giving relevant applications involved in the synthesis of drugs.
  - a) Pinner Pyrimidine synthesis.
  - b) Bernthsen acridine synthesis.
  - c) Traube purine synthesis.
2. Outline the mechanism and discuss the synthetic importance of the following:
  - a) Mannich reaction.
  - b) Brook rearrangement.
  - c) Ozonolysis.

**II. Write notes on:**

**(7 x 5 = 35)**

1. Explain the preparation, salient features of Aluminum isopropoxide and mention its applications in organic synthesis.
2. Discuss the factors that influence the mechanism of bimolecular substituents.
3. List out the important reduction reactions in organic synthesis and explain any one of them with its mechanism.
4. Discuss the chemistry and medicinal importance of any one 5-membered heterocycles containing two nitrogen atoms.
5. What is free radical? What are the steps involved in the free radical substitution reaction? Explain the stability of it.
6. Give any two applications each of N-bromosuccinamide and titanium chloride in pharmaceutical organic chemistry.
7. Write briefly about the Functional Group Inter-conversion (FGI) and Functional Group Addition (FGA) in retrosynthetic analysis.

\*\*\*\*\*

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

**[M.PHARM 0823]**

**AUGUST 2023  
(APRIL 2023 EXAM SESSION)**

**Sub. Code: 2942**

**M.PHARMACY DEGREE EXAMINATION  
SEMESTER - I (PCI New Regulations 2016)  
PHARMACEUTICAL CHEMISTRY - MPC  
PAPER II - ADVANCED ORGANIC CHEMISTRY - I**

*Q.P. Code: 262942*

**Time : Three hours**

**Answer ALL Questions**

**Maximum : 75 Marks**

**I. Elaborate on:**

**(2 x 20 = 40)**

1. Discuss briefly the following reactions with mechanism and application of following named reactions:
  - a) Knorr pyrazole synthesis.
  - b) Traube purine synthesis.
  - c) Pinner pyrimidine synthesis.
2. Discuss the mechanism and factors influence in Nucleophilic uni- and bimolecular reactions (SN1 and SN2).

**II. Write notes on:**

**(7 x 5 = 35)**

1. Explain the preparation and application of Aluminium isopropoxide.
2. Give the synthetic applications of Mannich reaction.
3. Discuss the protection of Carbonyl group.
4. Give the synthesis of Alprazolam and Thioguanine.
5. Write about the basic principles and advantages of Retrosynthesis in organic chemistry.
6. Give the synthetic application of Ullmann coupling reaction.
7. Explain with suitable examples of Organic intermediate Carbocations.

\*\*\*\*\*

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

[LN 942]

NOVEMBER 2018

Sub. Code: 2942

**M.PHARM. DEGREE EXAMINATION**  
**(PCI New regulations 2016)**  
**SEMESTER-I**  
**PHARMACEUTICAL CHEMISTRY – MPC**  
**PAPER II – ADVANCED ORGANIC CHEMISTRY – I**

*Q.P. Code : 262942*

**Time : Three hours**

**Maximum : 75 Marks**

**I. Elaborate on:**

**(2 x 20 = 40)**

1. Explain briefly the mechanism and synthetic applications of following reactions.
  - a) Dornbner - Miller synthesis.
  - b) Vilsmeier - Heck reaction.
  - c) Shapiro & Suzuki reaction.
2. What is free radical? What are the steps involved in the free radical substitution reaction? Explain the stability, relative reactivity and orientation of it.

**II. Write notes on:**

**(7 x 5 = 35)**

1. Give the synthetic applications of Carbocations.
2. Write the mechanism and synthetic applications of Wittig reagent and Aluminium isopropoxide.
3. Discuss about the protection for amino group and amino acids.
4. Discuss the factors that influence the mechanism of substitution reactions.
5. Give the mechanism and applications of Pinner pyrimidine synthesis.
6. Explain retro synthesis.
7. Outline the synthesis and medicinal uses of Antipyrin and Mercaptopurine.

\*\*\*\*\*

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

[LO 942]

MAY 2019

Sub. Code: 2942

**M.PHARM. DEGREE EXAMINATION**  
**(PCI New regulations 2016)**  
**SEMESTER-I**  
**PHARMACEUTICAL CHEMISTRY – MPC**  
**PAPER II – ADVANCED ORGANIC CHEMISTRY – I**

*Q.P. Code : 262942*

**Time : Three hours**

**Maximum : 75 Marks**

**I. Elaborate on:**

**(2 x 20 = 40)**

1. Explain the mechanism and give the synthetic applications of the following reactions:  
a) Dieckmann reaction    b) Mannich reaction    c) Brook rearrangement
2. Explain the method of formation and synthetic applications for the following:  
a) Free radicals    b) Nitrenes    c) Carbanions

**II. Write notes on:**

**(7 x 5 = 35)**

1. Explain the protection for the carbonyl group in organic synthesis.
2. Write synthetic application of Wittig reagent and diazopropane.
3. Synthesis and medicinal uses of Chloroquin and Triamterene.
4. Give the basic principles and advantages of retrosynthesis.
5. Discuss the mechanism of elimination reactions.
6. Explain about the strategies for synthesis of five membered ring compounds.
7. Explain Combes Quinoline synthesis.

\*\*\*\*\*

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

[LP 942]

NOVEMBER 2019

Sub. Code: 2942

**M.PHARM. DEGREE EXAMINATION**  
**(PCI New regulations 2016)**  
**SEMESTER-I**  
**BRANCH II – PHARMACEUTICAL CHEMISTRY – MPC**  
**PAPER II – ADVANCED ORGANIC CHEMISTRY – I**

*Q.P. Code : 262942*

**Time : Three hours**

**Maximum : 75 Marks**

**I. Elaborate on:**

**(2 x 20 = 40)**

1. Explain the mechanism, relative reactivity and orientations of Elimination reactions.
2. Discuss the mechanism and applications of the following organic name reactions:
  - a) Knorr pyrazole synthesis.
  - b) Smiles rearrangement reaction.
  - c) Traube purine synthesis.

**II. Write notes on:**

**(7 x 5 = 35)**

1. Give the mechanism and application of Ullmann coupling reaction.
2. Discuss the mechanism and factors influence for bimolecular substituent reaction.
3. Outline the synthesis and medicinal uses of Ketoconazole and Alprazolam.
4. Write a note on Functional Group Inter-conversion (FGI) and Functional Group Addition (FGA).
5. Give any two applications of Osmium tetroxide and diazomethane.
6. Discuss about the role of protection in organic synthesis.
7. Write a note on Bernthsen Acridine synthesis.

\*\*\*\*\*

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

[LQ 0121]

**JANUARY 2021**

**Sub. Code: 2942**

**(APRIL 2020 EXAM SESSION)**

**M.PHARMACY DEGREE EXAMINATION**

**SEMESTER-I (PCI New regulations 2016)**

**PHARMACEUTICAL CHEMISTRY – MPC**

**PAPER II – ADVANCED ORGANIC CHEMISTRY – I**

***Q.P. Code : 262942***

**Time : Three hours**

**Answer ALL Questions**

**Maximum : 75 Marks**

**I. Elaborate on:**

**(2 x 20 = 40)**

1. Discuss the mechanism and synthetic importance of the following:
  - a) Brook rearrangement.
  - b) Sandmeyer reaction.
  - c) Michael addition reaction.
2. Explain briefly with suitable examples of the following medicinal agents:
  - a) Free radicals.
  - b) Carbanions.
  - c) Nitrenes.

**II. Write notes on:**

**(7 x 5 = 35)**

1. Discuss about the role of protection in organic synthesis.
2. Write the synthetic applications of Osmium tetroxide & N-bromosuccinamide.
3. Give the detailed explanation of Combes Quinoline synthesis & Traube purine synthesis.
4. Outline the synthesis and medicinal uses of Chlorpromazine and Antipyrin.
5. Write briefly about the Functional Group Interconversion (FGI) and Functional Group Addition (FGA).
6. Explain Hoffman & Saytzeff's rule.
7. Give the mechanism and applications of Smiles rearrangements.

\*\*\*\*\*

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

**[MPHARM 0422]**

**APRIL 2022  
(OCTOBER 2021 EXAM SESSION)**

**Sub. Code: 2942**

**M.PHARMACY DEGREE EXAMINATION  
SEMESTER-I (PCI New regulations 2016)  
PHARMACEUTICAL CHEMISTRY - MPC  
PAPER II - ADVANCED ORGANIC CHEMISTRY - I  
*Q.P. Code : 262942***

**Time : Three hours**

**Answer ALL Questions**

**Maximum : 75 Marks**

**I. Elaborate on:**

**(2 x 20 = 40)**

1. a) Explain in detail about the SN1 and SN2 reaction.  
b) Write notes on Ullmann coupling reaction and its application.
2. a) Explain the CX and CC disconnection of alcohol and carbonyl compounds.  
b) Debus-Radzisewski synthesis and Combes synthesis.

**II. Write notes on:**

**(7 x 5 = 35)**

1. Free radicals and its synthetic application.
2. Sharpless asymmetric epoxidation and its application.
3. Synthetic applications of Witting reagent.
4. Protection of carbonyl compound.
5. Synthesis of Triamterene and Thioguanine.
6. FGI and FGA.
7. Strategies for synthesis of five membered rings.

\*\*\*\*\*

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

**[M.PHARM 0922]**

**SEPTEMBER 2022  
(APRIL 2022 EXAM SESSION)**

**Sub. Code: 2942**

**M.PHARMACY DEGREE EXAMINATION  
SEMESTER - I (PCI New regulations 2016)  
PHARMACEUTICAL CHEMISTRY - MPC  
PAPER II - ADVANCED ORGANIC CHEMISTRY - I**

*Q.P. Code : 262942*

**Time : Three hours**

**Answer ALL Questions**

**Maximum : 75 Marks**

**I. Elaborate on:**

**(2 x 20 = 40)**

1. Explain the mechanism and synthetic applications of
  - a) Ugi reaction.
  - b) Baeyer-Villiger Oxidation.
  - c) Mannich reaction.
  - d) Vilsmeier–Haack Reaction.
2. Discuss about the formation, stability, relative reactivity, orientation and applications of free radicals.

**II. Write notes on:**

**(7 x 5 = 35)**

1. Write a brief note on Wilkinson reagent and Wittig reagent.
2. Give an account on the synthetic importance of Debus–Radziszewski imidazole synthesis.
3. Write in detail about rearrangement reactions.
4. Sketch out the synthesis and medicinal uses of Ketoconazole and Metronidazole.
5. Write a note on guidelines for the dissection of molecules.
6. Explain protection of hydroxyl group in organic synthesis.
7. Discuss briefly about stereochemical aspects in SN2 reaction.

\*\*\*\*\*

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

**[M.PHARM 0423]**

**APRIL 2023  
(OCTOBER 2022 EXAM SESSION)**

**Sub. Code: 2942**

**M.PHARMACY DEGREE EXAMINATION  
SEMESTER - I (PCI New regulations 2016)  
PHARMACEUTICAL CHEMISTRY - MPC  
PAPER II - ADVANCED ORGANIC CHEMISTRY - I**

*Q.P. Code: 262942*

**Time : Three hours**

**Answer ALL Questions**

**Maximum : 75 Marks**

**I. Elaborate on:**

**(2 x 20 = 40)**

1. Discuss briefly on the mechanism and synthetic importance of
  - a) Pinner Pyrimidine Synthesis.
  - b) Combes Quinoline Synthesis.
2. Elaborate on the generation, stability and synthetic applications of
  - a) Carbocation
  - b) Carbenes.

**II. Write notes on:**

**(7 x 5 = 35)**

1. Brief out the mechanism and synthetic utility of Doebner–Miller Reaction.
2. Outline the synthesis and medicinal uses of Chloroquine and Theophylline.
3. Write a note on functional group interconversion and addition.
4. Give an account on the protection of carboxyl group in organic synthesis.
5. Write briefly about the synthetic applications of aluminium isopropoxide.
6. Explain C-X disconnection strategy in carbonyl compounds.
7. Write a note on acetals and ketals as protecting groups.

\*\*\*\*\*



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

**[M.PHARM 0524]**

**MAY 2024  
(APRIL 2024 EXAM SESSION)**

**Sub. Code: 2942**

**M.PHARMACY DEGREE EXAMINATION  
SEMESTER - I (PCI New Regulations 2016)  
PHARMACEUTICAL CHEMISTRY - MPC  
PAPER II - ADVANCED ORGANIC CHEMISTRY - I**

*Q.P. Code: 262942*

**Time: Three hours**

**Answer ALL Questions**

**Maximum: 75 Marks**

**I. Elaborate on:**

**(2 x 20 = 40)**

1. Discuss the method of formation, stability, synthetic applications, mechanism and orientations of carbocations.
2. Give a detailed account on mechanism and synthetic application of:
  - a) Ullmann coupling reaction
  - b) Dieckmann reaction
  - c) Sandmeyer reaction

**II. Write notes on:**

**(7 x 5 = 35)**

1. Give the synthesis and application of Knorr pyrazole.
2. What are the strategies for synthesising a six-membered ring?
3. Outline the synthesis and medicinal uses of Mercaptopurine and Thioguanine.
4. How will you protect the Amino Group in Amino Acid during synthesis?
5. Give a brief account on any one synthetic reagent with its application.
6. Explain Nucleophilic uni and bi-molecular reactions.
7. Write a brief account on the Carbon-carbon disconnection approach.

\*\*\*\*\*

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

[M.PHARM 0425]

APRIL 2025

Sub. Code: 2942

M.PHARMACY DEGREE EXAMINATION  
SEMESTER - I (PCI New Regulations 2016)  
PHARMACEUTICAL CHEMISTRY - MPC  
PAPER II - ADVANCED ORGANIC CHEMISTRY - I

*Q.P. Code: 262942*

**Time: Three hours**

**Answer ALL Questions**

**Maximum: 75 Marks**

**I. Elaborate on:**

**(2 x 20 = 40)**

1. Discuss on the Basic principles, terminologies and advantages of retro synthesis with examples.
2. Write the synthetic procedure of drugs containing heterocyclic nucleus.  
a) Metronidazole    b) Trimethoprim    c) Chloroquine    d) Promazine

**II. Write notes on:**

**(7 x 5 = 35)**

1. Discuss the role of protection for the carbonyl group.
2. Write a brief note on Osmium tetroxide and diethyl azodicarboxylate.
3. Outline the Carbon-Halogen disconnection approaches.
4. What are the organic intermediates, explain free radicals and carbanions.
5. Give mechanism and synthetic application of Suzuki reaction and ozonolysis.
6. How carboxyl groups are protected during organic synthesis? explain.
7. What are the strategies for synthesizing a five-membered ring?

\*\*\*\*\*