

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

[LM 945]

MAY 2018

Sub. Code: 2945

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

Q.P. Code : 262945

Time : Three hours

Maximum : 75 Marks

I. Elaborate on:

(2 x 20 = 40)

1. a) Explain the general Fragmentation patterns for the interpretation of organic Compounds in Mass Spectrometry.
b) Give the Mass interpretation patterns for the following organic compounds.
a) Benzyl alcohol b) 2-Hexanone c) Benzaldehyde d) Benzamide
2. a) Explain the principle and methodology of Differential Scanning Colorimetry (DSC).
b) Write the principle, Instrumentation and Application of GC – MS.

II. Write notes on:

(7 x 5 = 35)

1. Radio Immuno-assay of digitalis.
2. Explain the following and discuss the merits of:
a) Super critical fluid chromatography.
b) Flash Chromatography.
3. Cosy and N cosy.
4. FT- IR and ATR – IR.
5. How do you calculate the absorption maximum wavelength for Dienes with Woodward Fieser Rule?
6. Predict and explain the signal positions (8 value) and spin-spin Splitting in the NMR spectra of : a) Butanol b) 2- Chloropropane
7. Explain the MC Lafferty Rearrangements.

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[LN 945]

NOVEMBER 2018

Sub. Code: 2945

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SEMESTER-II
BRANCH-II – PHARMACEUTICAL CHEMISTRY – MPC
PAPER I – ADVANCED SPECTRAL ANALYSIS

Q.P. Code : 262945

Time : Three hours

Maximum : 75 Marks

I. Elaborate on:

(2 x 20 = 40)

1. a) Explain the different elution techniques used in high performance thin layer chromatography (HPTLC).
b) Discuss the application of Woodward-Fieser Rules taking α , β – Unsaturated ketones as example.
2. a) Explain the instrumentation of 1D and 2D NMR and discuss the Hector and Inadequate techniques.
b) Explain the principle with neat diagram of LC- NMR and its application.

II. Write notes on:

(7 x 5 = 35)

1. Liquid Chromotography – Mass Spectroscopy (LC-MS).
2. Write the principle and applications of DSC.
3. Woodwards rule and its application.
4. Explain the theory behind the important aspects of molecular fragmentation in mass spectroscopy.
5. Explain the principle and application of TGA.
6. Write the Application of DTA.
7. Explain the principle and Application of LC-FTIR.

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[LO 945]

MAY 2019

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(PCI New regulations 2016)
SEMESTER-II
BRANCH-II – PHARMACEUTICAL CHEMISTRY – MPC
PAPER I – ADVANCED SPECTRAL ANALYSIS

Q.P. Code : 262945

Time : Three hours

Maximum : 75 Marks

I. Elaborate on:

(2 x 20 = 40)

1. Explain the Interpretation of NMR spectroscopy.
2. Explain the woodward - Fieser rule in Cyclic dienes and discuss the ATR - IR.

II. Write notes on:

(7 x 5 = 35)

1. 2-D NMR.
2. Meta Stable ions.
3. Flash Chromatography.
4. GC – MS.
5. ELISA.
6. Write the Principle, Instrumentation & applications of Raman Spectroscopy.
7. Short note on TGA.

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[LP 945]

NOVEMBER 2019

Sub. Code: 2945

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BRANCH-II – PHARMACEUTICAL CHEMISTRY – MPC
PAPER I – ADVANCED SPECTRAL ANALYSIS

Q.P. Code : 262945

Time : Three hours

Maximum : 75 Marks

I. Elaborate on:

(2 x 20 = 40)

1. Explain the interpretation of organic compounds in Mass Spectroscopy.
2. Explain the principle, instrumentation and application of LC-MS.

II. Write notes on:

(7 x 5 = 35)

1. N_{osy} – C_{osy}.
2. Write note on Biological standardization RIA.
3. Woodward-Fieser Rules for 1, 3-Butadienes.
4. Isotopic peaks in mass spectroscopy.
5. Write note on 1 - D NMR.
6. HPTLC.
7. Write note on Fragmentation of Carbonyl compounds.

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

[LQ 0121]

JANUARY 2021

Sub. Code: 2945

(APRIL 2020 EXAM SESSION)

**M.PHARMACY DEGREE EXAMINATION
SEMESTER-II (PCI New regulations 2016)
PHARMACEUTICAL CHEMISTRY – MPC
PAPER I – ADVANCED SPECTRAL ANALYSIS
*Q.P. Code : 262945***

Time : Three hours

Answer ALL Questions

Maximum : 75 Marks

I. Elaborate on:

(2 x 20 = 40)

1. a) Cosy and Nosy.
b) Principle and applications of DSC.
2. a) Principle with neat diagram of GC- AAS and its application.
b) Principle, Instrumentation of Raman Spectroscopy

II. Write notes on:

(7 x 5 = 35)

1. ELISA.
2. Principle, Instrumentation and Application of Ion Chromatography.
3. FT- IR and ATR – IR.
4. M_C Lafferty Rearrangements.
5. Mass fragmentation and its rules.
6. Principle and methodology of DTA.
7. Radio immuno assay of Digitalis.

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

[MPHARM 0921]

SEPTEMBER 2021
(OCTOBER 2020 EXAM SESSION)

Sub. Code: 2945

M.PHARMACY DEGREE EXAMINATION
SEMESTER-II (PCI New regulations 2016)
PHARMACEUTICAL CHEMISTRY - MPC
PAPER I – ADVANCED SPECTRAL ANALYSIS
Q.P. Code : 262945

Time : Three hours

Answer ALL Questions

Maximum : 75 Marks

I. Elaborate on:

(2 x 20 = 40)

1. Explain ATR-IR. Discuss Woodward Fieser rule for α - β unsaturated carbonyl compounds.
2. a) Explain the principle, instrumentation and applications of CE-MS.
b) Explain the principle with neat diagram and applications of TGA.

II. Write notes on:

(7 x 5 = 35)

1. IR Interpretation of Amines.
2. Predict and explain the signal positions (δ value) and spin – spin splitting in the ^1H NMR spectra of a) Ethyl benzene b) Benzyl alcohol.
3. Mc Lafferty rearrangement of fragmented ions in Mass Spectrometry.
4. Bio Assay.
5. Meta stable ions.
6. HPTLC.
7. Radioimmuno assay of digitalis.

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

[M.PHARM 0922]

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

Sub. Code: 2945

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

Q.P. Code : 262945

Time : Three hours

Answer ALL Questions

Maximum : 75 Marks

I. Elaborate on:

(2 x 20 = 40)

1. A) Give the Mass Interpretation patterns for the following organic compounds:
a) Cyclohexene b) Naphthalene c) 2-butanol d) Benzamide.
B) Write the Principle with neat diagram of High performance Thin Layer Chromatography and its Application.
2. A) Write the Instrumentation of Ion exclusion chromatography and its application.
B) Write the Principle, Instrumentation and Application of ELISA.

II. Write notes on:

(7 x 5 = 35)

1. Woodward's Fieser Rule and its applications.
2. Write a note on Enzyme Linked Immuno Sorbent Assay.
3. Explain the Principle and Application of Differential Scanning Calorimetry.
4. Super critical fluid chromatography.
5. Mass Fragmentation and its rules.
6. Explain HECTOR and INADEQUATE Techniques.
7. Explain Ion Exchange chromatography.

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[M.PHARM 0423]

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

Sub. Code: 2945

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

Q.P. Code: 262945

Time : Three hours

Answer ALL Questions

Maximum : 75 Marks

I. Elaborate on:

(2 x 20 = 40)

1. Explain the interpretation of NMR spectrum for the following compounds:
 - a) Cis-stilbene
 - b) Acetaldehyde
 - c) 2,3, Dibromo propene
 - d) P-Anisidine
 - e) Phenyl acetylene.
2. Explain the Principle, instrumentation and application of the following:
 - a) Liquid chromatography-Fourier Transform Infrared Spectroscopy.
 - b) Liquid chromatography-Nuclear Magnetic Resonance.

II. Write notes on:

(7 x 5 = 35)

1. Write note on bioassay.
2. Difference between Differential scanning calorimetry and Differential Thermal Analysis.
3. Infrared interpretation of Methyl cyanide.
4. Write note on Ring rule and Isotopic peak.
5. Ion chromatography.
6. Enzyme Linked Immuno Sorbent Assay.
7. Supercritical fluid chromatography.

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[M.PHARM 0823]

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

Sub. Code: 2945

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

Q.P. Code: 262945

Time : Three hours

Answer ALL Questions

Maximum : 75 Marks

I. Elaborate on:

(2 x 20 = 40)

1. Explain the principle and instrumentation of CE-MS and discuss the SCFC.
2. Explain the interpretation of IR in Organic compounds.

II. Write notes on:

(7 x 5 = 35)

1. HECTOR Techniques.
2. Mc- Lafferty arrangement.
3. RIA – Insulin.
4. I – EC chromatography.
5. Write note on Mass Fragmentation and its rules.
6. GC – AAS.
7. Flash Chromatography.

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

[M.PHARM 1223]

**DECEMBER 2023
(OCTOBER 2023 EXAM SESSION)**

Sub. Code: 2945

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

Q.P. Code: 262945

Time : Three hours

Answer ALL Questions

Maximum: 75 Marks

I. Elaborate on:

(2 x 20 = 40)

1. Explain the Woodward Fieser Rule and its application and discuss the interpretation of any two functional group using IR.
2. A) Write the principle and methodology of Differential Thermal Analysis.
B) Write the Principle, Instrumentation and Application of Ion Chromatography.

II. Write notes on:

(7 x 5 = 35)

1. COSY and NOSY.
2. Explain the Mc Lafferty Rearrangements.
3. Explain Super Critical fluid chromatography.
4. Explain the principle and application of Thermo Gravimetric Analysis.
5. 2D NMR.
6. Meta Stable ions.
7. Radio Immuno Assay.

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

[M.PHARM 0524]

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

Sub. Code: 2945

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

Q.P. Code: 262945

Time: Three hours

Answer ALL Questions

Maximum: 75 Marks

I. Elaborate on:

(2 x 20 = 40)

1. a) Discuss the Woodward-Fieser rule for 1,3-butadienes and enones system.
b) Explain the IR Interpretation of following organic compounds.
a) Ethyl benzene b) Urea c) PABA d) 2-butanol.
2. Explain the Principle, Instrumentation and applications of the a) GC-MS b) DSC.

II. Write notes on:

(7 x 5 = 35)

1. NMR Interpretation of the a) P-Amino phenol b) benzamide.
2. Applications of Raman Spectroscopy.
3. Radioimmuno assay of digitalis.
4. Meta stable ions.
5. HPTLC.
6. MS Interpretation pattern of alcohols and amines.
7. INADEQUATE techniques.

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

[M.PHARM 0425]

APRIL 2025

Sub. Code: 2945

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

Q.P. Code: 262945

Time: Three hours

Answer ALL Questions

Maximum: 75 Marks

I. Elaborate on:

(2 x 20 = 40)

1. a) Explain the principle, instrumentation and application of Mass spectroscopy.
b) IR interpretation of three organic compounds.
2. a) Write an account on principle advantage of Radioimmuno assay. Discuss the radioimmuno assay of insulin.
b) Write application of LC-MS (Liquid Chromatography – Mass Spectrometry).

II. Write notes on:

(7 x 5 = 35)

1. What are the details we during NMR interpretation give examples.
2. Give the mass fragmentation and its rules.
3. Ion exchange chromatography.
4. Nitrogen rule.
5. Principle in LC-FTIR (Liquid Chromatography – Fourier Transformer Infra red Spectroscopy).
6. Application of DSC (Differential Scanning Calorimetry).
7. Application of AT-IR (Attenuated Reflection IR).

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[M.PHARM 1025]

OCTOBER 2025

Sub. Code: 2945

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

Q.P. Code: 262945

Time: Three hours

Answer ALL Questions

Maximum: 75 Marks

I. Elaborate on:

(2 x 20 = 40)

1. a) Write the instrumentation of LC-NMR and its application.
b) Give application of IEC.
2. What are thermal methods of analysis? Give the type of instruments used and explain any one instrument.

II. Write notes on:

(7 x 5 = 35)

1. Explain principle involved in NMR.
2. Fragmentation pattern in amines and alcohols.
3. Write an account on bioassay.
4. What is the Ring rule in Mass?
5. Application of GC-MS.
6. Woodward-Fieser rule.
7. IR spectrum of carboxylic acid and ester.
