

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

[LM 955]

MAY 2018

Sub. Code: 2955

M.PHARM. DEGREE EXAMINATION
(PCI New regulations 2016)
SEMESTER-II
BRANCH-III – PHARMACEUTICAL ANALYSIS – MPA
PAPER I – ADVANCED INSTRUMENTAL ANALYSIS

Q.P. Code :262955

Time : Three hours

Maximum : 75 Marks

I. Elaborate on:

(2 x 20 = 40)

1. a) Explain the principle and instrumentation of Mass spectroscopy.
b) Explain in detail with examples the fragmentation pattern of organic compounds by mass spectroscopy.
2. a) Discuss NOESY and COSY techniques.
b) Explain the term “chemical shift” and describe the factors affecting it with the aid of suitable examples.

II. Write notes on:

(7 x 5 = 35)

1. Briefly explain the principle and application of Nano liquid chromatography.
2. Discuss Enantiomer separations of pharmaceuticals in HPLC.
3. Write the principle and application of ion exchange chromatography.
4. Give an account of detectors used in Gas chromatography.
5. Discuss the working principle and application of HPTLC.
6. Explain the principle involved in size exclusion chromatography.
7. Explain the principle involved in Capillary electrophoresis.

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[LN 955]

NOVEMBER 2018

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Time : Three hours

Maximum : 75 Marks

I. Elaborate on:

(2 x 20 = 40)

1. a) Describe in detail about Size exclusion chromatography.
b) Explain the principle and instrumentation of NMR.
c) What are the different parameters involved in HPLC separation?
2. a) Elaborate the various ionization techniques in Mass spectrometry.
b) Discuss the principle, instrumentation and applications of Supercritical fluid chromatography (SFC).
c) What are the different factors influencing Chemical shift?

II. Write notes on:

(7 x 5 = 35)

1. Write a brief note on Coupling constant.
2. Outline the principle and methods involved in CE.
3. With a neat diagram, write briefly about Flame ionization detector (FID).
4. Describe in detail about LC-MS.
5. Explain about the various pumps used in HPLC.
6. Write short notes on Affinity chromatography and its applications.
7. Discuss in detail about ^{13}C -NMR.

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Q.P. Code :262955

Time : Three hours

Maximum : 75 Marks

I. Elaborate on:

(2 x 20 = 40)

1. a) Write the principle of Gas Chromatography.
b) Explain about the detectors used in Gas Chromatography.
2. a) Discuss in detail about LC-MS Hyphenation technique.
b) Explain in detail about Quadrupole and Ion trap type of Mass Analysers.

II. Write notes on:

(7 x 5 = 35)

1. Write the principle and quantization techniques of HPTLC.
2. Discuss NOESY techniques in NMR.
3. Explain different factors influencing chemical shift in NMR.
4. Write shortly about APPI mass fragmentation and its rules.
5. Discuss about the practical aspects of preparative HPLC.
6. Enumerate in detail about different types of injectors used in HPLC.
7. Write about head space sampling technique in Gas chromatography and its applications.

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Q.P. Code : 262955

Time : Three hours

Maximum : 75 Marks

I. Elaborate on:

(2 x 20 = 40)

1. a) Describe the principle, instrumentation and applications of High Performance Thin Layer Chromatography (HPTLC).
b) Explain briefly about MALDI and FT-ICR.
c) Write a detailed note on LC-NMR.
2. a) Discuss the principle and instrumentation of Mass spectrometry.
b) Explain in detail about Ion exchange chromatography.
c) Enumerate the various applications of HPLC.

II. Write notes on:

(7 x 5 = 35)

1. Write short notes on Ion pair chromatography.
2. Give the construction and working of Quadrupole mass analyser.
3. Discuss the applications of NMR spectroscopy.
4. What are the different detectors used in HPLC?
5. Explain about HETP.
6. Give a detailed account on CE-MS.
7. Describe in detail about derivatization techniques in Gas chromatography.

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

[LQ 0121]

JANUARY 2021

Sub. Code: 2955

(APRIL 2020 EXAM SESSION)

M.PHARMACY DEGREE EXAMINATION

SEMESTER-II (PCI New regulations 2016)

PHARMACEUTICAL ANALYSIS – MPA

PAPER I – ADVANCED INSTRUMENTAL ANALYSIS

Q.P. Code : 262955

Time : Three hours

Answer ALL Questions

Maximum : 75 Marks

I. Elaborate on:

(2 x 20 = 40)

1. a) Write the principle, instrumentation and application of Super Critical Fluid Chromatography.
b) Explain the principle and instrumentation involved in Capillary Electrophoresis.
2. a) Explain the principle, theory and instrumentation of Mass Spectroscopy.
b) Discuss about different types of peaks in Mass Spectroscopy.

II. Write notes on:

(7 x 5 = 35)

1. Explain the principle of NMR.
2. Write about type of columns used in Gas Chromatography.
3. Explain about HETP.
4. Discuss COSY techniques in NMR.
5. Explain in detail about APCI in Mass Spectroscopy.
6. Write the principle, stationary phase and mobile phase used in Affinity Chromatography.
7. Write about the high performance liquid chromatography in Chiral Analysis and its applications.

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[MPHARM 0921]

**SEPTEMBER 2021
(OCTOBER 2020 EXAM SESSION)**

Sub. Code: 2955

**M.PHARMACY DEGREE EXAMINATION
SEMESTER-II (PCI New regulations 2016)
PHARMACEUTICAL ANALYSIS - MPA
PAPER I – ADVANCED INSTRUMENTAL ANALYSIS
*Q.P. Code : 262955***

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 gas chromatography.
b) Derivatization techniques of gas chromatography.
2. a) Explain the principle, instrumentation and application of NMR spectroscopy.
b) Discuss about Mass analyzers.

II. Write notes on:

(7 x 5 = 35)

1. Write difference between ^{13}C - NMR and ^1H - NMR.
2. Discuss about LC-MS.
3. Explain the principle and application of nano liquid chromatography.
4. Write about crown ethers in capillary electrophoresis.
5. Explain the affinity chromatography.
6. Write the chiral separation in pharmaceuticals.
7. Gradient high performance liquid chromatography.

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[MPHARM 0122]

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

Sub. Code: 2955

**M.PHARMACY DEGREE EXAMINATION
SEMESTER-II (PCI New regulations 2016)
PHARMACEUTICAL ANALYSIS - MPA
PAPER I – ADVANCED INSTRUMENTAL ANALYSIS
*Q.P. Code : 262955***

Time : Three hours

Answer ALL Questions

Maximum : 75 Marks

I. Elaborate on:

(2 x 20 = 40)

1. a) Explain the principle, instrumentation and detectors of HPLC.
b) Briefly outline the principles of FT-NMR with reference to ¹³C-NMR.
2. a) Explain the principle, instrumentation and application of super critical fluid chromatography.
b) Write the overview of capillary electrophoresis in pharmaceutical analysis

II. Write notes on:

(7 x 5 = 35)

1. Write the principle of 2D nuclear magnetic resonance.
2. Discuss the different types of ionization techniques in mass spectroscopy.
3. Explain the principle and application of ion pair chromatography.
4. Describe any two detectors used in gas chromatography.
5. Explain the size exclusion chromatography.
6. Write a brief note on coupling constant and chemical shift.
7. Write about practical aspects of preparative HPLC.

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[M.PHARM 0922]

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

Sub. Code: 2955

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

Q.P. Code : 262955

Time : Three hours

Answer ALL Questions

Maximum : 75 Marks

I. Elaborate on:

(2 x 20 = 40)

1. a) Outline the principle behind NMR spectroscopy. Elaborate on factors which influence chemical shift .
b) Discuss NOESY techniques in NMR.
c) Discuss in detail about ¹³C-NMR.
2. a) Explain the working of Mass spectroscopy.
b) Explain the Liquid Chromatography - Mass Spectroscopy LC-MS..
c) Discuss in detail about FAB mass spectrometry.

II. Write notes on:

(7 x 5 = 35)

1. Discuss the working principle and application of ion pair chromatography.
2. Write an account on pumps used in HPLC.
3. Discuss in detail about capillary electrophoresis CE characteristics.
4. Write a brief notes on ESI mass spectrometry.
5. List the applications of preparative HPLC.
6. Discuss in detail about MS/MS system mass spectrometry.
7. Write about the instrumentation of super critical fluid chromatography.
