Roll No:

B. PHARM.
(SEM-VII) THEORY EXAMINATION 2020-21
INSTRUMENTAL METHODS OF ANALYSIS

Time: 3 Hours *Total 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 chromophores and auxochromes.
b.	What is absorptivity?
c.	What are different types of vibrational modes observed in IR spectroscopy?
d.	Write about hollow cathode lamp.
e.	What is the difference between normal phase and reverse phase chromatography?
f.	What is electrophoretic mobility?
g.	What is HETP? Give its significance.
h.	What is Eddy diffusion?
i.	Write two examples each of cation and anion exchangers.
j.	Enlist the advantages and disadvantages of agarose and polyacrylamide gels.

SECTION B

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

a.	Enlist the different components of uv-visible spectrophotometer and explain the working of double beam spectrophotometer along with well labeled diagram.
b.	Explain principle, instrumentation, and application of flame photometry.
c.	Discuss about principle and instrumentation of HPLC.

SECTION C

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

a.	What is Lambert-Beer's law? Explain its deviations along with quantitative applications.
b.	Compare the working of dispersive IR and FTIR instruments. Explain working of FTIR in detail.
c.	Explain principle, instrumentation, and application of fluorimetry.
d.	Explain principle, methodology with applications of ion exchange chromatography.
e.	What is electrophoresis? Explain different types of electrophoresis techniques with their principle and applications.
f.	Write about principle, methods, and applications of TLC.
g.	Write note on theory and working of gel electrophoresis.

Printed Pages: 01 **Sub Code:BP-701T**

Paper Id: 231161 **Roll No.**

B. PHARM.
(VII SEMESTER) THEORY EXAMINATION 2022-23
INSTRUMENTAL METHODS OF ANALYSIS

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

Note: Attempt all Sections.

SECTION A

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

(a) Give principle of UV spectroscopy.

(b) Describe quenching with examples.

(c) Explain principle of Flame Photometry.

(d) What are various methods for preparation of TLC plates?

(e) Give significance of Fermi Resonance.

(f) Define Chromophores with examples.

(g) Give names of detectors used in HPLC.

(h) Describe principle of Affinity Chromatography.

(i) Explain applications of Nephelometry.

(j) Discuss factors affecting Vibrational frequency in IR spectroscopy.

SECTION B

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

(a) Discuss theory involved in IR Spectroscopy. Explain instrumentation of IR spectrophotometer with applications.

(b) Describe theory, principle, instrumentation and applications of Gas Chromatography.

(c) Differentiate between Atomic absorption and atomic emission. Describe various interferences involved in Atomic Absorption Spectroscopy.

SECTION C

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

(a) Give theory of Gel Electrophoresis. Explainfactors affecting electrophoretic mobility.

(b) What is Finger Print region? Explainfundamental modes of vibrations in poly atomic molecules.

(c) Explain applications of Spectrofluorometry.

(d) Describe mechanism of ion exchange process in Ion Exchange Chromatography.

(e) Explain Isocratic and Gradient Elution in HPLC.

(f) Discuss significance of derivatisation in Gas Chromatography.

(g) Describe spectral shifts and solvent effect on absorption spectra in UV Spectroscopy.

PAPER ID-311090

Roll No: | | | | | | | | | | | | |

BPHARM
(SEM VII) THEORY EXAMINATION 2023-24
INSTRUMENTAL METHODS OF ANALYSIS – 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.	Give one example for strong cation exchange resin and strong anion exchange resin.
b.	Write about stationary phases used in Affinity chromatography.
c.	What do you understand by wet packing and dry packing?
d.	What is mulling and pelleting technique?
e.	Write the sources of I.R radiation.
f.	Differentiate Nephelometry and Turbidimetry.
g.	Define chromophores and auxochromes with suitable example.
h.	Write the I.R functional bands for amines and ketones.
i.	What is hypsochromic shift?.
j.	Elaborate the column types in HPLC.

SECTION B

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

a.	Describe the principle, instrumentation and few applications of atomic absorption spectroscopy.
b.	Explain the instrumentation of HPLC with a neat sketch. Write a note on Van Deemter equation.
c.	Derive Beer Lambert's law. Explain the working of photomultiplier tube.

SECTION C

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

a.	Describe the principle of fluorescence with Jablonski's diagram. What do you mean by quenching.
b.	Explain FT-IR spectrometer with interferogram.
c.	Elaborate the interferences in flame photometry with its counter measures to prevent them.
d.	Explain the principle involved in ion exchange chromatography. Write the factors affecting ion exchange.
e.	Outline the detectors used in Gas chromatography. What do you know about size exclusion chromatography?
f.	Describe the types of paper chromatography in detail.
g.	Write the principle and instrumentation of paper electrophoresis.

PAPER ID-410849

Roll No: | | | | | | | | | | | | | |

BPHARM
(SEM VII) THEORY EXAMINATION 2023-24
INSTRUMENTAL METHODS OF ANALYSIS 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 auxochromes with examples.
b.	What do you understand by quenching?
c.	Write the use of thermocouples.
d.	Enumerate few applications of Flame photometry.
e.	What is the principle behind TLC?
f.	What type of medium is used for electrophoresis?
g.	Enumerate the detectors used in Gas chromatography.
h.	Write the various pumps used in HPLC.
i.	Write a note on stationary phases used in Gel chromatography.
j.	Write an example each for cation exchange resin and anion exchange resin.

SECTION B

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

a.	Write the principle of Fluorescence with Jablonski diagram.
b.	Discuss the principle and instrumentation of IR spectroscopy.
c.	Describe the principle, procedure for development and application of paper chromatography.

SECTION C

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

a.	Describe the Instrumentation of HPLC with special note on columns.
b.	Discuss the principle and applications of ion exchange chromatography.
c.	Explain the Gel electrophoresis technique with a neat sketch.
d.	Describe the various electronic transitions in UV spectroscopy.
e.	Write short notes on PMT and its working.
f.	Explain the light sources and detectors of IR region.
g.	Write the principle and instrumentation of atomic absorption spectroscopy with a neat sketch.

PAPER ID-311090

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BPHARM
(SEM VII) THEORY EXAMINATION 2023-24
INSTRUMENTAL METHODS OF ANALYSIS – 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.	Give one example for strong cation exchange resin and strong anion exchange resin.
b.	Write about stationary phases used in Affinity chromatography.
c.	What do you understand by wet packing and dry packing?
d.	What is mulling and pelleting technique?
e.	Write the sources of I.R radiation.
f.	Differentiate Nephelometry and Turbidimetry.
g.	Define chromophores and auxochromes with suitable example.
h.	Write the I.R functional bands for amines and ketones.
i.	What is hypsochromic shift?.
j.	Elaborate the column types in HPLC.

SECTION B

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

a.	Describe the principle, instrumentation and few applications of atomic absorption spectroscopy.
b.	Explain the instrumentation of HPLC with a neat sketch. Write a note on Van Deemter equation.
c.	Derive Beer Lambert's law. Explain the working of photomultiplier tube.

SECTION C

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

a.	Describe the principle of fluorescence with Jablonski's diagram. What do you mean by quenching.
b.	Explain FT-IR spectrometer with interferogram.
c.	Elaborate the interferences in flame photometry with its counter measures to prevent them.
d.	Explain the principle involved in ion exchange chromatography. Write the factors affecting ion exchange.
e.	Outline the detectors used in Gas chromatography. What do you know about size exclusion chromatography?
f.	Describe the types of paper chromatography in detail.
g.	Write the principle and instrumentation of paper electrophoresis.

PAPER ID-310103

Roll No: | | | | | | | | | | | | | |

BPHARM
(SEM VII) THEORY EXAMINATION 2024-25
INSTRUMENTAL METHODS OF ANALYSIS – 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.	Name the types of electronic transitions involved in UV-Visible spectroscopy.
b.	Define chromophore and auxochrome with example.
c.	What is mull technique?
d.	Differentiate between fluorescence and phosphorescence.
e.	What is electrophoretic mobility?
f.	Mention the advantages of Thin Layer Chromatography (TLC).
g.	Differentiate between isocratic and gradient elution in HPLC.
h.	How does temperature programming affect the separation process in GC?
i.	What is the principle of nephelo-turbidometry?
j.	Discuss the principle behind gel chromatography.

SECTION B

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

a.	Explain the principles, instrumentation, and applications of UV-Visible spectroscopy.
b.	Discuss Beer-Lambert's law, its derivation, and the deviations observed.
c.	Discuss the principle, theory and instrumentation of HPLC.

SECTION C

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

a.	Explain principle and applications of spectrofluoremetry.
b.	Discuss instrumentation and applications of nephelo-turbidometry.
c.	Write the principle and instrumentation of gel electrophoresis.
d.	Outline the mechanism involved in ion exchange chromatography with factors affecting.
e.	Discuss the principles of flame photometry and AAS along with interference in flame photometry.
f.	Explain plate and rate theory involved in chromatography.
g.	Explain the importance of temperature programming along with methodology of GC.

Paper ID : 250069

Roll No: | | | | | | | | | | | | | |

BPHARM

(SEM VII) THEORY EXAMINATION 2024-25

INSTRUMENTAL METHODS OF ANALYSIS – 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.	Discuss the bathochromic shift and hypsochromic shift.
b.	Define wave number and absorptivity.
c.	List any four types of detectors used in UV-Visible spectroscopy.
d.	Discuss about the sampling techniques in IR spectroscopy.
e.	What is HETP? Gives its significances.
f.	What are the different vibrational modes in IR spectroscopy?
g.	What is the principle of affinity chromatography?
h.	Write the application of nephelo-turbidimetry.
i.	Define isocratic and gradient elution.
j.	What is electrophoretic mobility?

SECTION B

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

a.	What is fluorimetry? Discuss quenching, instrumentation and application.
b.	Write a detail note on gas chromatography and discuss derivatization and temperature programming in gas chromatography.
c.	Discuss factors affecting on electrophoretic mobility. Write note on gel electrophoresis.

SECTION C

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

a.	Write note on electronic transition in UV spectroscopy.
b.	Discuss Beer's and Lambert's law with deviations.
c.	Write a detail note on the Thin Layer Chromatoghaphy.
d.	What is atomic absorption spectroscopy? Discuss principle, interference & applications.
e.	Write note on detectors used in IR spectroscopy.
f.	Write principle, instrumentation and application of HPLC.
g.	Discuss the mechanism of ion exchange process, factors affecting and applications.