

MSc Sem.-2 Examination

410

Pharma Science

May-2025

Time : 2-30 Hours]

[Max. Marks : 70

Q1A	Discuss the construction, working, and pharmaceutical applications of Scanning Electron Microscopy (SEM).	7 Marks
Q1B	Explain the wave and particle nature of electromagnetic radiation. Describe the significance of the electromagnetic spectrum in spectroscopy.	7 Marks
OR		
Q1A	Describe the basic working principles of Phase Contrast Microscopes. Explain their applications in pharmaceutical analysis.	7 Marks
Q1B	Describe the theory, instrumentation, and applications of IR Spectroscopy. How do molecular vibrations influence IR absorption?	7 Marks
OR		
Q2A	What is the Beer-Lambert Law? Discuss its mathematical expression and explain the various factors leading to its deviation.	7 Marks
Q2B	Write down the applications of Applications of UV-VIS Spectroscopy in detail.	7 Marks
OR		
Q2A	Discuss the instrumentation of a UV-Visible spectrophotometer with a labelled diagram and explain the function of each component.	7 Marks
Q2B	Write down the Advantages and Limitations of UV-Visible Spectroscopy.	7 Marks
OR		
Q3A	What is HPTLC? Write a detailed note on HPLTC.	7 Marks
Q3B	Explain size exclusion chromatography and its separation pattern.	7 Marks
OR		
Q3A	Explain affinity chromatography with an example.	7 Marks
Q3B	What is full form of HPLC? Explain the parts of HPLC.	7 Marks
OR		
Q4A	What is full form of AAS? How does AAS work?	7 Marks
Q4B	What is the difference between Flame AAS and Graphite Furnace AAS?	7 Marks
OR		
Q4A	Define MALDI-TOF and explain its application in mass spectrometry.	7 Marks
Q4B	What are two common ionization methods in mass spectrometry?	7 Marks
OR		
Q5	Answer the following questions (Any Seven)	14 Marks
OR		
I	Define fluorescence in one line.	2 Marks
II	Which law is used to calculate vibrational frequencies in IR?	2 Marks
III	Write one difference between absorption and emission spectra.	2 Marks
IV	What is the function of a photomultiplier tube (PMT)?	2 Marks
V	What is the role of a monochromator in a UV-Visible spectrophotometer?	2 Marks
VI	Give the basic formula for the Woodward-Fieser rule.	2 Marks
VII	What is R _f value in paper chromatography? Give the formula for calculating the R _f .	2 Marks
VIII	Name two synonyms of size exclusion chromatography.	2 Marks
IX	What type of molecules can be analyzed using gas chromatography?	2 Marks
X	Why do we use a hollow cathode lamp in AAS?	2 Marks
XI	What does the "matrix" do in MALDI-TOF?	2 Marks
XII	How does a time-of-flight (TOF) analyser work?	2 Marks

BEST OF LUCK