0302E1357

Candidate's Seat No : _____

MSc Sem.-1 Examination

402

Toxicology

February-2025

Time : 2-30 Hours] **[Max. Marks : 70**

Q1A	Differentiate between simple and compound microscopes in terms of their design, working mechanism, and applications in toxicology.	7 Marks
Q1B	Write a note on UV-visible spectrophotometry and list out its applications.	7 Marks
	OR	
Q1A	Explain the principles of Transmission Electron Microscopy (TEM) and describe its role in ultrastructural analysis in toxicology.	7 Marks
Q1B	Write a note on atomic absorption spectrophotometry and list out its applications.	7 Marks
Q2A	Define histopathology and explain its importance in the diagnosis of diseases. Provide examples of how histopathological studies contribute to toxicology.	7 Marks
Q2B	Explain the principle and steps involved in tissue processing and embedding. Highlight the significance of paraffin embedding in histopathology.	7 Marks
	OR	
Q2A	Explain the principles of Hematoxylin and Eosin (H&E) staining, detailing the steps involved and the type of information it provides in histological studies.	7 Marks
Q2B	Describe the structure and working of a microtome. Discuss its role in preparing tissue sections for microscopic analysis.	7 Marks
Q3A	Explain the HPLC in detail with its advantages and applications.	7 Marks
Q3B	Write a detailed note on gas chromatography.	7 Marks
	OR	
Q3A	What is the principle of ion exchange chromatography? Explain the technique in detail.	7 Marks
Q3B	Write a note on size-exclusion column chromatography.	7 Marks
Q4A	Write a detailed note on Tandem mass spectrometry. What are the advantages of it?	7 Marks
Q4B	What is the full form of MALDI-TOF? Explain the technique in detail.	7 Marks
	OR	
Q4A	Explain ICP-MS in detail. Write down the three advantages and applications of it.	7 Marks
Q4B	Write a detailed note on HR-LCMS in detail. Give its applications.	7 Marks
Q5	**Answer the following questions (Any Seven)**	**14 Marks**
I	What is the function of the objective lens in a compound microscope?	2 Marks
II	Which microscope is commonly used to observe live cells?	2 Marks
III	What does FTIR stand for?	2 Marks

(P.T.O)

IV	What is the role of decalcification in tissue processing?	2 Marks
V	Which staining method is considered the gold standard in histopathology?	2 Marks
VI	What is the primary goal of fixation in histopathology? Which fixative is most commonly used in routine histopathology?	2 Marks
VII	What is the full form of HPTLC? Give one advantage of it.	2 Marks
VII	What is stationary phase in paper chromatography? On what basis the analysis are separated in this technique?	2 Marks
IX	Capillary electro-chromatography is a combination of which two techniques?	2 Marks
X	Give example of any two soft ionisation technique.	2 Marks
XI	What is matrix effect?	2 Marks
XII	Write down the full form of SDS-PAGE. What is the role of beta mercapto ethanol in SDS-PAGE?	2 Marks