2111E752

Candidate's Seat No :_____

M.Sc Sem-3 Examination

502

Toxicology

Time : 2-30 Hours] **November-2024** **[Max. Marks : 70**

Q1A	Describe the working principle of Atomic Absorption Spectroscopy (AAS). Discuss its applications in toxicological analysis.	7 Marks
Q1B	Explain the principle and functioning of Mass Spectrometry (MS). How is it applied in toxicology to identify and quantify chemical compounds, and what are the advantages of using MS in analytical toxicology?	7 Marks
	OR	
Q1A	Discuss the working mechanism of Fourier Transform Infrared (FTIR) Spectroscopy. How is FTIR used in toxicological analysis?	7 Marks
Q1B	Compare and contrast Atomic Absorption Spectroscopy (AAS) and Mass Spectrometry (MS) in terms of their sensitivity, detection limits, and applications in toxicological testing.	7 Marks
Q2A	Explain the parts of HPLC in detail.	7 Marks
Q2B	What is capillary electrophoresis? Write down its role in sanger sequencing.	7 Marks
	OR	
Q2A	Explain separation in HPLC and its application in detail.	7 Marks
Q2B	Explain how Capillary Electrophoresis works as a separation technique. Discuss its advantages and limitations.	7 Marks
Q3A	Describe the working principles of Scanning Electron Microscopy (SEM) and its applications.	7 Marks
Q3B	Describe the working principles of TransmissionElectron Microscopy (TEM) and its applications.	7 Marks
	OR	
Q3A	Explain the principle of Confocal Microscopy and how it differs from traditional optical microscopy. Discuss its applications in biological research and toxicology.	7 Marks
Q3B	Discuss the importance of advanced microscopy techniques, including SEM, TEM, and Confocal Microscopy, in the field of toxicology.	7 Marks
Q4A	Write detailed note on the CT scan and also discuss its significance in toxicology.	7 Marks
Q4B	Describe the MRI Scan with instrumentation with its significance in toxicology.	7 Marks
	OR	
Q4A	Discuss in detail about the Micro CT scan.	7 Marks
Q4B	Compare and contrast CT and MRI scans in terms of their underlying technology, the type of information they provide, and their specific	7 Marks

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	applications in toxicological imaging.	
Q5	**Answer the following questions (Any Seven)**	**14 Marks**
I	How does Fourier Transform Infrared (FTIR) Spectroscopy identify chemical compounds?	2 Marks
II	What type of substances can Atomic Absorption Spectroscopy (AAS) detect in toxicological studies?	2 Marks
III	How is AAS different from FTIR in terms of the type of analysis conducted?	2 Marks
IV	What are advantages of using HPLC in toxicology over traditional chromatography techniques.	2 Marks
V	What is the key advantage of Capillary Electrophoresis over traditional chromatographic methods?	2 Marks
VI	What is the role of degasser in HPLC?	2 Marks
VII	How does Transmission Electron Microscopy (TEM) differ from SEM in terms of the images it produces?	2 Marks
VII	What is a significant advantage of Confocal Microscopy over traditional light microscopy?	2 Marks
IX	What type of microscopy is best for generating three-dimensional images of cells and Why?	2 Marks
X	What is Hounsfield units (HU)?	2 Marks
XI	Write the difference between an X-ray and a CT scan.	2 Marks
XII	What is the role of Rf in the MRI?	2 Marks

BEST OF LUCK