UNIVERSITY OF JAFFNA, SRI LANKA
FACULTY OF ALLIED HEALTH SCIENCES
FIRST YEAR SECOND SEMESTER EXAMINATION IN BScHons (MLS) - 2023
MLSMT 1213 MEDICAL LABORATORY TECHNOLOGY II

Date: 20.06.2025 **Time: 2 hours**

Answer all Six Questions.

1. **1.1** Describe the working principle of UV/Visible spectroscopy. **(20 Marks)**

   1.2 Explain the causes and corrective actions of the following interferences that may occur in atomic absorption spectroscopy.

   1.2.1 Spectral interferences **(20 Marks)**

   1.2.2 Chemical interferences **(20 Marks)**

   1.2.3 Ionization interference **(20 Marks)**

   1.3 State the clinical applications of Nephelometry. **(20 Marks)**

2. **2.1** Outline the principle of Hydrophobic Interaction chromatography. **(20 Marks)**

   2.2 Explain the steps of performing a Hydrophobic Interaction chromatography to purify a newly invented drug molecule. **(60 Marks)**

   2.3 Give the applications of gel permeation chromatography. **(20 Marks)**

3. **3.1** Briefly describe the scientific basis of DNA gel electrophoresis. **(20 Marks)**

   3.2 Explain the usage of the following in a Protein gel electrophoresis.

   3.2.1. Bromophenol blue **(20 Marks)**

   3.2.2. Coomassie brilliant blue **(20 Marks)**

   3.2.3. Glycerol **(20 Marks)**

   3.3 State the importance of using Ethidium Bromide in DNA Gel Electrophoresis. **(20 Marks)**

4. 4.1 Describe the principle of mass spectrometry. **(50 marks)**

4.2 Name four (4) different types of mass analyzers used in mass spectrometry. **(20 marks)**

4.3 Outline the steps of measuring serum electrolytes (Na+ and K+) in flame photometry. **(30 Marks)**

5. 5.1 Describe the working principle of,

5.1.1. Anion exchange chromatography. **(20 Marks)**

5.1.2. Paper chromatography **(20 Marks)**

5.2 Explain how thin-layer chromatography (TLC) can be used to identify the presence of an amino acid impurity in a purified drug sample **(60 Marks)**

6. Write short notes on

6.1 pH electrode. **(25 Marks)**

6.2 Clark-style amperometric O_2 sensor. **(25 Marks)**

6.3 Pneumatic tube systems. **(25 Marks)**

6.4 Ion-Selective Electrodes. **(25 Marks)**