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End Semester Examination, December 2024
MSc(FORENSIC SCIENCE) – 1st Semester
Instrumental Analysis (MSFS707)

Time: 2.5 hrs.

Max Marks: **50**

Note: **All Questions are compulsory.** Marks are indicated against each question.

PART-A

Q.1 *First question will consist of 7 small questions covering entire syllabus out of which student has to attempt 5 questions and understanding level will be assessed.*

- (a) Define spectroscopy and its fundamental principles. [CO-1] [L-1]
- (b) List the different types of electromagnetic radiation sources used in UV and visible spectroscopy. [CO-1] [L-1]
- (c) What is chromatography, and how is it classified? [CO-1] [L-1]
- (d) Mention the primary applications of UV-visible spectroscopy in forensic science. [CO-1] [L-1]
- (e) Recall the basic principles of Polymerase Chain Reaction (PCR). [CO-1] [L-1]
- (f) Name the types of detectors used in infrared spectrophotometry. [CO-1] [L-1]
- (g) Identify the main principles of Radioimmunoassay (RIA). [CO-1] [L-1]

2x5

PART-B

Q.2 Explain the interaction of radiation with matter, covering reflection, absorption, transmission, and their forensic applications. [CO-2][L-2]

OR

Describe the various types of sources and detectors used in UV-visible spectrophotometry. [CO-2][L-2]10

Q.3 How would you choose an appropriate instrumental technique for analyzing a complex biological sample? [CO-3][L-3]

OR

Illustrate the step-by-step process of HPLC method development for forensic sample analysis. [CO-3][L-3]10

Q.4 Interpret the results of an infrared spectroscopy analysis, focusing on peak assignments and their significance. [CO-4] [L-4]

OR

Analyze and explain how atomic absorption spectrometry can be used for quantitative analysis in forensic science. [CO-4]
[L-4]10

Q.5 What basic steps can be taken to ensure that HPLC instruments function properly and produce accurate results? [CO-5] [L-4]

OR

