THE OPEN UNIVERSITY OF SRI LANKA

FACULTY OF HUMANITIES AND SOCIAL SCIENCES

DEPARTMENT OF LEGAL STUDIES

LL.M IN CRIMINAL JUSTICE ADMINISTRATION

FIRST YEAR- FINAL EXAMINATION - 2022/2023

LLPA 306- CRIMINAL INVESTIGATION I (FORENSIC TOXICOLOGY, DNA & EQD)

DURATION: 03 HOURS

Date: 17.09.2023 **Time: 09.30 a.m. – 12.30 p.m.**

Total No. of Questions: 07

Answer four (04) questions only.

Select at least one question from each part.

Write answers for each part on a separate Answer Book.

Candidates will be penalized for illegible handwriting.

PART 01- FORENSIC TOXICOLOGY

01.

i. What is Forensic Toxicology? Briefly explain the role of Forensic Toxicologist

(04 Marks)

ii. "Odour or the specific smell of a poison plays a major role in identification of unknown poisons. "Giving at least three examples briefly explain this statement.

(06 Marks)

iii. A women consumed oil of wintergreen (Methyl Salicylate) as an abortifacient. She developed sweating, abdominal pain, convulsions & died in coma. The police recovered a bottle containing a clear liquid with "menthol-like" odour, a glass containing small amount of clear liquid with the same odour in her room. Further, there were vomitus on the floor.

(a) Methyl salicylates metabolize to Salicylic acid in the body. What is the main organ responsible for metabolism? Which organ is responsible for excretion of the drug and its metabolites?

(b) Considering the metabolism of this drug, giving reasons name suitable samples to be sent by the Judicial Medical Officer for toxicological analysis?

(c) What specimens do you request police to collect?

(d) Describe the colour test that could be carried out to identify Methyl salicylate and its metabolite, Salicylic acid. (12 Marks)

(iv) Name three poisonous gases giving availability in society? (03 Marks)

02.

i) Poisons can be classified into seven major groups. Name four such groups with one example for each group. (04 Marks)

(ii) Specific symptoms and specific postmortem changes are very important in the identification of poisons. With reasons to give the poison you suspect in the following cases.

(a) An old man was found unconscious in an enclosed garage with the car engine running. He was admitted to hospital and died few hours later. At the post- mortem examination, the JMO observed that the blood is cherry red.

(b) A five year old girl drank a brown coloured varnish remover thinking it is a Cola drink. She developed vomiting, difficulty in breathing, headache & blurred vision and recovered after hospital treatment. (06 Marks)

(iii) A female travelling from Pakistan stayed in a hotel room. The following day morning she was found dead inside the room. At the postmortem examination the JMO recovered thirty condoms which were partially filled with brown powder in her stomach. Out of them two packets were found ruptured. Laboratory examination revealed that the condom packets contain Heroin.

(a) If you are the JMO, carrying out the post-mortem of this body, considering the drug metabolism and excretion, what specimens do you collect for toxicological analysis to prove that the death is due to Heroin overdose?

(b) What is the most suitable specimen to be analyzed in this case?

(c) How do you send these specimens to the forensic toxicology laboratory for examination?

(d) What are the metabolites of Heroin?

(e) Name one suitable extraction procedure (No details required) and colour test that could be used to identify those metabolites.

(f) Name one analytical technique that could be applied in the analysis of heroin in body fluids. (15 Marks)

03.

(i) Certain poisons can be used as an acute or chronic poison. Giving examples, explain what is acute Toxicity and chronic toxicity. (06 Marks)

(ii) If a person died due to chronic Arsenic poisoning, what are the suitable postmortem samples for toxicological analysis? (04 Marks)

(iii) Briefly explain the suitable characteristics of a poison to be used as a homicidal agent. Comment on the drawbacks and suitability of Arsenic to be used as a homicidal agent.

(05 Marks)

(iv) Explain the situations where Carbon monoxide analysis in blood is highly important in Forensic Toxicology. (05 Marks)

(v) What are the suitable postmortem specimens to test for carbon Monoxide? What is the analytical technique used in the analysis of carbon monoxide? (05 Marks)

PART 02- EXAMINATION OF QUESTIONED DOCUMENTS (EQD)

04. Forensic document examiners often deal with questions of document authenticity. To determine whether a document is genuine, an examiner may attempt to confirm who created the document, determine the timeframe in which it was created, identify the materials used in its preparation or uncover modifications to the original text.

If a question is being asked as to whether a specific individual wrote a body of text or signature, then the first step is for the investigator to obtain known exemplars or samples of writing from that individual.

a. What is the main type of specimens for the above mentioned examination?

b. What are the main factors to be considered obtaining the above-mentioned specimens.

(25 Marks)

05. Documents can be examined for evidence of alterations, obliterations, erasures, and page substitutions. Or the examiner can study the methods, materials or machines that created the document, providing key information that can identify or narrow the possible sources of the document. Discuss this statement with the relevant examples. (25 Marks)

PART 03- FORENSIC SEROLOGY & DNA

06. Briefly explain the followings;

a. How to maintain the chain of custody of court case productions pertaining to DNA

b. Importance of the DNA finger printing in crime investigation. (25 Marks)

07. Write short notes on the followings;

a. What is the Importance of the primary testing and confirmatory testing of samples prior to DNA testing?

b. Why it is important to Prevent from contamination of DNA samples.

c. What is a reference sample and why it is required? What type of reference sample is taken for DNA analysis from the deceased victim and suspect? (25 Marks)