



THE OPEN UNIVERSITY OF SRI LANKA
FACULTY OF HUMANITIES AND SOCIAL SCIENCES
DEPARTMENT OF LEGAL STUDIES
DEGREE OF MASTER OF LAWS IN CRIMINAL JUSTICE ADMINISTRATION
FINAL EXAMINATION – 2018/2019
LLPA306/LWP2106–CRIMINAL INVESTIGATION I
(FORENSIC TOXICOLOGY, DNA & EQD)
DURATION: 03 HOURS

Date: 22.08.2020

Time:9.30 a.m. – 12.30 p.m.

Instructions for candidates:

- **Total number of questions 07**
- **Answer four (04) questions only**
- **Select at least one question from each section. Each carries 25 marks**
- **Write answers for each section on a separate Answer Book**
- **Candidates will be penalized for illegible handwriting**

PART I – FORENSIC TOXICOLOGY

01. i. What is the definition of ‘Pesticide’? Pesticides could be classified into several groups according to the type of pest they control. Give five different groups. (Examples of the names of pesticides are not required).
- ii. “The colour of a poison is highly useful for a toxicologist to identify an unknown poison” Giving examples to explain this statement.
- iii. After a quarrel between two people, a liquid poison was poured on to one person’s head by another person. He was admitted to hospital but died after a few hours. The shirt and the sarong of the deceased had a very strong petroleum smell and had bluish green wet patches all over. The empty poison bottle was also found at the scene.

According to the above history,

- a) What is the route of administration of poison you suspect and why do you suspect that route?
 - b) What is the probable poison in this particular case and why do you suspect it?
 - c) What specimens do you request the police to collect?
 - d) What specimens do you request from the Judicial Medical Officer (JMO) for toxicological analysis in this case? What are the most important specimens to be sent by the JMO for toxicological analysis?
 - e) How do you instruct the JMO to collect and forward specimens to the Govt. Analyst's Department?
 - f) If this person was under the influence of alcohol and you are asked to analyse his blood for alcohol content, what is the most suitable technique to be used in the analysis? What chemical characteristic of alcohol is important in applying the above technique?
02. i. Specific symptoms and specific post mortem changes are very important in the identification of poisons. With reasons, explain the poison you suspect in the following cases?
- a) An undergraduate student developed vomiting after consumption of dinner from the canteen and the following day she noticed extensive hair loss. On investigation at the university canteen it was revealed that they used rat poison on the previous day to control rats.
 - b) A person was found unconscious in a room with a home heater on and admitted to the hospital. He died a few hours later. At the postmortem the Judicial Medical Officer found that his blood is cherry red in colour.

- c) A person was found dead in a jewelry shop. At the post mortem examination it was noticed that his stomach wall was dark reddish pink in colour with a bitter almond smell.
- ii. A 58 year old lady drank a liquid containing a high concentration of methyl salicylate to commit suicide. She was found dead in her room. Police officers observed a strong “menthol-like” odor, coffee cups containing clear liquid with a similar odor, and several empty medication containers at her room.
- a) Briefly explain the different routes of administration of poisons and give the order according to the severity of poisoning. What is the route of administration in this case?
- b) Methyl salicylate 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?
- c) Considering the metabolism of this drug, giving reasons, briefly explain the suitable samples for toxicological analysis to be sent by the doctor (JMO)?
- d) Describe the colour test that could be carried out to identify Methyl salicylate and its metabolite, Salicylic acid.
03. i. Name two metals except Arsenic that are poisonous to humans.
- ii. Arsenic can be used as an acute or chronic poison. Explain what is acute and chronic toxicity.
- iii. If a person died due to chronic Arsenic poisoning, what are the suitable post mortem samples for toxicological analysis?
- iv. Metals in post mortem samples, can be analysed by ICP-MS or Atomic absorption Spectroscopy. Before subject to these techniques, it is necessary to carry out the sample preparation. Give one possible extraction technique which could be applied to extract metals from blood.

- v. Briefly explain the suitable characteristics of a poison to be used as a homicidal agent? Comment on the draw backs and suitability of Arsenic to be used as a homicidal agent.

PART II – DNA

04. Forensic Serology involves the detection and identification of body fluids from a crime scene.
 - i. What are the incidences where forensic serology applies?
 - ii. What is meant by screening test and confirmatory test? What are the specific features of screening test?
 - iii. Draw a complete contact-evidence triangle for a rape.
 - iv. What exhibits/ productions recovered from a scene of a rape can produce for serological analysis?

05. Analysis of serological evidence ends up with identification of individuals by DNA analysis.
 - i. What is “chain of custody”? Briefly explain why maintaining the “chain of custody” is specifically important for the cases in which DNA analysis is requested?
 - ii. What are the main steps that should follow in a DNA analytical protocol after sampling (collecting samples from evidence)?
 - iii. “Some evidence samples fail to produce good DNA profiles. This is mainly due to poor packaging and storage”. Explain this statement.
 - iv. What is meant by “paternity test”?

PART III – EQD

06. a) Define Forgery. What are forgery types? Explain Traced forgery.
(10 marks)
- b) Differentiate between Fake and Genuine Currency notes.
(06 marks)
- c) What do you understand by the term Alterations in Documents?
(09 marks)
07. a) What are handwriting specimens for comparison? Which is better and why?
(12 ½ marks)
- b) What are handwriting characteristics? How do age and health affect an individual's handwriting?
(12 ½ marks)

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