

THE OPEN UNIVERSITY OF SRI LANKA
FACULTY OF HUMANITIES AND SOCIAL SCIENCES
DEPARTMENT OF LEGAL STUDIES
LL.M IN CRIMINAL JUSTICE ADMINISTRATION – LEVEL 10- 1st Year
FINAL EXAMINATION – 2017/2018
LLPA306 / LWP2106 - CRIMINAL INVESTIGATION I (FORENSIC
TOXICOLOGY, DNA & EQD)
DURATION –03 HOURS

07

00068



Date: 2nd December 2018

Time: 09.30 a.m. – 12.30 p.m.

Total number of questions: 07

Answer four (04) questions only.

Select at least one question from each section.

Write answers for each section on a separate Answer Book

Candidates will be penalized for illegible handwriting.

PART I –FORENSIC TOXICOLOGY

1.

- i. Dose determines the level of effect of poison in the body. Briefly explain three different types of dose important in forensic toxicology.
- ii. Name seven main groups of poisons with at least one example for each group.
- iii. Colour and specific odour of poisons are very valuable information for a toxicologist in identification of unknown poisons. Explain the importance of colour and odour, giving at least two examples for each character.
- iv. A girl and boy had an affair for two years. The boy was always suspecting the girl and he did not like to see her talk with other boys. The affair continued with lot of troubles. One day after a fight with the boyfriend, the girl consumed over dose of sleeping tablets, valium and became unconscious. She was admitted to the hospital by her parents. After few days, she recovered, but still was in the hospital for further treatments. The boyfriend visited her after recovery with two unopened Milo chocolate milk packets. He gave one to the girl and consumed the other by himself. As soon as they consumed the milk, both died in the hospital ward.

On investigation, the police found two Milo packets with remaining milk and an injection syringe with a small amount of colourless liquid in the boy's bag.

Further, they detected puncture mark top part of each milk packet. Each Milk packet and the liquid in the syringe had almond smell.

Imagine you are the toxicologist engaged in this investigation.

The police and the doctor seek your advice regarding the collection and forwarding of samples for toxicological analysis in this particular case.

- a) How do you instruct them to collect and forward specimens to you?
- b) What specimens do you request police to collect?
- c) What specimens do you request from the doctor for toxicological analysis?
- d) What poison do you suspect in this case and why do you suspect it?

(25 marks)

2.

- I. Physical form of a poison (gas, liquid etc.) and route of administration determine the severity of poisoning.
 - a) Give the order of poisoning according to the physical form?
 - b) Give order of poisoning based on the route of administration?
- II. Two people slept in a car with the Air Conditioner and the engine on. Both were found unconscious in the morning and were admitted to the hospital, one was found dead on admission and the other one recovered after treatments. In the post mortem examination Judicial Medical Officer noticed that the blood is cherry red in colour. On investigation, police detected that the exhaust air leaked inside the car while the engine was on.
 - a) What is the probable poison in this particular case and why do you suspect it?
 - b) What is the route of administration of poison suspect and why do you suspect that route?
 - c) What is the most important specimen to be sent by the doctor for toxicological analysis in this particular case?
- III. Hydrolysis of aspirin to salicylic acid by nonspecific esterases occurs in the liver so that only 68% of the dose reaches the systemic circulation as aspirin. A student consumed 100 tablets of Aspirin to commit suicide. Based on your knowledge on metabolism, what specimens do you recommend for toxicological analysis in this particular case.
- IV. Describe the colour test that you can carry out to identify Aspirin and its metabolite, Salicylic acid.

(25 marks)

3.

- I. Extraction of poisons from body fluids (blood, urine etc.) and tissues (liver, kidney etc.) is extremely important in Forensic toxicological analysis. Name one suitable extraction method that could be used in following cases. (the procedure is not necessary).
 - a) Analysis of liver sample for the presence of metal- Arsenic.
 - b) Analysis of blood sample for cyanide and ethyl alcohol.
 - c) Analysis of bile sample for heroin and its metabolites

- II. What is /are the active poisonous compound/ compounds found in the following poisonous plants?
 - a) Atthana
 - b) Niyagala
 - c) Cannabis
 - d) Poppy

- III. If a group of people died after consumption of 'kassippu' deliberately mixed with Methanol;
 - a) What is the specific symptom you expect from these people before death?
 - b) What specimens do you send for toxicological analysis after the post mortem examination?
 - c) What are the metabolites you expect in these specimens?
 - d) What is the most suitable analytical method you can use to analyse these sample to identify methanol and its metabolites in one run?

- IV. Briefly explain the suitable characteristics of a poison to be used as a homicidal agent?

(25 marks)

PART II EXAMINATION OF QUESTIONED DOCUMENTS (EQD)

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4. Assume that you are the defense counsel for a testamentary case. There is a Last Will which is in favour of your client, but the complainant challenges the last will. As such you need to get a scientific evidence from the Government Examiner of Questioned Documents (GEQD);

- a) What are the main Documents you need to send the GEQD?
- b) What kind of specimen you should send for this examination?
- c) What are the main scientific analysis regarding this examination?

(25 marks)

5. Human trafficking is one of the major crimes in the world today. These criminals have sound knowledge in modern technology relating to the documents and relevant accessories. Therefore the investigators and the law enforcement officers should be aware of these kinds of frauds.

- a) What are the main case productions to be sent for the Forensic Document Examination Laboratory to get scientific evidence above investigations
- b) Discuss the important examination on one of the case productions that you mentioned above.

(25 marks)

PART III –FORENSIC SEROLOGY & DNA

6. Briefly describe followings;

- a) DNA evidence in homicide cases.
- b) Major steps in a forensic DNA fingerprinting.
- c) Paternity test.
- d) Chromosomes and genes.

(25 marks)

7. Write short notes on the following topics;

- a) Pattern analysis.
- b) Maintaining the chain of custody in physical evidence.
- c) Preliminary tests and confirmatory tests in forensic serology.
- d) Sources of biological evidence in DNA fingerprinting.

(25 marks)