



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 – 2013/2014
LWP2106 – CRIMINAL INVESTIGATION I (FORENSIC TOXICOLOGY, DNA
& EQD)
DURATION: 03 HOURS

DATE: 24th May 2014

TIME: 9.30 a.m. – 12.30 p.m.

Total No. 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

01. i. What is Toxicology?
Name three branches of Toxicology and explain what is meant by Forensic Toxicology.
- ii. Pesticides could be classified into several groups according to the type of pest they control.

Give five different groups. (Examples with the names of pesticides are not required).
- iii. A small child developed vomiting and diarrhea and became unconscious. He was admitted to the hospital and died within a day. The cause of death was thought to be some viral diseases. After a few days of the incident, the grandfather and grandmother developed same symptoms after drinking

cow's milk drawn from their own cow. They noticed a bitter taste in milk. They were admitted to the hospital and produced the remaining portion of cow's milk to the doctor. On the 7th day alms giving, the mother consumed some fruit salad kept in the refrigerator and she too developed vomiting. Then the family members suspected something behind this incident and informed the police.

On investigation, after questioning the male and female servants, it was revealed that the female servant had added some poison to baby's cough syrup, cow's milk and the fruit salad. The male servant further revealed that, she had hidden the bottle of poison in the garage and the police recovered it later.

The baby's body was exhumed and post-mortem examination was performed by the judicial medical officer.

If the police and the doctor seek your advice regarding the collection & forwarding of samples for toxicological analysis in this particular case,

- a) How do you instruct them to collect and forward specimens to the Government Analyst's Department?
- b) What specimens do you request police to collect?
- c) What specimens do you request from the doctor for toxicological analysis?

Discuss.

02. i. Explain briefly the important physical and chemical characteristics that are useful for the forensic toxicologist in the identification of an unknown poison.

Support your answer with the relevant examples.

- ii. A girl was murdered by her boyfriend by introducing an unknown poison while travelling in a bus. The police recovered an injection syringe with small amount of greenish blue colour liquid. At the post-mortem

examination the doctor detected a puncture mark on the girl's abdomen and also a greenish blue patch on her skirt near the puncture mark.

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 characteristics make this poison a suitable homicidal agent?
- d) What are the most important specimens to be sent by the doctor for toxicological analysis in this case?
- e) If, samples of blood, urine, and the suspected injection syringe recovered at the scene were submitted for analysis, what is the most suitable analytical technique you could use to identify this poison.

Discuss.

03.
 - i. What is the main organ where drug metabolism take place, Which is the main organ responsible for excretion of drugs?
 - ii. A person was arrested by the police at the airport on an information given by an informant stating that this person was carrying heroin in his anus. He was produced to a doctor and found one of the packets had burst inside the anus. The suspect's breathing and heart rate became slow and finally came to the stage of coma and died a few hours later.
 - a) If you were 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) Briefly discuss the reasons for selection of those specimens taking special attention to the metabolism and excretion.
 - c) What is the most suitable specimen to be analysed in this case?

- iii. How do you send these specimens to the forensic toxicology laboratory for examination?
- iv. What analytical techniques could be applied in the analysis of heroin in body fluids?

PART II- Examination of Questioned Documents (EQD)

- 04. It is reported that there is an increase in the practice of using the Southern Express Way for changing the counterfeited currency by travelers.
 - a) What sort of scientific conclusion can be drawn against the person who change the counterfeited currency?
 - b) What other examinations/analysis can be done in Forensic Questioned Documents Laboratories?
 - c) Explain two examinations mentioned above to find out the nature and the origin of the disputed matter.

05. What is Questioned Document Examination?

Discuss under the following themes;

- Overview
- Scope of document examination
- Types of document examination
- Historical cases.

PART III – Forensic Serology & DNA

06. Briefly explain the followings.
- i. The Locard's principle
 - ii. Blood pattern analysis
 - iii. Forensic serology
 - iv. Crime scene investigation in relation to forensic serology.
07. a) Write short notes on the following topics.
- i. DNA fingerprinting
 - ii. Polymerase chain reaction
 - iii. Chain of custody of forensic samples.
- b) What are the important factors to be considered during evidence collection and preservation in crime scene investigation?

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