

THE OPEN UNIVERSITY OF SRI LANKA  
FACULTY OF HUMANITIES AND SOCIAL SCIENCES  
LL.M. IN CRIMINAL JUSTICE ADMINISTRATION - LEVEL 7  
FINAL EXAMINATION – 2015/2016



LWP 2106 – CRIMINAL INVESTIGATION I – FORENSIC TOXICOLOGY, EQD &  
DNA  
DURATION – 03 HOURS

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Date : 24.06.2017

Time: 09.30 a.m. – 12.30 p.m.  
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Total number of questions 7.

Candidates will be penalized for illegible handwriting.

Answer **FOUR (04)** questions selecting at least **ONE** question from each Part. Each question carries 25 marks.

**PART I – FORENSIC TOXICOLOGY**

1. (i) What is the definition of fatal dose? Briefly explain the factors affecting fatal dose.
- (ii) Pesticides can be classified into several groups depending on the pest they control. Give five different groups of pesticides.
- (iii) Odour or the specific smell of a poison plays a major role in identification of unknown poisons. Name three poisons with specific smell.
- (iv) An unmarried girl delivered a baby. The baby was fed with extracted breast milk of the mother via a naso-gastric tube since he was in an incubator. The breast milk was collected into a sterile cup and the baby was fed with the milk given by the mother through the nasal tube. The baby started vomiting and the vomits were wiped with a piece of cloth. The stomach contents of the baby were aspirated immediately, but he died after about two hours. In the Inquiry on the incident they found a small bottle containing a viscous liquid with strong smell with the mother.

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 you?

- (b) What specimens do you request from the police?
- (c) What specimens do you request from the doctor for toxicological analysis?
2. (i) Giving examples briefly explain the importance of specific symptoms in identification of unknown poisons.
- (ii) A university student had her dinner served in the university canteen. The following day morning she fell sick with severe headache and admitted to the hospital. When combing her head she noticed unusual hair loss and informed the doctor about it. On investigation at the university canteen it was revealed that they used rat poison on the previous day to control rats. What poison do you suspect in this case and why do you suspect that poison?
- (iii) What is the main organ where metabolism of drugs or poisons takes place?
- (iv) Heroin ( Diacety / Morphine) metabolise to Mono acetyl Morphine and Morphine in the body. If a heroin addict died due to overdose of heroin, giving special attention to metabolism and excretion, briefly explain the specimens you collect at the post mortem examination to send for toxicological analysis. What is the most suitable specimen to be analysed in this case?
- (v) Describe the colour test that you can carry out to identify Heroin.
- 3.. (i) Route of administration is one of the factors which affect severity of poisoning. Briefly explain the possible routes of administration of poisons and their order of severity.
- (ii) A nurse was found dead on her bed with a saline infusion set connected to her right arm. Empty vials of an anaesthetic drug Atracurium and a sleep inducing drug Midazolam was found at her room.
- (a) What is the route of administration of this drug in this particular case? Explain the reasons for her sudden death giving special attention to the route of administration.
- (b) What are the most important productions to be collected by the police for toxicological analysis?
- (c) What specimens should be collected by the Judicial Medical Officer for toxicological Analysis?

- (iii) What are the possible extraction methods for suspected drugs in urine? Briefly explain the technique of solid phase extraction.
- (iv) Name five poisonous plants found in Sri Lanka with their active poisonous ingredient.

**PART II – EQD**

4. Illegal human trafficking is a main mode of earning black money at the present. As such we can find scientific evidence according to the Criminal Procedure Code
- (a) What are the main case production of the above mentioned crime (4 marks)
  - (b) What are the forensic scientific examinations/analyses for the above mentioned court productions (6 marks)
  - (c) What are the other scientific examinations that can be done in the forensic documents laboratory (10 marks)
5. When children learn to write, they are taught a set of copybook pattern, the precise shapes of letters and relationships between letters. These traits are referred to as class characteristics features in handwriting that all individuals who learned that particular copybook style utilize. Even though the writing becomes more peculiar and natural when an individual became an adult and handwriting become an individual characteristics.
- (a) What is the scientific mechanism of execution of hand writings and signatures? (5 marks)
  - (b) What are the scientific identification features in hand writings and signatures examinations (15 marks)

**PART III – DNA**

6. Briefly explain the followings.
- (i). The effectiveness of DNA finger printing in crime investigations.
  - (ii) .Locard's principal and contact evidence triangle.
- 7.. (i) What are the samples required for.
- (a). DNA finger printing examination.
  - (b). Establishing Maternity / Paternity.
  - (c) Identity of a missing person.
  - (d). Establishing identity of rape/rapist.
- (ii) Write short notes.
- (a) Polymerase chain reaction.
  - (b). Comparison of shoe marks.

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