



# MERU UNIVERSITY OF SCIENCE AND TECHNOLOGY

P.O. Box 972-60200 – Meru-Kenya.

Tel: +254(0) 799 529 958, +254(0) 799 529 959, +254 (0)712 524 293

Website: [www.must.ac.ke](http://www.must.ac.ke) Email: [info@mucst.ac.ke](mailto:info@mucst.ac.ke)

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## UNIVERSITY EXAMINATIONS 2023/2024

FOURTH YEAR, SECOND SEMESTER EXAMINATION FOR THE DEGREE OF  
BACHELOR OF SCIENCE IN COMMUNITY HEALTH AND DEVELOPMENT

### HPC 3453: COMMUNITY HEALTH FORENSICS

DATE: APRIL 2024

TIME: 2 HOURS

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#### INSTRUCTIONS:

Part I: Multiple Choice Questions (MCQs)

Part II: Short Answer Questions

Part III: Long Answer Questions

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#### PART I MULTIPLE CHOICE QUESTIONS

##### Question One

Which of the following is NOT one of the primary tasks of a crime scene investigator (CSI)?

- a) Documenting the crime scene
- b) Identifying potential suspects
- c) Collecting and preserving physical evidence
- d) Interviewing witnesses and victims

##### Question Two

When examining human skeletal remains in forensic anthropology, what can the presence of Harris lines in long bones indicate?

- a) The victim's gender
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- b) The time of death
- c) Past episodes of malnutrition or illness
- d) The suspect's psychological state

**Question Three**

What is the primary limitation of using latent fingerprints in forensic investigations?

- a) Latent fingerprints are always clear and well-defined.
- b) Latent fingerprints may not have enough ridge detail for identification.
- c) Latent fingerprints are resistant to degradation over time.
- d) Latent fingerprints can be easily collected from any surface.

**Question Four**

In hair analysis, why is the presence of the medulla, cuticle, and cortex important

- a) To establish the time of death
- b) To identify the time of death
- c) To differentiate between animal and human hair
- d) To determine the victim's gender

**Question Five**

In forensic entomology, what is the significance of the "post-mortem interval" (PMI)?

- a) It measures the suspect's time of death.
- b) It estimates the victim's age.
- c) It determines the time of death based on insect activity.
- d) It classifies fingerprint patterns.

**Question Six**

What is the primary function of blow fly larvae in forensic entomology?

- a) To conduct DNA analysis on evidence
- b) To estimate the victim's time of death
- c) To feed on decomposing remains and aid in PMI estimation
- d) To create composite sketches of suspects

**Question Seven**

Which of the following is NOT an example of forensic documentation?

- a) Crime scene sketches and diagrams



- b) Chain of custody records
- c) Suspect interrogation transcripts
- d) Insect activity reports

### **Question Eight**

In forensic toxicology, what is the purpose of an immunoassay test?

- a) To analyze insect activity at a crime scene.
- b) To estimate the time of death with precision.
- c) To identify and quantify drugs, alcohol, and substances in biological samples.
- d) To track the geographical distribution of forensic laboratories.

### **Question Nine**

What is the primary purpose of a gas chromatograph-mass spectrometer (GC-MS) in controlled substance analysis?

- a) To analyze gunshot residue on clothing.
- b) To determine the suspect's alibi in a criminal investigation.
- c) To measure blood alcohol concentration.
- d) To identify the chemical composition of controlled substances and confirm their presence in samples.

### **Question Ten**

When conducting saliva testing for drugs, what is the primary challenge associated with interpreting the results?

- a) Determining the suspect's handwriting characteristics
- b) Assessing the victim's time of death
- c) Distinguishing between drug use and external contamination
- d) Estimating the victim's age with precision

### **Question Eleven**

In the context of forensic science, what is the "Miranda warning"?

- a) A warning issued to suspects during an interrogation to inform them of their legal rights, including the right to remain silent and the right to an attorney.
- b) A technique for analyzing gunshot residue on clothing.



- c) A type of forensic documentation used in court proceedings.
- d) A classification system for fingerprint patterns.

### **Question Twelve**

What is the main purpose of the "Von Luschan scale" in forensic anthropology?

- a) It measures the time since death based on insect activity.
- b) It estimates the suspect's height from footprints found at a crime scene.
- c) It classifies the color of human skin and helps determine racial or ethnic origin.
- d) It analyzes blood spatter patterns for clues in homicides.

### **Question Thirteen**

In forensic documentation, what is the importance of maintaining a proper chain of custody?

- a) It helps preserve the integrity of evidence to ensure it is admissible in court.
- b) It determines the suspect's handwriting characteristics.
- c) It establishes the victim's identity.
- d) It tracks the geographical distribution of forensic laboratories.

### **Question Fourteen**

How can forensic entomology aid in estimating the time since death in a homicide case?

- a) By analyzing the victim's stomach contents
- b) By examining the development stages of insects found on the corpse
- c) By studying the blood spatter patterns at the crime scene
- d) By conducting DNA analysis on insect specimens

### **Question Fifteen**

What are the limitations of saliva testing in forensic science when compared to blood testing?

- a) Saliva testing cannot detect drug use.
- b) Saliva testing cannot determine the suspect's age.
- c) Saliva testing has a shorter detection window for certain substances.



d) Saliva testing is more invasive than blood testing.

### **Question Sixteen**

What is the primary purpose of DNA profiling in forensic science?

- a) Identifying the suspect's social media activity
- b) Determining the suspect's clothing size
- c) Matching a DNA sample to a specific individual or excluding suspects
- d) Identifying the suspect's fingerprint patterns

### **Question Seventeen**

In forensic pathology, what is livor mortis?

- a) The determination of the victim's age
- b) A term for the time of death
- c) The pooling of blood in a deceased person's body
- d) A type of fingerprint pattern

### **Question Eighteen**

What is the primary purpose of a comparison microscope in forensic science?

- a) To analyze gunshot residue on clothing
- b) To determine the suspect's alibi
- c) To compare questioned and known samples for similarities and differences
- d) To estimate the time of death

### **Question Nineteen**

In forensic science, what does "algor mortis" refer to?

- a) The process of rigor mortis
- b) The cooling of the body after death
- c) The development of insects on a corpse
- d) The process of identifying the victim's age



## Question Twenty

In the context of forensic science, what is the "CSI Effect"?

- a) A psychological phenomenon that influences juror decision-making based on television portrayals of forensic science.
- b) A method used to enhance latent fingerprints.
- c) A statistical approach for analyzing crime scene data.
- d) A technique for collecting insect evidence in forensic entomology.

## PART II (40 MARKS) – SHORT ANSWER

1. Define the following terms in relation to forensic science and give an example in each case
  - i. Toxicology
  - ii. Poison
  - iii. Toxinology
  - iv. Chelating agent
  - v. Parasuicide
2. Highlight the internal post-mortem findings caused by the following agents
  - i. Corrosive alkali
  - ii. Phenol
  - iii. Nitric acid
  - iv. Copper sulphate
  - v. Conc. sulphuric acid
3. Describe three types of finger prints and features that differentiate them (5 Marks)
4. With relevant examples, Define anthropometry and its use in forensic science (5 Marks)
5. Elucidate the purpose of DNA Profiling as used in a forensic Laboratory (5 Marks)
6. Describe various sources of poisonous substances (5 Marks)
7. Explain the immediate resuscitative measure of a poisoning case (5 Marks)

## PART III (40 MARKS) – LONG ANSWER QUESTIONS – ANSWER ALL QUESTIONS

1. Discuss the classification of poisons (10 Marks)
2. Describe the factors that influence the action of Poison in the body (10 Marks)
3. Highlight the physical complication of excessive alcohol intake (10 Marks)
4. Discuss the forensic analysis of Hair (10 Marks)

