



University of Zambia
School of Health Sciences
Department of Biomedical Sciences

Biomedical Forensic Science: BMS 5340

BSc Biomedical Sciences: Fifth Year

November 2023 – Examination

Tuesday, 7th November 2023

09:00 -12:00

Instructions to Candidates

1. This paper contains six (6) questions. Answer **question 1 and any other three (3) .**
2. Question 1 carries 20 marks, whilst the remaining questions carry 20 marks [each.](#)
3. Indicate your Student Identification Number on each page of the answer booklet used.
4. Time allowed: **3 hours ONLY.**

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Please answer Question 1 and any other three questions. Please note that Question 1 is COMPULSORY

1. In a certain remote village, two unidentified dead bodies were found near a river in the bush. One body was partially decomposed and another one completely skeletonized. On the decomposing body, certain species of insects were found and collected for forensic examination. Some fluids suspected to be the stomach content were also collected at the scene. Five days before these bodies were found, it was reported to the nearby police station that a white Caucasian female tourist who had visited the national park near the village went missing and it was suspected that the skeletonized body could be the same missing person. You are part of the forensic team which is investigating this case and you have collected all the required evidence from the scene.
 - a) Briefly outline how you would positively deduce the identity of the deceased person using the skeletonized evidence found at the crime scene [10 marks]
 - b) Based on the entomological evidence collected at the crime scene, how would you determine the postmortem interval of the deceased person? [10 marks]
 - c) What toxicological tests would you conduct on the gut content to determine the nature and identity of the poison found in the gut content? Explain your response [10 marks]
 - d) What kind of postmortem would be conducted on these bodies if a need arises? State five reasons for your answer [10 marks]

2. Evidence suspected to be human semen was collected at the crime scene and is brought to your forensic science laboratory for identification.
 - a) Name any two validation tests you can use to identify this evidence as semen [2 marks]
 - b) Discuss the principle for each of the tests you have mentioned above [12 marks]
 - c) State one advantage and two weaknesses for each of the tests you have mentioned above [6 marks]
3. Fingerprint and DNA analysis are among the most important analytical tests performed in the forensic science laboratory. In your opinion, which of these methods is superior to the other? Explain your answer [20 marks]
4. You are a Biomedical Scientist specialized in forensic ballistics working at the National Institute of Crime Laboratory. You have received a bullet and a cartilage collected from a crime scene. A firearm suspected to be used to fire this evidence is confiscated from the suspect. Elaborate how you would deduce if the bullets found on the crime scene were fired from the same gun which the suspect owns [20 marks]
5. You have received meat from unknown wildlife obtained from poachers caught at the international border post in Eastern Province of Zambia. This evidence you have collected is suspected to be meat from a known endangered wild animal from the Serengeti National Park in Tanzania. Explain how you would deduce the identity and possible source (country of origin) of this evidence [20 marks]
6. With respect to digital evidence and computer forensics, write short notes on the following:
 - a) Cyber warfare [5 marks]
 - b) Phishing [5 marks]
 - c) Spyware [5 marks]
 - d) Cyber terrorism [5 marks]

End of examination