



MERU UNIVERSITY OF SCIENCE & TECHNOLOGY

Qualification: **Diploma In Environmental Science & Technology Level 6**

Unit of Competency: **Laboratory Techniques**

Unit Code: **SHC 2152**

April 2024

END OF SEMESTER WRITTEN ASSESSMENT Time: 3 Hours

INSTRUCTION TO CANDIDATES

1. This paper has two sections **A** and **B**
2. You are provided with separate Answer Booklet
3. Marks for each question are as indicated
4. **Do Not Write** on the Question Paper

This paper consists of 3 printed pages

Candidates should check the question paper to ascertain that all pages are printed as indicated and that no questions are missing

SECTION A [40 Marks]

Answer **all** questions in this section

1. In-house breeding of animals of any species takes a deliberate effort and recognition of the costs not only in direct expenses, but also in animal numbers, space allocation, genetic monitoring, labor, and expertise. Highlight four factors to consider before developing breeding colonies.
(4 Marks)
2. A camera lens is a tool used to bring light to a fixed focal point. State **four** characteristics of camera lens
(4 Marks)
3. Discuss the **two** basic categories of camera lenses
(4 Marks)
4. Radiographic film consists of a transparent, blue-tinted base coated on both sides with an emulsion. When the film is processed, it is exposed to several different chemical solutions for controlled periods of time. Enumerate **four** film processing steps
(4 Marks)
5. Describe **two** roles of lighting in photography
(4 Marks)
6. When taking close-up photographs one of the most common problems encountered is shallow depth-of-field. Therefore, accurate focusing is critical. What is the meaning of focusing in photography?
(2 Marks)
7. We all play an important role in maintaining an incident-free campus where students and employees alike are equipped to work safely. Each person must promote and model best practices in safety, including wearing the proper personal protective equipment, or PPE. Enumerate **three** working of protection equipment for;
 - a) Photographer
(3 Marks)
 - b) Individuals being photographed
(3 Marks)
8. Highlight **two** photomicrography/photo microscopy used in the lab
(2 Marks)
9. Summarize **two** importance of camera filters
(4 Marks)
10. Organizing resources and staffing in the laboratory is critical to help in delivery of quality laboratory services. Describe **four** types of laboratory organization & management
(4 Marks)
11. Outline **two** principles of laboratory organization & management
(2 Marks)

SECTION B (60 Marks)

Answer any **three** questions in this section

12. In the context of laboratory animal research, a post-mortem, often referred to as a necropsy, is an examination performed on an animal that has died during the course of a scientific experiment or study
- a) Explain **five** key aspects of a post-mortem examination for laboratory animals (10 Marks)
 - b) Enumerate **five** protocols for safe handling and disposal of lab carcasses (10 Marks)
13. There are a few important factors to take into consideration when investing in a new camera lens
- a) Evaluate **four** factors to consider when buying a camera lens (8 Marks)
 - b) Discuss **six** principal accessories of a camera (12 Marks)
- 14.
- a) When considering information in the lab, almost everything involves identification. From patient data to expiration dates on chemicals, we rely on labels. Explain **five** reasons/importance of labeling in a lab environment (10 Marks)
 - b) There are several different types of lighting conditions that you may find yourself shooting in- daylight, incandescent, fluorescent and other light sources all have colour characteristics that vary significantly. The way an object or person will look in your photos is therefore affected by these lighting conditions. List **five** different types of filters and what they do (10 Marks)
15. Generally, a laboratory is like a vehicle. It needs someone to maneuver the institution towards success.
- a) Explain **five** importance of laboratory organization & management (10 Marks)
 - b) Storage must be given careful consideration, as the main goal of documentation is finding the information when it is needed.
 - i. Discuss **four** considerations to be made while using a paper system to store documents (8 Marks)
 - ii. Describe **two** factors that are used to determine retention times for records in the laboratory (2 Marks)

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ALL THE BEST