

052106T4ENS

ENVIRONMENTAL SCIENCE LEVEL 6

ENV/OS/SCI/CC/04/6/A

Perform Environmental Laboratory Practice

July/August 2024



TVET CURRICULUM DEVELOPMENT, ASSESSMENT AND CERTIFICATION
COUNCIL (TVET CDACC)

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INSTRUCTIONS TO CANDIDATE:

- i. This paper consists of **TWO** sections: **A & B**
- ii. Answer **ALL** questions in sections **A** and any **THREE** questions in section **B**
- iii. Marks for each question are indicated in the brackets.
- iv. Do not write on the question paper
- v. Answer all questions in **English**.

This paper consists **THREE (3)** printed pages.

Candidate 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. The siting and orientation of a balance room should be carefully considered to ensure accurate and reliable results. State FOUR key considerations for siting and orientation of a balance room. (4 Marks)
2. The clothing you wear in the laboratory is a factor which will influence your safety. Outline FOUR do's and don'ts of the clothing worn in a chemical laboratory. (4 Marks)
3. Describe the first aid treatment given to victim who has fallen unconscious due to smoky poisonous substance. (4 Marks)
4. During a practical session, a lighted Bunsen burner falls in a waste paper basket causing it to catch fire. Outline FOUR steps that should be taken to contain this fire. (4 Marks)
5. Analytical balances are an extremely accurate and precise in measuring the mass of an object. State FOUR maintenance practices for an analytical balance. (4 Marks)
6. Briefly explain how you would attempt to remove grease from a pipette. (4 Marks)
7. A darkroom is used to process photographic prints and carry out other associated tasks. Identify FOUR equipment found in a darkroom. (4 Marks)
8. Stocktaking is a method used to determine if there is appropriate stock for the laboratory. Outline FOUR significance of laboratory stock taking. (4 Marks)
9. Laboratory animals are prone to infectious diseases caused by a variety of organisms such as bacteria, yeast, fungi and parasites. Suggest FOUR ways of preventing spread of infectious diseases in laboratory animals. (4 Marks)
10. Chemical hazards are a problem in the laboratory. Name FOUR common hazards associated with chemicals. (4 Marks)

SECTION B (60 MARKS)***(Answer any Three Questions in this section)***

11. You are part of a team of laboratory technicians working at a regional environmental testing laboratory. Your laboratory receives water samples from various sources within the local community for analysis. These samples are critical for assessing water quality and ensuring compliance with regulatory standards to safeguard public health. In recent months, concerns have been raised about the quality of drinking water in several neighborhoods. Residents have reported unusual odours, discoloration, and taste in their tap water, leading to worries about potential health risks. As part of your laboratory's mandate, you are tasked with investigating the water quality issues and identifying potential contaminants.
- a) Discuss FIVE parameters that are essential for assessing water quality. (10 Marks)
 - b) Explain FIVE potential sources of water contamination in the community. (10 Marks)
12. a) Keeping inventory records is an essential part of good laboratory management. Discuss FIVE benefits of maintaining accurate inventory records in the laboratory. (10 Marks)
- b) Most laboratories experience challenges with inventory or stocktaking and record keeping. Describe FIVE ways how this can be improved in laboratories. (10 Marks)
13. a) When working with glassware in a laboratory setting, it is important to follow safety practices to prevent accidents, injuries and contamination. Describe FIVE safety work practices with glassware. (10 Marks)
- b) Working in the lab alone can be very dangerous under most circumstances. Analyze FIVE laboratory situations under which you should never work alone. (10 Marks)
14. a) When handling developer solution in a dark room, several precautions should be taken to ensure personal safety and maintain the quality of the solution. Explain FIVE precautions necessary when handling developer solution in a dark room. (10 Marks)
- b) Routine inspection and maintenance of a laboratory drainage system are essential to ensure its proper functioning. Explain FIVE routine inspection and maintenance of laboratory drainage system. (10 Marks)

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