

2528/104
2922/104
ENVIRONMENTAL LABORATORY
PRACTICE
June/July 2021
Time: 3 hours



THE KENYA NATIONAL EXAMINATIONS COUNCIL

DIPLOMA IN ENVIRONMENTAL SCIENCE AND TECHNOLOGY

MODULE I

ENVIRONMENTAL LABORATORY PRACTICE

3 hours

INSTRUCTIONS TO CANDIDATES

You should have an answer booklet for this examination:

This paper consists of TWO sections: A and B.

Answer ALL the questions in section A and any THREE questions from section B in the answer booklet provided

Each question in section A carries 4 marks while each question in section B carries 20 marks.

Maximum marks for each part of a question are as shown.

Candidates should answer the questions in English.

This paper consists of 3 printed pages.

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

SECTION A (40 marks)

Answer ALL questions in this section.

1. State **four** objectives of administering first aid to a trainee involved in an accident in a chemical analytical laboratory. (4 marks)

2. Draw each of the following safety signs displayed in the laboratory:
 - (a) flammable chemical; (1 mark)
 - (b) oxidizing chemical; (1 mark)
 - (c) poisonous chemical; (1 mark)
 - (d) irritant or harmful chemical. (1 mark)

3. State **four** ways of handling live animals used in conducting investigations in the laboratory. (4 marks)

4. State **four** sources of water used in training institutions' laboratory. (4 marks)

5. List any **four** reasons why people take photographs. (4 marks)

6. State **four** advantages of using rubber tiles on the floor of a school laboratory. (4 marks)

7. State **four** reasons why natural ventilation is preferred over artificial ventilation in a laboratory. (4 marks)

8. Draw a labelled diagram describing a container used in storing cryogenic fluids. (4 marks)

9. Describe the annealing process of a glassware. (4 marks)

10. (a) Draw a diagram of a beaker. (2 marks)
(b) List **two** characteristics of borosilicate glass which makes it suitable for producing beakers. (2 marks)

SECTION B (60 marks)

Answer any **THREE** questions from this section.

11. (a) Describe **five** characteristics of a good first aider. (10 marks)
- (b) List **four** causes of nose bleeding. (4 marks)
- (c) Outline **six** first aid steps used in managing nose bleeding. (6 marks)
12. (a) Draw a labelled diagram of an analytical balance. (6 marks)
- (b) Outline **seven** procedures for operating an analytical balance. (14 marks)
13. (a) Describe **four** categories of water impurities which necessitate its treatment before use in laboratories. (8 marks)
- (b) Describe the process of filtration in treatment of domestic water. (6 marks)
- (c) Describe **three** methods used in disinfecting water used in the laboratory. (6 marks)
14. (a) List **three** types of rodents beside rats and mice used in scientific studies. (3 marks)
- (b) Describe the breeding process of rabbits. (7 marks)
- (c) State **five** differences between a rat and a mice. (10 marks)
15. (a) Define the term 'disposal of waste'. (2 marks)
- (b) List **six** health effects resulting from improper solid waste disposal in the environment. (6 marks)
- (c) Describe **six** methods of waste disposal used by county governments in Kenya. (12 marks)

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