

2528/104

2922/104

ENVIRONMENTAL LABORATORY PRACTICE

June/July 2020

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 the following for this examination:

Answer booklet;

Non-programmable scientific calculator.

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 pages are printed as indicated and that no questions are missing.

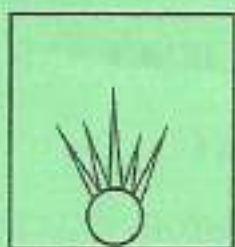
SECTION A (40 marks)

Answer ALL the questions in this section.

1. Name **four** equipment found in a science laboratory. (4 marks)
2. List the information on a label of a chemical in the laboratory. (4 marks)
3. State **four** routes through which toxic chemicals are exposed to a laboratory staff. (4 marks)
4. Name the symbols of the hazard shown in Figure 1. (4 marks)



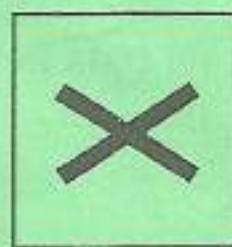
(i)



(ii)



(iii)



(iv)

Figure 1

5. List **four** reasons why a new laboratory should be situated next to existing laboratories. (4 marks)
6. Describe **two** uses of the preparation room in a laboratory. (4 marks)
7. Explain why cotton material is preferred over nylon in making a laboratory coat. (4 marks)
8. Draw a labelled diagram describing a liquid ring vacuum pump. (4 marks)
9. Describe the function of each of the following parts of a human eye in reference to the working of a camera:
 - (a) eye lid; (2 marks)
 - (b) cornea. (2 marks)
10. Draw a labelled diagram of each of the following laboratory glassware:
 - (a) round bottom flask; (2 marks)
 - (b) conical flask. (2 marks)

SECTION B (60 marks)

Answer any THREE questions from this section.

11. (a) Explain **eight** general rules applied in preparing and handling solution in a chemistry laboratory. (16 marks)
- (b) Outline the procedure for preparing 100 mL normal saline solution. (4 marks)
12. (a) Describe **seven** factors which can contribute to accidents in a science laboratory. (14 marks)
- (b) Describe **three** causes of burns exposed to laboratory staff. (6 marks)
13. (a) Explain **three** safety precautions taken when using electrical equipment in the laboratory. (6 marks)
- (b) (i) Define a laboratory. (2 marks)
- (ii) With the aid of diagrams, describe **four** shapes of bench tops in a science laboratory. (8 marks)
- (iii) State **one** advantage of each shape of bench top. (4 marks)
14. (a) Draw a labelled diagram describing a single lens reflex camera. (8 marks)
- (b) Describe the working of a single lens reflex camera. (12 marks)
15. (a) Describe **four** desirable characteristics of a beaker used in a chemistry laboratory. (8 marks)
- (b) Outline the procedure for cleaning a volumetric flask. (12 marks)

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