

2528/104
2922/104
ENVIRONMENTAL LABORATORY PRACTICE
June/July 2018
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 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.

10 marks

1. State any **four** faults on electric plugs that require regular checking in order to avoid accidents. (4 marks)
112. Give **four** advantages of using glazed tiles on laboratory floors. (4 marks)
- durable - easy to acquire - cheap - easy maintenance
113. State **four** reasons for building a new laboratory block close to existing laboratories in a learning institution. (4 marks)
- safety - site - cost - convenience
114. Name **four** utilities that should be incorporated when renovating a building into a laboratory. (4 marks)
- power - ventilation
115. List **four** glassware used for measuring liquids in a laboratory. (4 marks)
- pipette - buret
116. State any **four** methods of disinfecting surface water used in laboratories. (4 marks)
- boiling or chlorination
117. Describe the first aid administered to a student whose skin was accidentally exposed to liquid nitrogen in the laboratory. (4 marks)
- reporting to the lab technician - remove clothes of the victim - wash to affected skin with cold water - first aid kit should be hospitalized
118. Distinguish between hard glass and soft glass used in glass blowing. (4 marks)
119. State **four** ideal conditions for storing chemicals sensitive to sunlight. (4 marks)
- vial water
120. List any **four** classes of fixatives based on their mechanism of action. (4 marks)

SECTION B (60 marks)

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

11. (a) Draw a labelled diagram of a Bunsen burner. (6 marks)

(b) Outline the process of cleaning the jet of a Bunsen burner. (8 marks)

(c) Explain the **three** requirements necessary for a fire to burn. (6 marks)
- oxygen
12. (a) Explain **three** types of hazards caused by leakage of gases in the laboratory. (6 marks)

(b) Describe **three** functions of adequate ventilation in a science laboratory. (6 marks)

(c) Explain any **four** causes of vibrations in the balance room. (8 marks)

- ✓ 14. (a) Explain four causes of accidents in the laboratory. (8 marks)
 - lack of experience
 - age
 - layout
 - fatigue
- (b) Describe six safety devices that should be provided to a laboratory staff. (12 marks)
 - proper ventilation
 - proper lighting
 - adequate safety
 - gloves
 - goggles
 - lab coat
 - gaiters
14. (a) Define the term 'first aid'. (2 marks)
- (b) State three reasons for administering first aid to an accident victim. (3 marks)
 - to avoid blood loss
 - to prevent moving of injured parts
 - to arrange for victim to be taken to hospital
- (c) List five symptoms shown by a person affected by an electric shock. (5 marks)
 - eye pain
 - skin
 - swelling
- (d) Describe the first aid procedure administered to a victim of electric shock. (10 marks)

15. (a) Name the function of the following parts of a camera: (15 marks)
- 3
- (i) body - preventing inner parts from damage (1 mark)
- (ii) lens - for viewing the image (1 mark)
- (iii) shutter release button - To take the picture (1 mark)
- (iv) viewfinder - for locating the image (1 mark)
- (v) power switch - for switching the camera (1 mark)
- (b) Describe five methods used to inject drugs to mice in laboratory studies. (15 marks)
- R
- 1) Intravenous
 - 2) Intradermal
 - 3) Intramuscular
 - 4) Subcutaneous

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