

2528/104
2922/104
ENVIRONMENTAL LABORATORY PRACTICE
June/July 2017
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 the pages are printed as indicated and that no questions are missing.

SECTION A (40 marks)

Answer ALL the questions in this section.

1. State four ways of preventing electrical sparks in the laboratory. (4 marks)
use of eye mark
2. Name four main sources of fire risk in a science laboratory. (4 marks)
gas
3. Explain two reasons for not using lifts as a fire escape in a building. (4 marks)
4. Outline the procedure used for preparing aquas methylene blue. (4 marks)
5. State four importance of dressing a wound as a first aid measure. (4 marks)
6. Name any four qualities to be considered in a material used for constructing laboratory bench top. (4 marks)
not flammable, Resistance to heat, Resistance to chemical, cut
7. State four utilities that need to be fixed to an existing building when renovating it into a laboratory. (4 marks)
gas tap, sink, water
8. State four ways in which a student can be exposed to hazardous chemicals in the laboratory. (4 marks)
9. List four effects of anesthetic agent to human being if ingested accidentally. (4 marks)
10. Outline the process of annealing of glass pipette in the laboratory. (4 marks)
erect heat, at 1000°C in normal bench, Use dichromate solution, use tap H₂O

SECTION B (60 marks)

Answer any THREE questions from this section.

11. (a) State three classes of poisons based on their nature of effects on the victim. (3 marks)
contaminated, poison, asphy, asphyx
 - (b) State six symptoms of carbon dioxide gas poisoning in human beings. (6 marks)
asphyxiation, asphyxiation, check, unconsciousness, faint
 - (c) Describe four first aid procedures administered to a carbon dioxide gas poisoning victim in the laboratory. (8 marks)
move the victim into fresh air, move the victim, move the victim, move the victim
 - (d) Outline the procedure used for testing leakage of a gas in a cylinder. (3 marks)
application of soapy water, application of soapy water
12. (a) Explain five precautions taken when storing glassware in the laboratory. (10 marks)
close in a box, clean & dichromate
 - (b) Name two dangers associated with explosion of glassware containing harmful reagents. (2 marks)



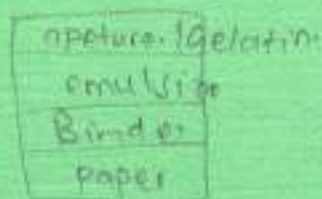
asphyxiation

- (c) (i) Name the **three** types of glassware used in the laboratory. (3 marks)
- (ii) State the suitable use of the glassware named in (i) above. (3 marks)
- (d) Name **two** chemicals which should not be used in removing residues from glassware. (2 marks)

13. (a) State **two** causes of shock associated with injury. *excessive bleeding, loss of body fluids* (2 marks)
- (b) Name **six** symptoms presented by a victim suffering from an electric shock. *irregular shock, cold skin, unconscious, sweating* (6 marks)
- (c) Describe **six** procedures for administering first aid to a victim suffering from a shock resulting from an injury. *Assess the injury, remove the victim safely* (12 marks)

14. (a) State the importance of each of the following ingredients in Nutrient agar media:
- (i) peptone; (1 mark)
- (ii) beef extract; (1 mark)
- (iii) agar; (1 mark)
- (iv) sodium chloride; (1 mark)
- (v) distilled water. (1 mark)
- (b) Outline the procedure used for preparing Nutrient agar media for culturing bacteria. (12 marks)
- (c) State **three** uses of Nutrient agar media. (3 marks)

15. With the aid of a labelled diagram, explain the structure of a photographic film. (20 marks)



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