

2914/103
2915/103
LABORATORY AND
WORKSHOP PRACTICE
Oct./Nov. 2021
Time: 3 hours



THE KENYA NATIONAL EXAMINATIONS COUNCIL

DIPLOMA IN APPLIED BIOLOGY
DIPLOMA IN ANALYTICAL CHEMISTRY

MODULE I

LABORATORY AND WORKSHOP 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.

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 indicated.

Candidates should answer the questions in English.

This question 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. Explain **four** factors that determine spacing of benches in laboratory layout. (4 marks)
2. Outline the general care and maintenance of personal protective equipment (PPE) in the laboratory. (4 marks)
3. State the precautions taken during specimen collection of hazardous biological materials. (4 marks)
4. (a) Distinguish between first degree burns and second degree burns. (2 marks)
(b) Outline first aid treatment for a first degree burn. (2 marks)
5. Identify the appropriate reagents used in cleaning the following stains in glassware:
 - (a) iron stains; (1 mark)
 - (b) iodine stains; (1 mark)
 - (c) grease stains; (1 mark)
 - (d) silicon grease stains. (1 mark)
6. Describe classification of nuclear wastes. (4 marks)
7. State **two** advantages and **two** disadvantages of LCD (Liquid Crystal Display) projectors. (4 marks)
8. Outline the procedure of making an L-joint in glass blowing. (4 marks)
9. Describe kiln seasoning of timber. (4 marks)
10. Name any **four** of each of the following metal work tools:
 - (a) marking tools; (2 marks)
 - (b) cutting tools. (2 marks)

SECTION B (60 marks)

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

11. (a) Describe **five** types of scales used in technical drawing. (10 marks)
- (b) Illustrate each of the following types of lines used in technical drawing:
- (i) hidden line;
 - (ii) construction line;
 - (iii) centre (axial) line;
 - (iv) ghost line;
 - (v) long break line. (10 marks)
12. (a) Describe the elements of a typical dewar vessel. (15 marks)
- (b) Outline the precautions taken while transporting cryogen. (5 marks)
13. Explain vacuum leakage prevention techniques. (20 marks)
14. (a) (i) Outline the procedure of using a Bunsen burner. (10 marks)
- (ii) Describe precautions taken while using a Bunsen burner. (5 marks)
- (b) State the maintenance practices for laboratory glassware. (5 marks)
15. (a) (i) State **four** benefits of first aid. (4 marks)
- (ii) Highlight the rules of first aid. (8 marks)
- (b) Outline first aid treatment to a victim of water drowning after being rescued from the water. (8 marks)

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