2914/103
2915/103
LABORATORY AND WORKSHOP PRACTICE
March/April 2020
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** the 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** the questions in this section.*

1. State any **four** factors to be considered in the layout of laboratory benches. (4 marks)

2. Describe the fitting of a rimless sink on a laboratory bench. (4 marks)

3. Identify any **four** personal protective equipment and their uses in laboratory. (4 marks)

4. Outline safety measures taken when handling broken glass. (4 marks)

5. Explain the importance of first aid. (4 marks)

6. Outline the cleaning procedure of new soft glassware. (4 marks)

7. Describe collection of waste chemicals for disposal purpose in the laboratory. (4 marks)

8. Outline the procedure for transferring a 20 ml volume of concentrated sulphuric acid from a stock bottle to a beaker. (4 marks)

9. State functions of each of the following parts of a digital camera:

   (a) shutter release button; (1 mark)

   (b) viewfinder; (1 mark)

   (c) aperture ring; (1 mark)

   (d) zoom control. (1 mark)

10. Explain the use of each of the following tools in glass blowing workshop:

    (a) jack; (1 mark)

    (b) pincers; (1 mark)

    (c) marvel; (1 mark)

    (d) blowpipe. (1 mark)

SECTION B (60 marks)

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

11. (a) (i) Classify vacuums according to pressure ranges. (4 marks)

(ii) Explain any **three** uses of vacuums. (6 marks)

(b) (i) Explain **two** hazards associated with handling cryogens. (4 marks)

(ii) Describe the precautions observed in handling cryogens. (6 marks)

12. (a) State **six** advantages of seasoned timber. (6 marks)

(b) Explain the differences between hard wood and soft wood. (14 marks)

13. (a) (i) Differentiate between the properties of ferrous and nonferrous metals. (6 marks)

(ii) Give **two** examples of famous metals and **two** examples of nonferrous metals. (4 marks)

(b) Describe **five** types of joints in metal work. (10 marks)

14. (a) Describe each of the following types of projections:

(i) isometric; (5 marks)

(ii) orthographic. (5 marks)

(b) (i) Identify **three** dimensions of an object as used in technical drawing. (3 marks)

(ii) State the **three** regular views on a multi-view drawing. (3 marks)

(c) Using a ruler and a pair of compass only, construct the following angles:

(i) 45° (2 marks)

(ii) 30° (2 marks)

15. (a) Explain the maintenance practices for laboratory glassware. (10 marks)

(b) Describe the precautionary measures while handling laboratory chemicals. (10 marks)

THIS IS THE LAST PRINTED PAGE.