

2914/103
2915/103
LABORATORY AND WORKSHOP PRACTICE
June/July 2023
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;*
- Size A4 drawing paper;*
- Drawing instruments.*

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.

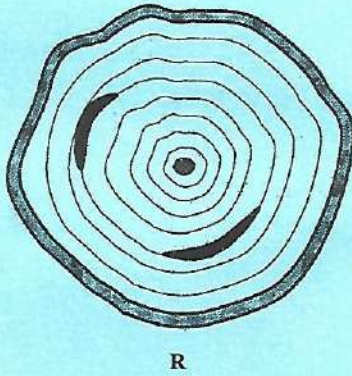
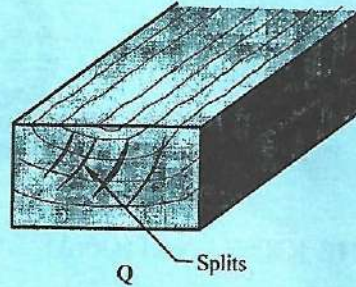
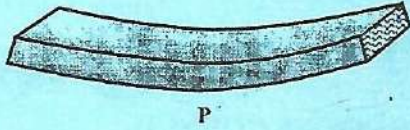
This question paper consists of 5 printed pages.

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. State the cause of each of the following wood defects illustrated in P, Q, R and S. (4 marks)



2. Figure 1 shows a diagram of a common workshop tool.

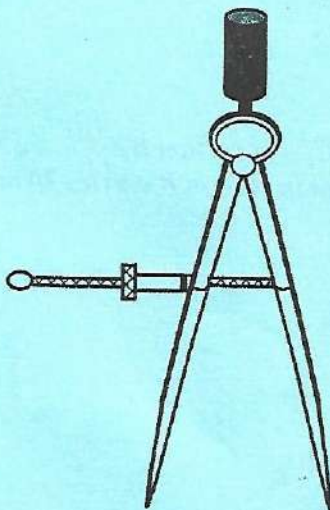


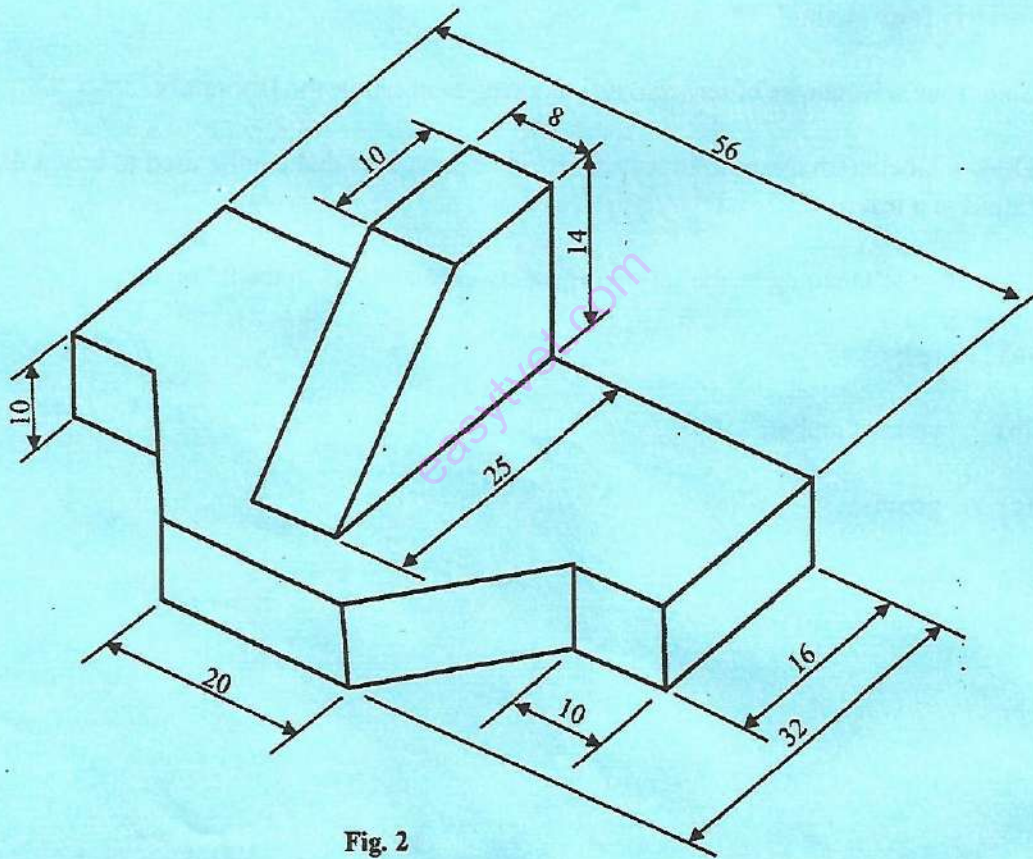
Fig. 1

- (a) Identify the tool. (1 mark)
- (b) State **one** function of the tool. (1 mark)
- (c) List **two** measures of taking care of the tool. (2 marks)
3. Draw a labelled sketch to illustrate a mortise and tenon wood joint. (4 marks)
4. Highlight **four** signs that a victim would show in case of swallowed poisonous chemical in the laboratory. (4 marks)
5. State **four** factors to consider when selecting a cleaning agent for use in the laboratory. (4 marks)
6. Outline the procedure of cleaning glass slides in the laboratory. (4 marks)
7. Identify **four** methods of waste disposal. (4 marks)
8. State **four** advantages of terrazzo as a flooring material in the laboratory. (4 marks)
9. Draw a labelled diagram to illustrate set-up of apparatus that can be used to heat a flammable liquid in a test tube. (4 marks)
10. Describe the meaning of the following safety colour codes in the laboratory:
- (a) red; (1 mark)
- (b) yellow/ amber; (1 mark)
- (c) green; (1 mark)
- (d) blue. (1 mark)

SECTION B (60 marks)

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

11. (a) Sketch the following technical drawing lines:
- (i) center line; (2 marks)
 - (ii) hidden detail line; (2 marks)
 - (iii) leader line. (2 marks)
- (b) Reproduce the object illustrated in figure 2 as an isometric drawing to a scale of 2 : 1. (14 marks)



12. (a) Outline the steps in operating sound components of audio visual equipment. (15 marks)
- (b) State **five** applications of vacuum technology. (5 marks)
13. (a) Highlight **eight** responsibilities of a first aider in case of an accident. (8 marks)
- (b) Outline the first aid treatment of a dry burn. (12 marks)
14. (a) State **five** differences between soldering and welding. (10 marks)
- (b) Outline the process of brazing two metal plates together. (10 marks)
15. (a) Highlight **five** properties of borosilicate glass. (5 marks)
- (b) State **two** advantages and **two** disadvantages of polycarbonate plastic ware in the laboratory. (4 marks)
- (c) Outline the safety measures when handling glassware in the laboratory. (11 marks)

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