

1904/102
PRINCIPLES OF LABORATORY AND
WORKSHOP PRACTICE I
June/July 2023
Time: 3 hours



THE KENYA NATIONAL EXAMINATIONS COUNCIL
CRAFT CERTIFICATE IN SCIENCE LABORATORY TECHNOLOGY
MODULE I

PRINCIPLES OF LABORATORY AND WORKSHOP PRACTICE I

3 hours

INSTRUCTIONS TO CANDIDATES

You should have the following for this examination:

Answer booklet;

Drawing instruments;

A4 size drawing paper.

The paper consists of TWO sections; A and B.

Answer ALL questions in section A and any TWO 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 paper consists of 6 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 (60 marks)

Answer ALL questions in this section.

1. Describe the preparation of the following disinfecting solutions in the laboratory:
 - (a) 70% ethanol; (2 marks)
 - (b) 5% lysol. (2 marks)
2. Outline the procedure of dressing a wound on a victim in the laboratory. (4 marks)
3. Highlight **four** characteristics of a corrosive chemical. (4 marks)
4. State **four** housekeeping rules in the laboratory. (4 marks)
5. List **four** signs of a fractured limb. (4 marks)
6. Highlight **four** factors to consider when selecting a site for a laboratory. (4 marks)
7. Identify the disposal bag colour code for each of the following wastes:
 - (a) expired drugs; (1 mark)
 - (b) rubber catheter; (1 mark)
 - (c) injection vials; (1 mark)
 - (d) blood bags. (1 mark)
8. **Figure 1** shows a common hazard symbol.



Fig. 1

- (a) Describe the nature of hazard for this symbol. (2 marks)
- (b) Explain the symbol features. (2 marks)
9. State **four** advantages of linoleum as a flooring material. (4 marks)
10. Highlight the use of each of the following components in first aid box:
- (a) cold pack; (2 marks)
- (b) first aid tape. (2 marks)
11. (a) **Figure 2** illustrates a timber defect labelled L. -

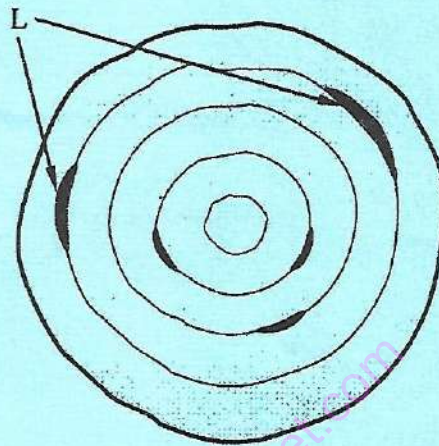
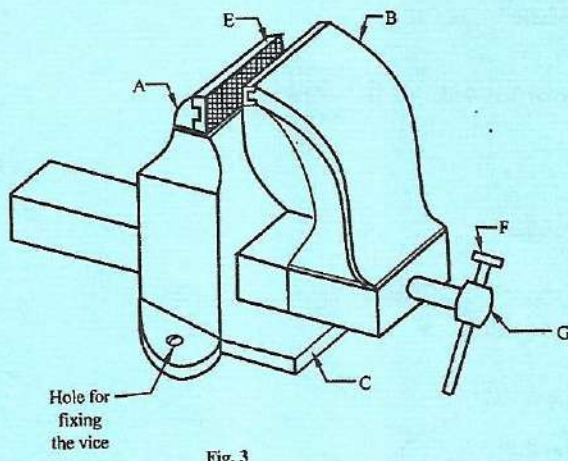


Fig. 2

- (i) Identify the defect. (1 mark)
- (ii) State **two** causes of the defect. (2 marks)
- (b) Explain the water stain defect. (1 mark)
12. Explain the water seasoning method in timber. (4 marks)

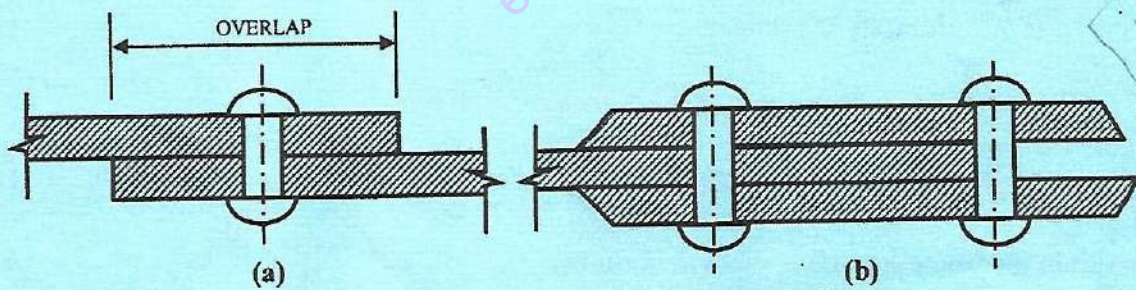
13. **Figure 3** shows a bench vice used for holding a variety of work pieces with parts labelled A to G.



Identify the letter representing the:

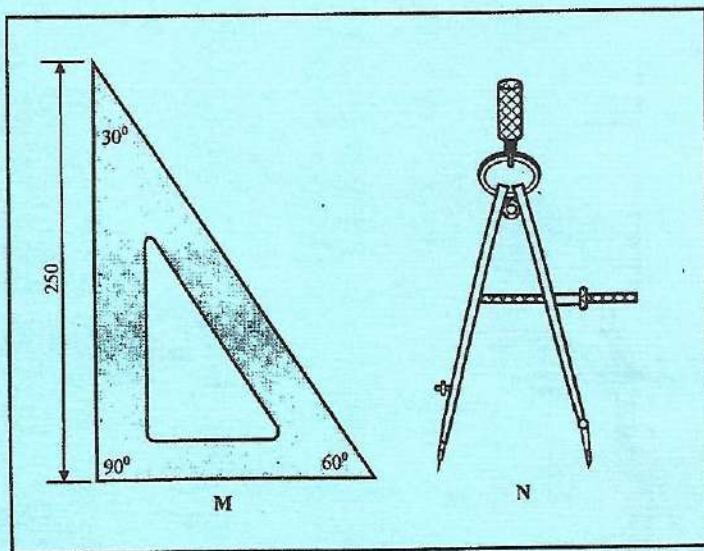
- (a) movable jaw; (1 mark)
- (b) part used for holding work piece; (2 marks)
- (c) part used for tightening. (1 mark)

14. **Figures 4 (a) and (b)** show diagrammatic representation of rivet butt joints.



- (a) Identify the diagram which represents:
- (i) single strap joint; (1 mark)
- (ii) double strap joint. (1 mark)
- (b) State the application of each joint identified in (a). (2 marks)

15. M and N are diagrammatic representations of two drawing instruments.



- (a) Identify the instruments labelled M and N. (2 marks)
- (b) State **one** function for each of the instruments labelled M and N. (2 marks)

SECTION B (40 marks)

Answer any TWO questions from this section.

16. A hollow cylinder measures 120 mm in length, with an external diameter of 70 mm and an internal diameter of 40 mm.
- (a) Draw the cylinder as an isometric projection. (14 marks)
- (b) On the drawing, indicate any **three** dimensions. (6 marks)

17. (a) **Figure 5** is a diagrammatic representation of a pH meter.

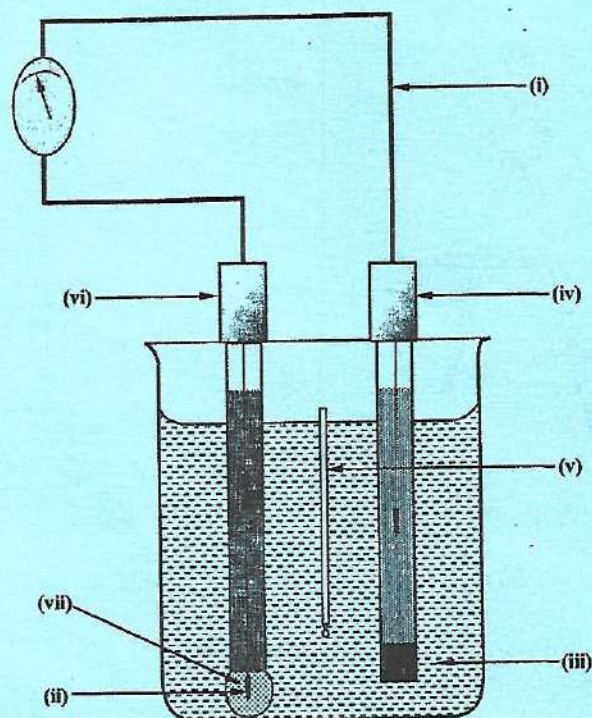


Fig. 5

- Identify the parts labelled (i) to (vii). (7 marks)
- (b) Outline the working operation of a pH meter. (13 marks)
18. (a) Describe the cleaning of the laboratory still. (15 marks)
- (b) Describe the process of disposing a sodium hydroxide spill. (5 marks)
19. (a) Outline the first aid treatment of a chemical burn. (10 marks)
- (b) Outline the procedure of cleaning laboratory crucibles. (6 marks)
- (c) Highlight four laboratory bench services. (4 marks)

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