

Name _____

Index No. _____

2601/104

2602/104

2603/104

ENGINEERING DRAWING,
MATERIALS, PROCESSES AND
WORKSHOP TECHNOLOGY

Oct./Nov. 2014

Time: 3 hours

Candidate's Signature _____

Date _____



THE KENYA NATIONAL EXAMINATIONS COUNCIL

DIPLOMA IN ELECTRICAL AND ELECTRONICS ENGINEERING
(POWER OPTION)
(TELECOMMUNICATION OPTION)
(INSTRUMENTATION OPTION)
MODULE I

ENGINEERING DRAWING, MATERIALS, PROCESSES AND WORKSHOP TECHNOLOGY

3 hours

INSTRUCTIONS TO CANDIDATES

Write your name and index number in the spaces provided above.

Sign and write the date of the examination in the spaces provided above.

You should have the following for this examination:

Drawing instruments;

Mathematical tables/Scientific calculator;

Drawing paper A3.

This paper consists of **EIGHT** questions in **TWO** sections; **A** and **B**.

Answer **THREE** questions in section **A** in the space provided in this paper and **TWO** questions in section **B** on the drawing paper.

All questions carry equal marks. Maximum marks for each part of a question are as indicated.

Do **NOT** remove any pages from this booklet.

Candidates should answer the questions in English.

For Examiner's Use Only

Sections	Questions	Maximum Score	Candidate's Score
A		20	
		20	
		20	
B		20	
		20	
Total Score			

This paper consists of 16 printed pages.

Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.

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Turn over

SECTION A

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

1. (a) Explain the following properties of engineering materials:
- (i) malleability; (6 marks)
 - (ii) strength. (4 marks)
- (b) Distinguish between enameling and etching. (10 marks)
- (c) With the aid of a labelled diagram, explain the extraction of iron from its ore. (4 marks)
2. (a) Differentiate between arc welding and soldering. (8 marks)
- (b) Describe the following marking out and measuring tools:
- (i) steel rules; (8 marks)
 - (ii) scribes; (8 marks)
 - (iii) engineer's try-square. (8 marks)
- (c) Using illustrations, outline the procedure for making a 'safe edge joint'. (4 marks)
3. (a) State any **four** safety hazards in the workshop. (12 marks)
- (b) Explain **four**:
- (i) causes of electric fires; (4 marks)
 - (ii) types of fire extinguishers and the kind of fire they extinguish. (4 marks)
- (c) Outline the procedures for rescuing a victim found unconscious and in contact with live conductors. (4 marks)

4. (a) Figure 1 shows a bench shear.
Name the parts labelled A - G.

(7 marks)

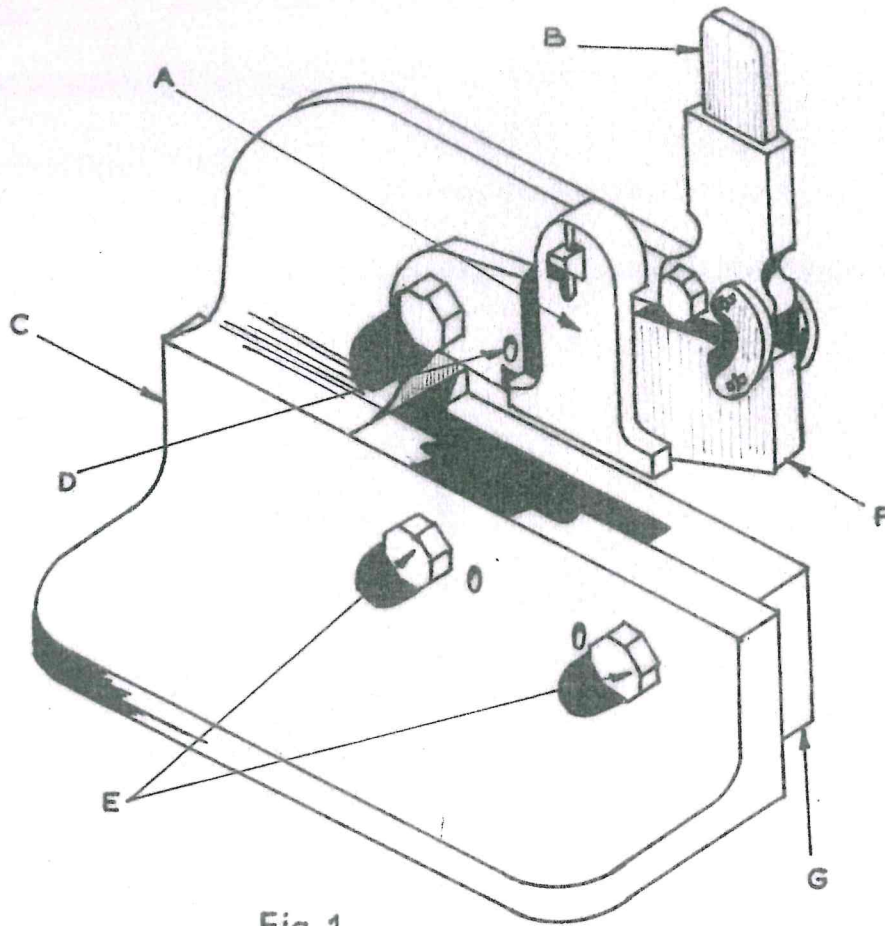


Fig.1

- (b) Outline the procedure for joining two metallic parts by riveting.

(9 marks)

- (c) (i) Explain the composition of brass.

- (ii) State any **four** applications of brass.

(4 marks)

SECTION B

Answer any *TWO* question from this Section.

5. Figure 2 shows a pictorial view of an object. Draw full size the following views in first angle projection:
- (a) front elevation in the direction of arrow F;
 - (b) end elevation in the direction of arrow E;
 - (c) plan in direction of arrow P.

(20 marks)

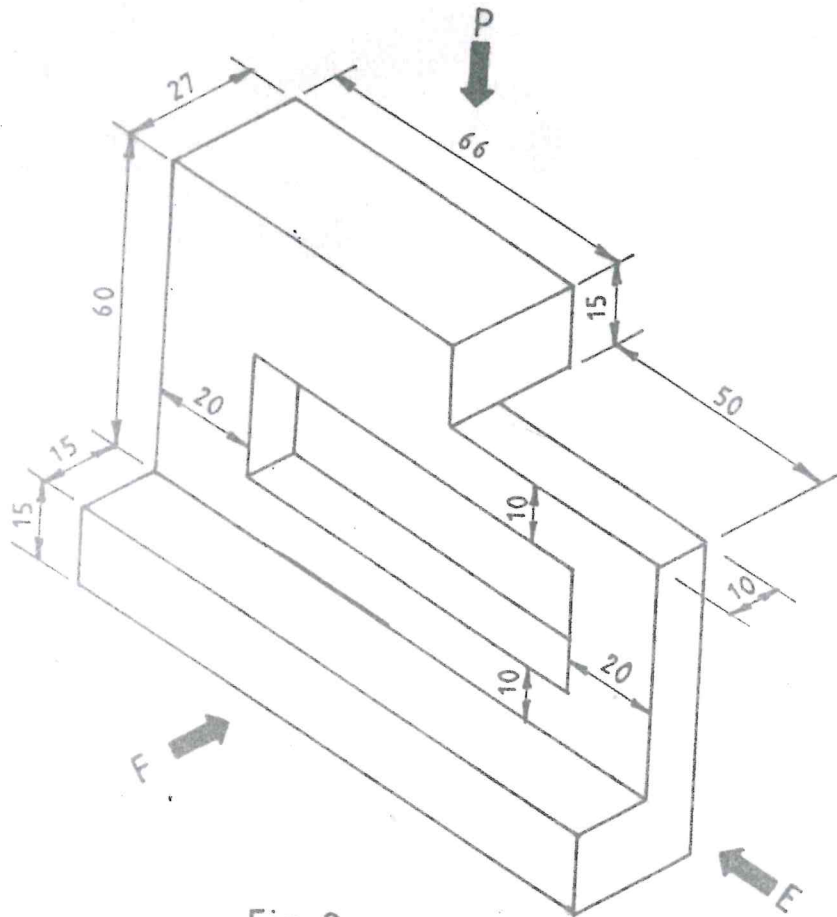


Fig. 2

6. Figure 3 shows an elevation of a truncated cylinder. Redraw the elevation and add the following:

- (a) plan;
- (b) true shape of the top side;
- (c) surface development.

(20 marks)

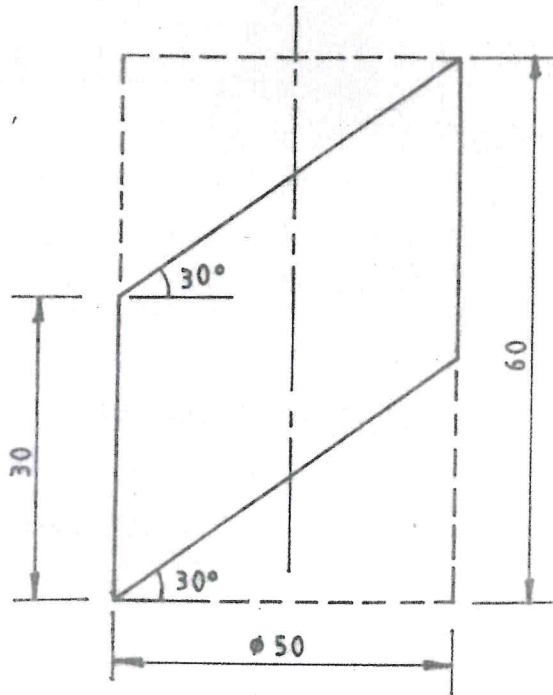


Fig. 3

7. Figure 4 shows an elevation of two intersecting cylinders.

- (a) Redraw the elevation and show the intersection.
- (b) Draw the following:
 - (i) plan;
 - (ii) surface development of cylinder A.

(20 marks)

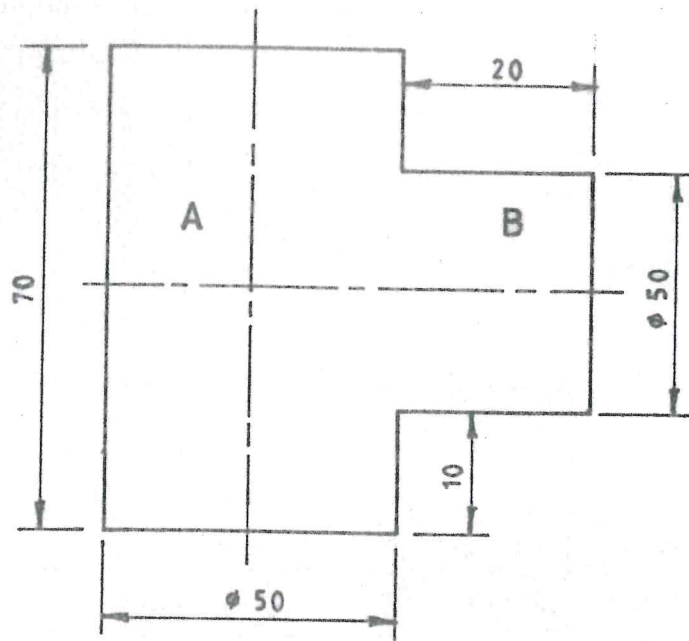


Fig. 4

8. (a) Make free hand sketches of the following hand tools:

- (i) flat screw driver;
- (ii) chisel hammer;
- (iii) bradawl;
- (iv) combination pliers;
- (v) wall punch;
- (vi) dividers.

(12 marks)

(b) Draw the following:

- (i) A plain scale of 2:1 to represent centimetres and millimetres to 5 cm and mark 3.8 cm.
- (ii) A regular hexagon using a pair of compasses and ruler only.

(8 marks)