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TECHNICAL DRAWING

June/July 2022

Time: 3 hours



THE KENYA NATIONAL EXAMINATIONS COUNCIL

**CRAFT CERTIFICATE IN CARPENTRY AND JOINERY
CRAFT CERTIFICATE IN MASONRY
CRAFT CERTIFICATE IN PLUMBING**

TECHNICAL DRAWING

3 hours

INSTRUCTIONS TO CANDIDATES

You should have the following for this examination:

Answer booklet;

Drawing paper size A2;

Drawing instruments;

Scientific calculator.

Answer FIVE of the following EIGHT questions.

All questions carry equal marks.

Maximum marks for each part of a question are as indicated.

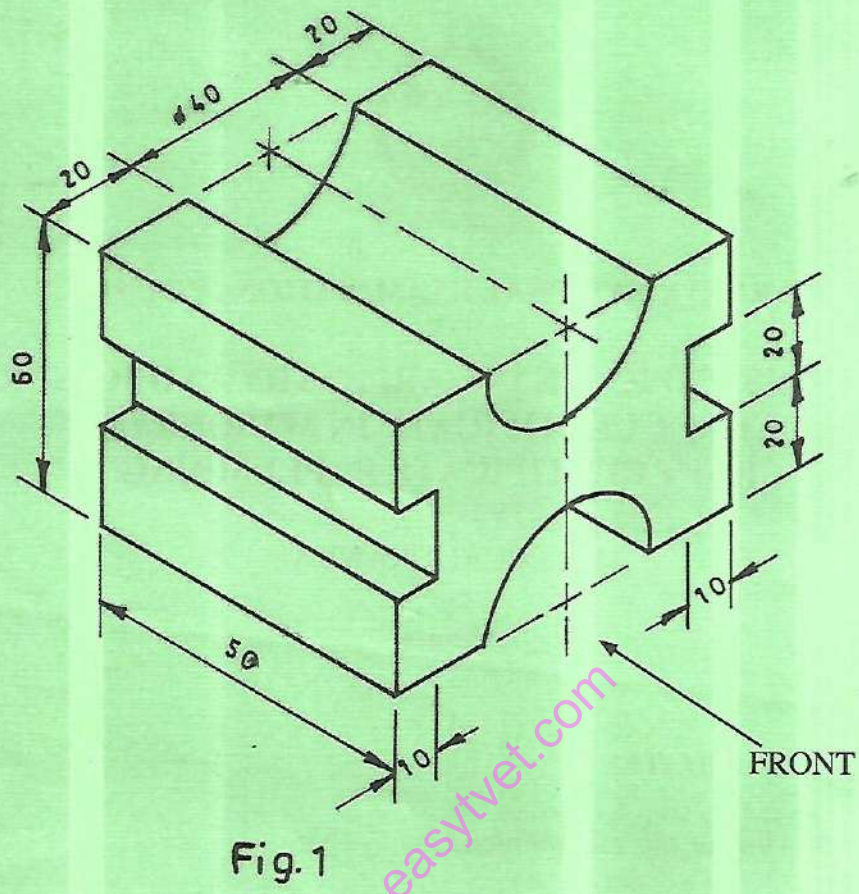
ALL dimensions are in millimeters.

Candidates should answer the questions in English.

This paper consists of 8 printed pages.

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

1. (a) In a height of 6 mm, print the paper sizes A0 to A4. (5 marks)
- (b) **Figure 1** shows a pictorial projection of an object. Draw the orthographic views in first angle. (15 marks)



2. **Figure 2** shows the orthographic views of a block in third angle projection. Draw full size the isometric view of the block taking corner X as the lowest point. (20 marks)

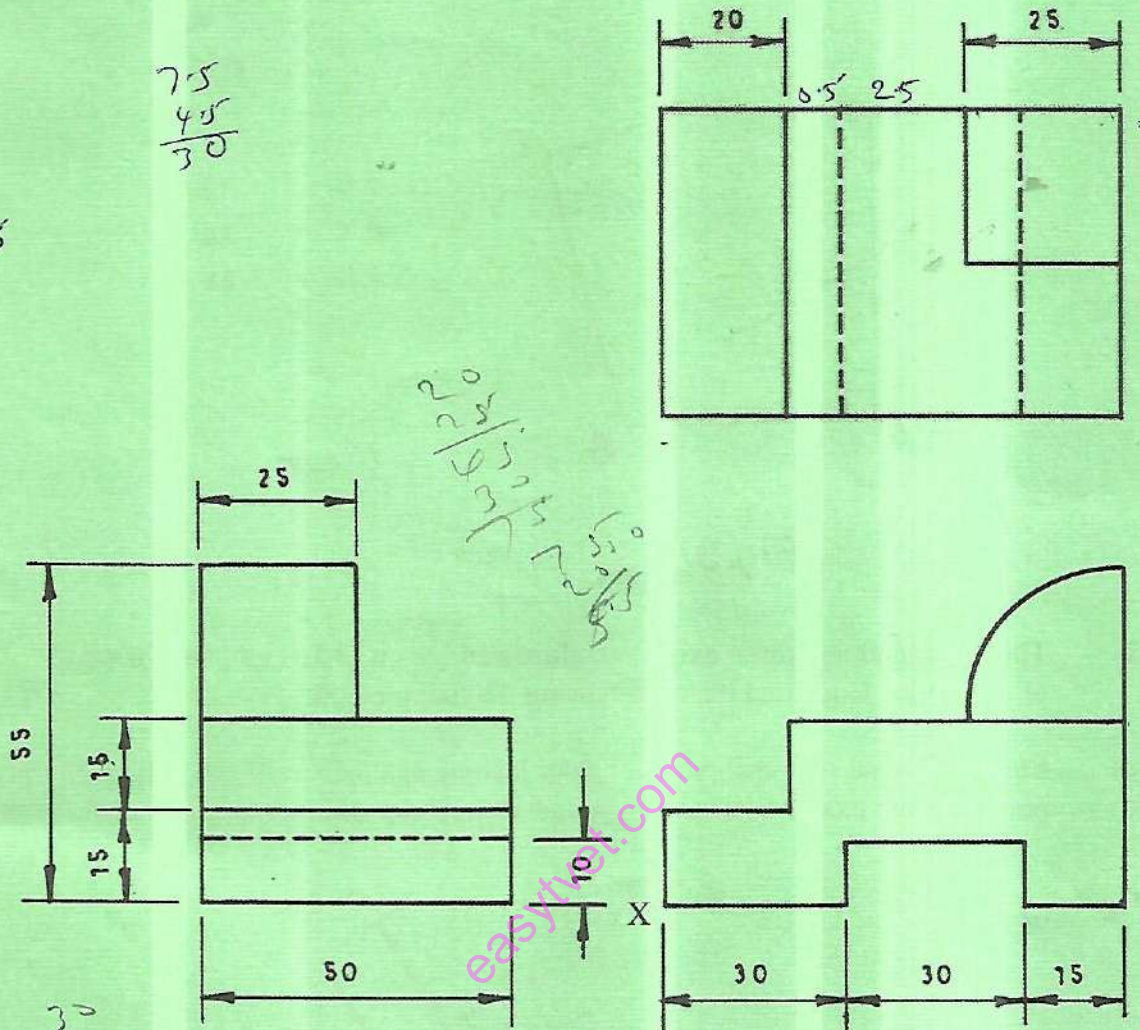


Fig. 2

3. (a) **Figure 3** shows the outline of an irregular polygon. Reduce its sides by the ratio 3:5 taking point A as the centre of similitude. (5 marks)

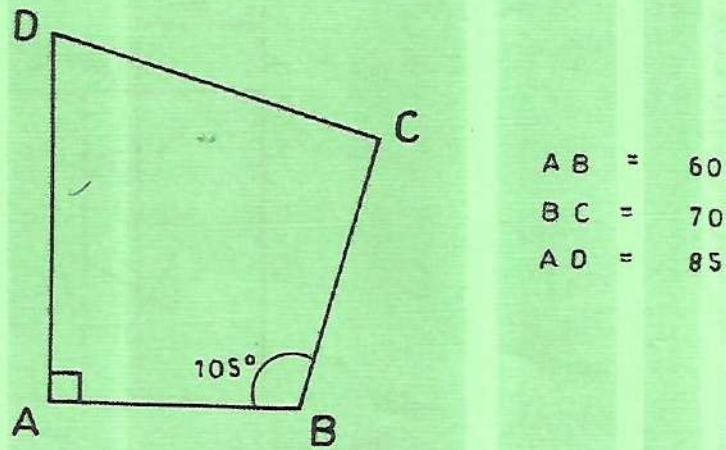


Fig.3

- (b) The major and the minor axis of an ellipse are given as 110 mm and 70 mm respectively. Construct the ellipse using the foci method. (7 marks)
- (c) **Figure 4** shows the position of a ladder leaning against a wall. Plot the path traced by point P as the ladder falls on the ground with its top sliding along the wall. (8 marks)

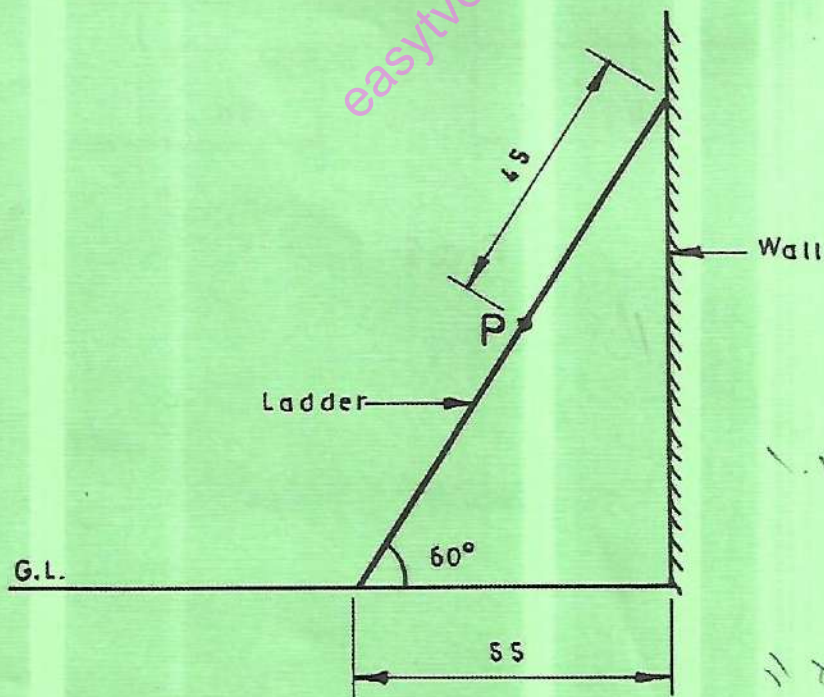


Fig.4

4. **Figure 5** shows a circular pipe intersected by a square pipe. Copy the given views and:

- (a) construct the line of intersection;
- (b) complete the plan;
- (c) construct the surface development of the square pipe.

(20 marks)

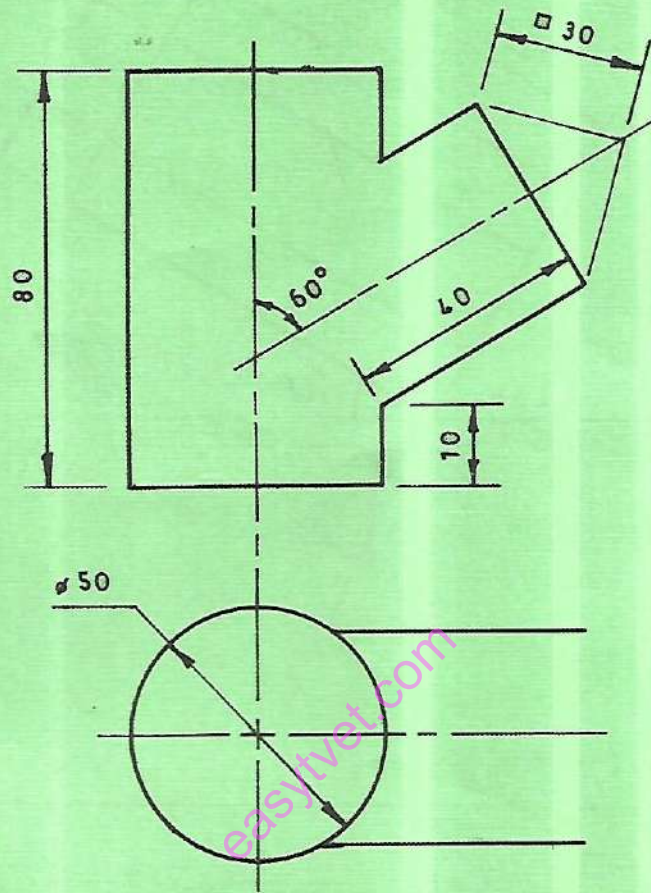


Fig.5

150
30
40
60°

5.

Figure 6 shows the layout of a perspective drawing. Draw the block in two points perspective from the given layout. (20 marks)

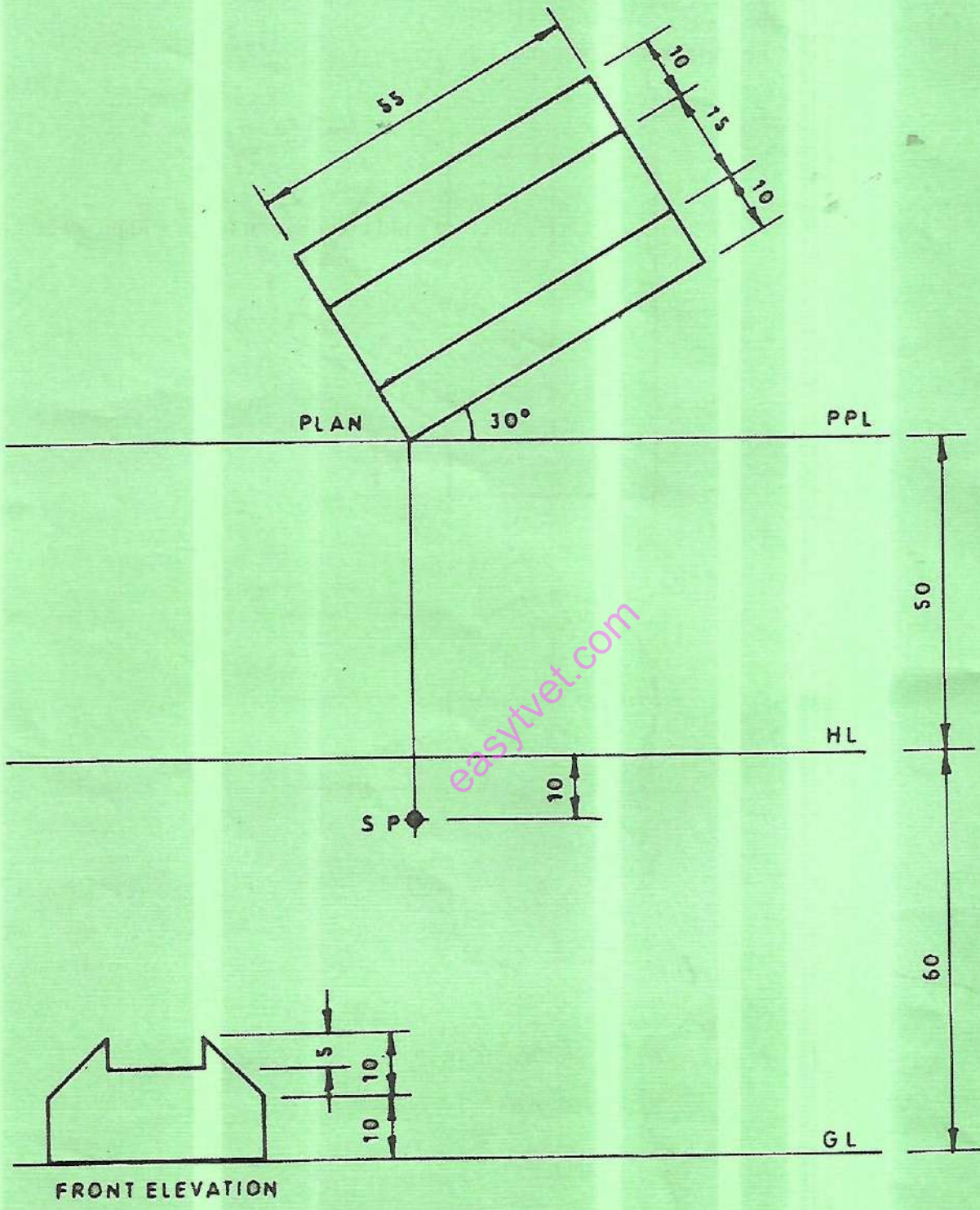


Fig. 6

6.

(a) Make freehand sketches of the following hand tools:

- (i) mallet;
- (ii) tenon saw;
- (iii) claw hammer.

(9 marks)

(b) A cone has a diameter of 56 mm and a height of 80 mm. Draw a right hand conical helix for one revolution given the lead as 60 mm. (11 marks)

7.

Figure 7 shows the front elevation of a truncated solid cylinder. In first angle projection, draw the following:

- (a) the plan;
- (b) left end elevation;
- (c) true shape of the cut portion.

(20 marks)

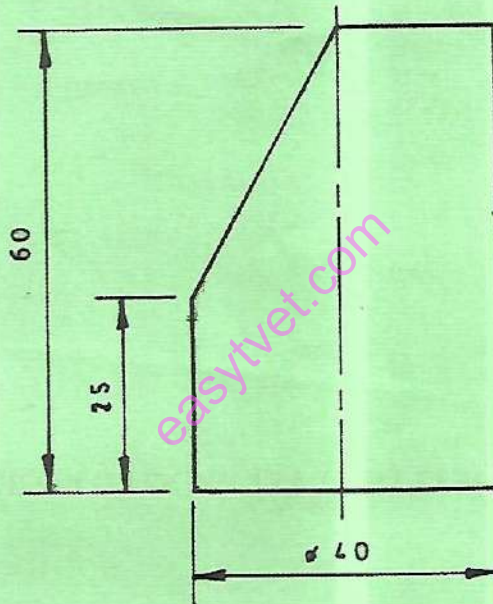


Fig. 7

8. (a) In rectangles of 30 mm by 10 mm, illustrate graphical symbols for any three of the following building materials:

- (i) mass concrete;
- (ii) unwrot timber;
- (iii) gate valve;
- (iv) dump proof membrane.

(6 marks)

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Turn over

(b) The clear span of a house is 3000 m. To a scale of 1:20 draw and label a vertical section of the roof given the following data:—

- 215 mm thick brick wall;
- 100 x 50 mm wall plate;
- 100 x 50 mm ceiling joist;
- 100 x 50 mm king post;
- 75 x 50 mm struts;
- 100 x 50 mm rafters;
- 75 x 50 mm purlins;
- 200 x 22 mm fascia board;
- 150 Ø mm half-round gutter;
- 30 gauge GCI sheet roof covering.

Assume any other relevant information not provided.

(14 marks)

150
~~3000~~
20
1

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