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TECHNICAL DRAWING
June/July 2021
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 A_2;
   Drawing instruments.
Answer FIVE questions of the following EIGHT questions.
All questions carry equal marks.
Maximum marks for each part of a question are indicated.
All dimensions are in millimeters.
Candidates should answer the questions in English.

This paper consists of 9 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) State the internal standard dimensions of each of the following paper sizes, given that size AO is 1189 x 841 mm.

   (i) A_1
   (ii) A_2
   (iii) A_3
   (iv) A_4

   (2 marks)

   (b) Illustrate **six** types of lines used in technical drawing and label each by printing in lower case.
   (3 marks)

   (c) Using the universal method of constructing regular polygons, construct a regular pentagon given that one of its sides is 30 mm hence draw a triangle equal in area to the pentagon.
   (15 marks)

2. (a) **Figure 1** shows the connection of a link mechanism. Given that point "A" is restricted to a linear motion along $x - x$ axis and point B moves around centre C, trace the locus of point "P" on a plate fixed on the connecting rod AB as B makes one revolution.
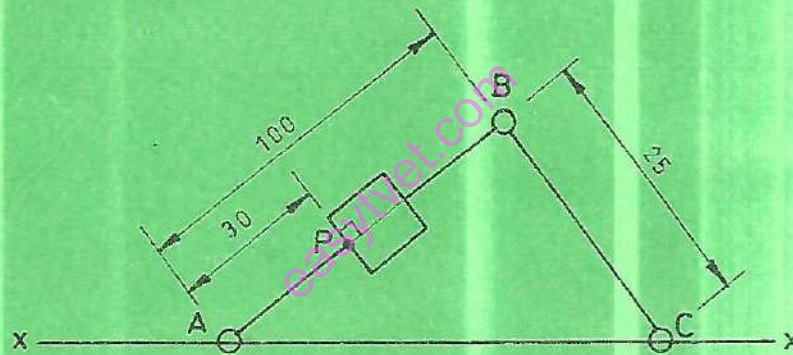   (12 marks)

Fig.1

(b)   The quadrant plate shown in **Figure 2** is symmetrical about the vertical centre line and its uppermost edge is concentric to the line of centres of the three holes. Copy the drawing and show all the construction details and dimensions.   (8 marks)
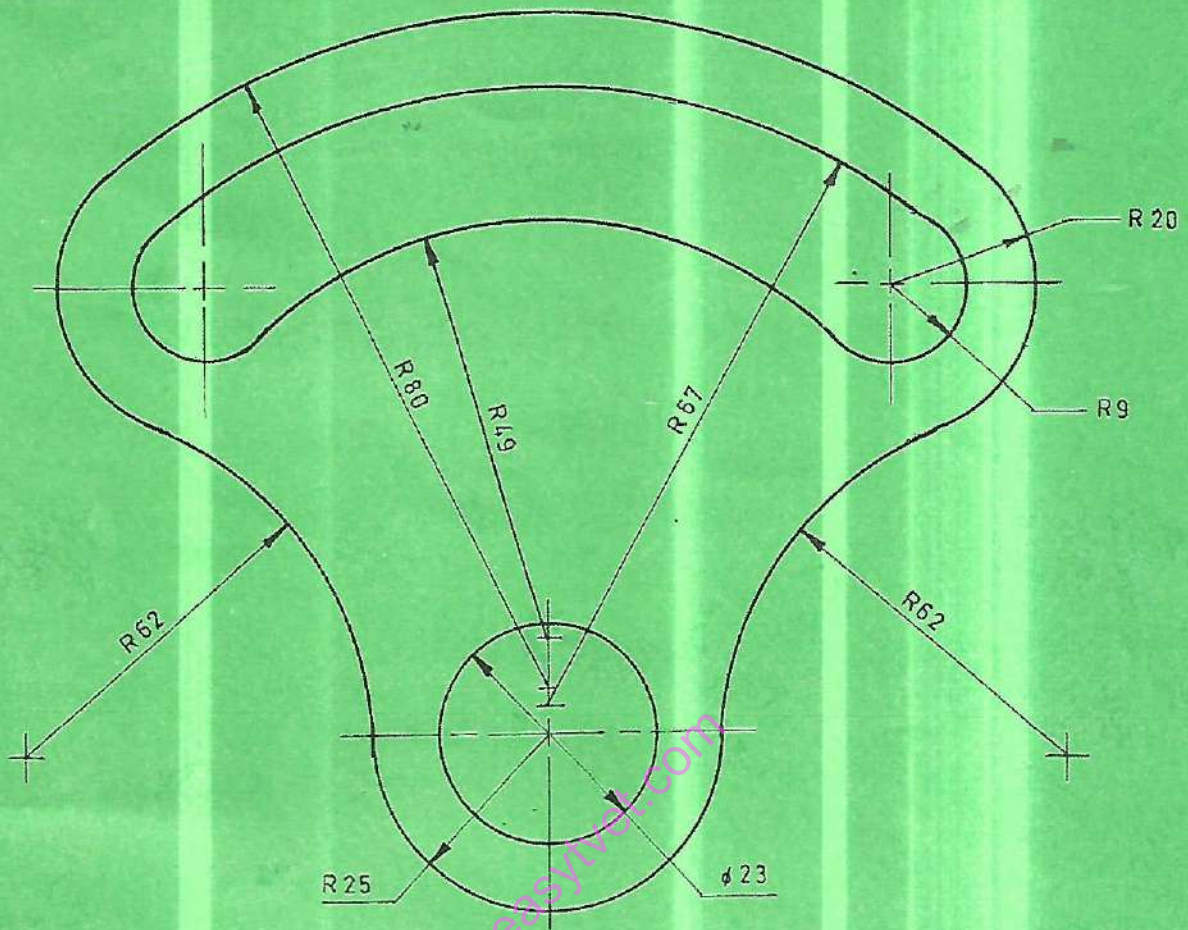

Fig. 2

3.   **Figure 3** shows a pictorial drawing of a shaped block. Draw full size a one point perspective drawing using the following information:

(a)   Horizontal plane is 50 mm from the picture plane.

(b)   Ground line is 60 mm from the horizon plane line.

(c)   Station point is 30 mm to the right hand side of the plan and 15 mm above the horizon plane line.
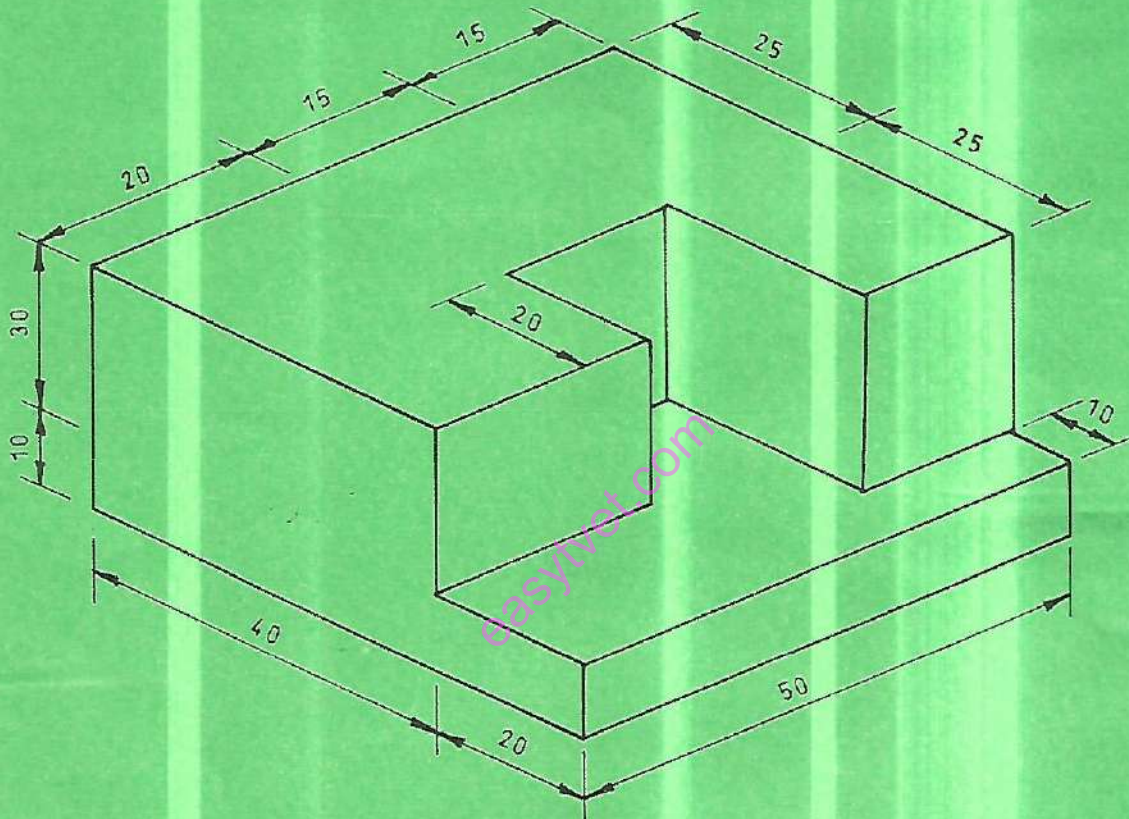
(20 marks)

Fig. 3

4. Figure 4 shows two pipes A and B of diameters 30 mm and 50 mm respectively, interpenetrating at an angle of 60°. In 3rd angle orthographic projection, draw full size the following:

(a) the given view and show the line of interpenetration;

(b) end elevation in the direction of arrow F;

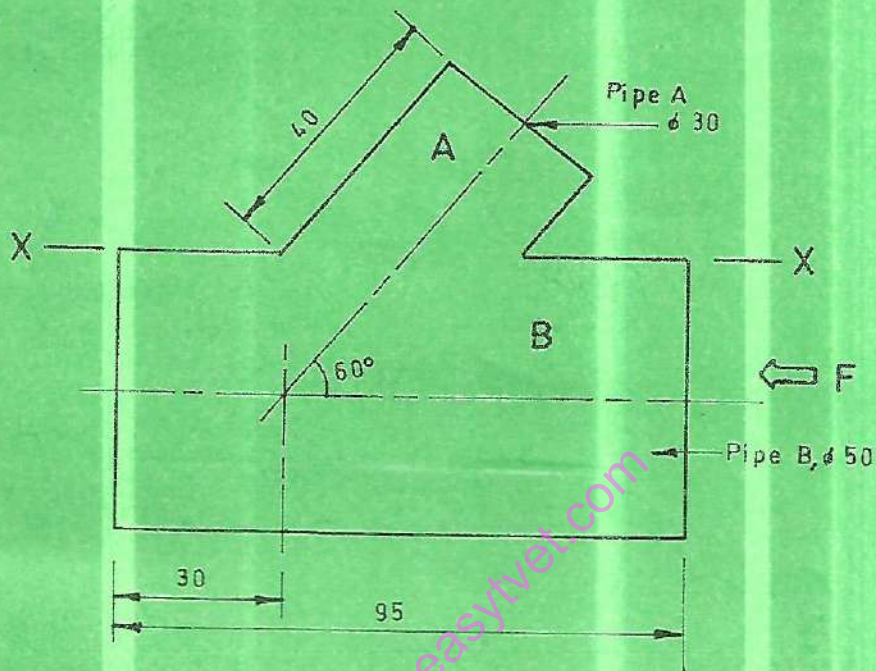(c) the development of pipe A opened at point X-X.

(20 marks)

Fig. 4

5.   **Figure 5** shows the front elevation of a truncated cone. Draw in 1ˢᵗ angle projection, full size, the following:

(a)   the given front elevation;

(b)   the plan;

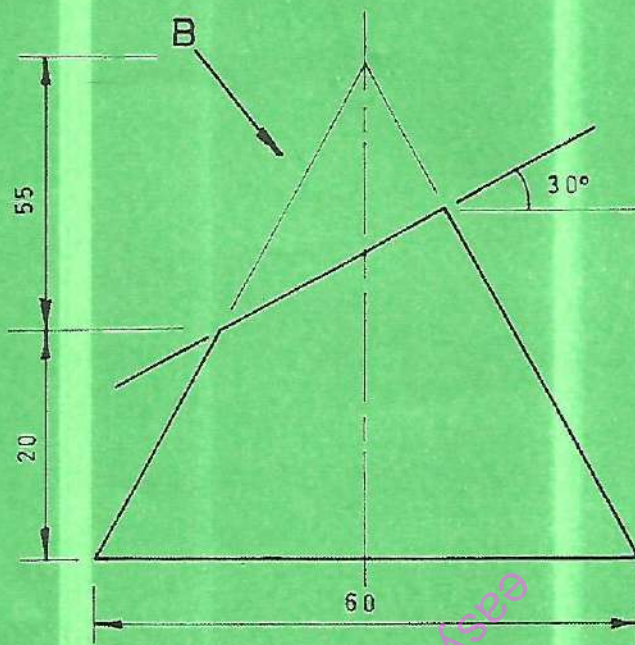(c)   the auxiliary view in the direction of arrow B.

(20 marks)

Fig. 5

6. **Figure 6** shows two views of a shaped block drawn in 1st angle projection. Draw a full size view of the block in isometric projection. Take point X as the lowest point. (20 marks)
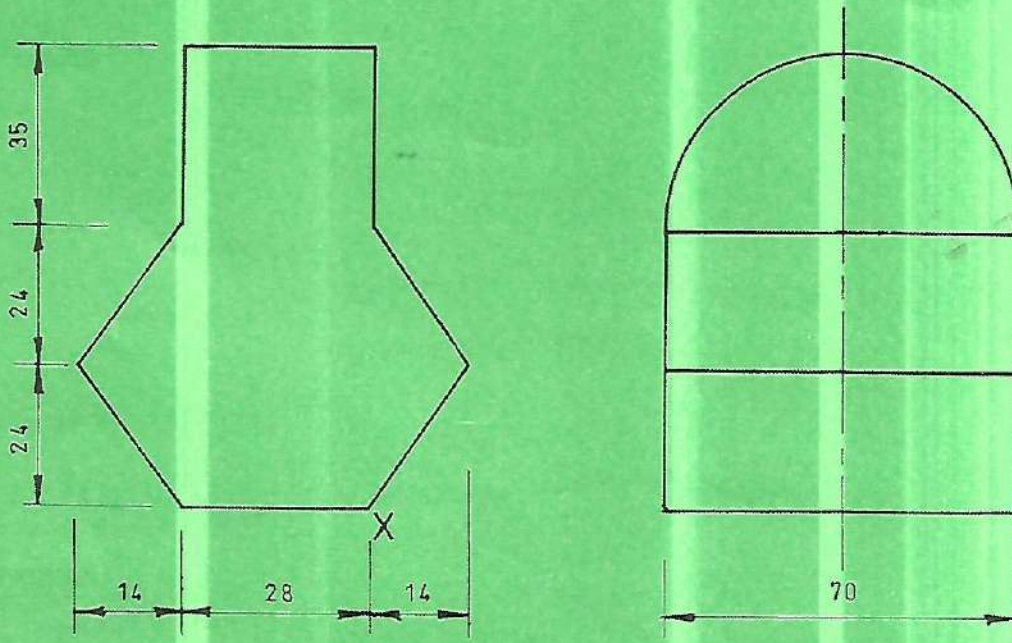

Fig. 6

7. **Figure 7** shows an isometric view of a shaped block. Draw full size in third angle projection the following views:

(a)   front elevation;
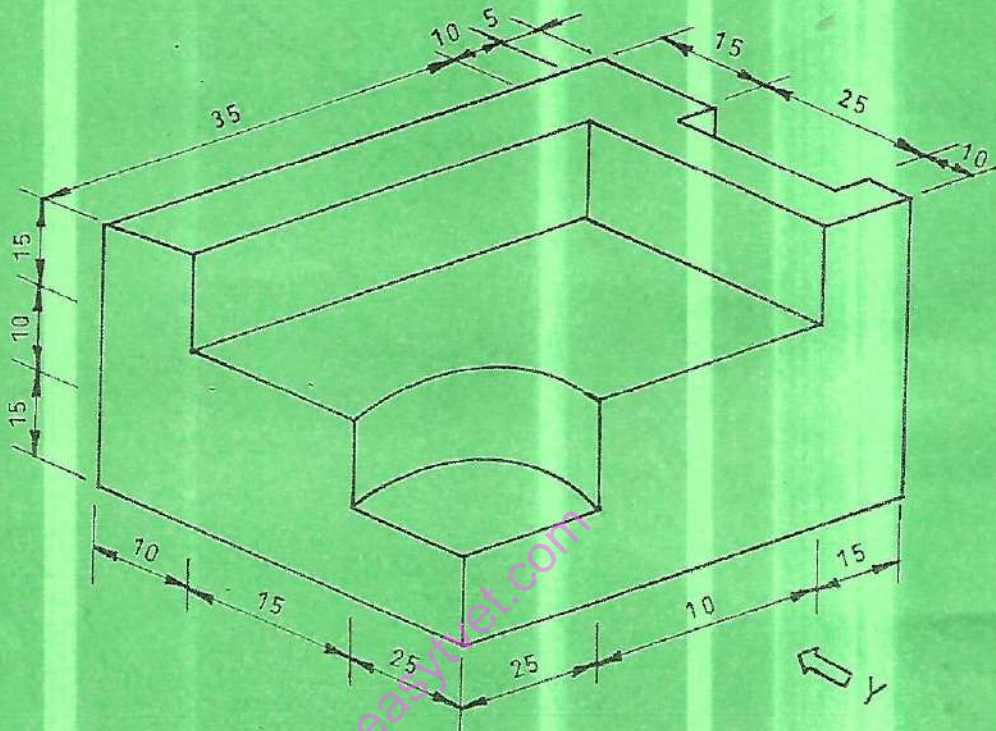
(b)   end elevation;

(c)   the plan.

(20 marks)

Fig.7

8. **Figure 8** shows a plan of a house for a servant in the school compound. To a scale of 1:25, draw section X-X using the following data:

- strip foundation 450 x 150 mm
- foundation wall 150 mm thick
- hard core 300 mm
- blinding 50 mm
- over site concrete floor 150 mm
- floor screed 25 mm
- superstructure wall 150 mm
- height of the window sill 850 mm from the oversight slab
- door height 2050 mm
- lintel 150 x 225 mm
- wall plate 100 x 50 placed on lintel
- rafter 100 x 50 mm
- purlins 75 x 50 mm
- roof covering GCI sheets gauge 30
- fascia board 225 x 25 mm
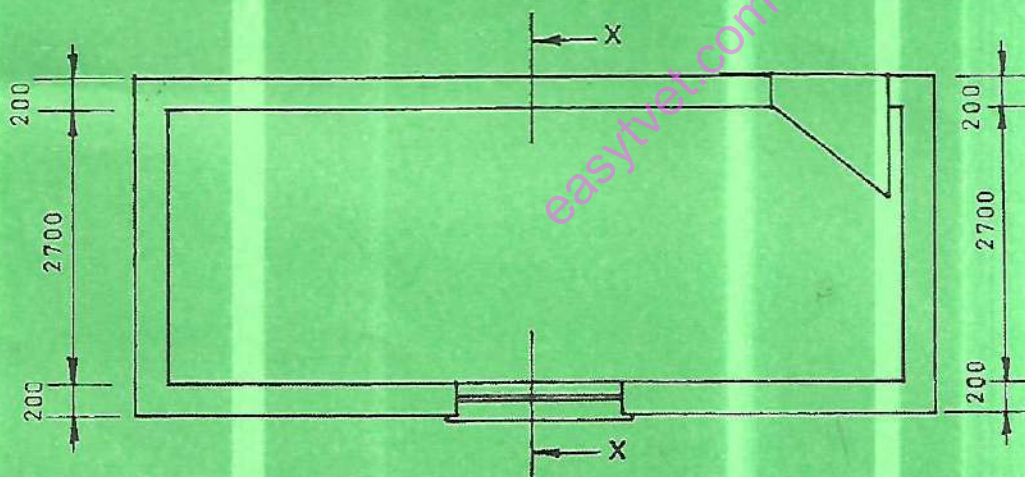- pitch angle 30°

Assume any other relevant information.

(20 marks)

Fig. 8

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