

1301/312

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TECHNICAL DRAWING

March/April 2023

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 papers;

Drawing instruments.

Answer FIVE of the following EIGHT questions.

All questions carry equal marks.

Maximum marks for each part of a question are indicated.

Candidates should answer the questions in English.

This paper consists of 7 printed pages.

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

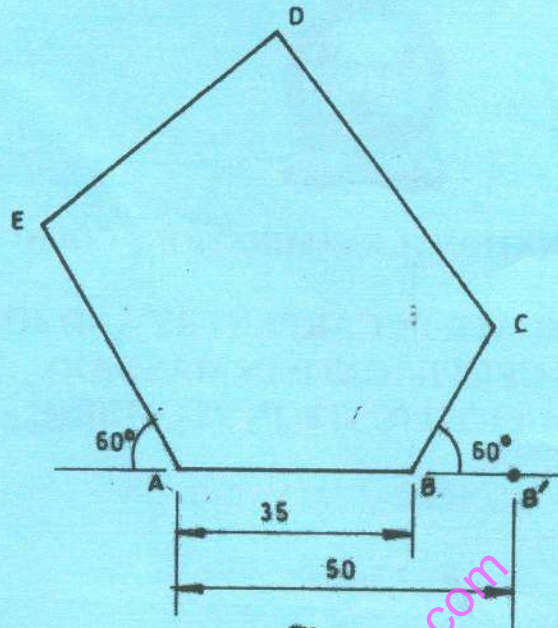
1. (a) State **two** uses of each of the following drawing instruments:

- (i) T-square;
- (ii) Set square.

(4 marks)

(b) **Figure 1** shows an irregular pentagon ABCDE. Enlarge the figure so that AB' is 50 mm long.

(6 marks)

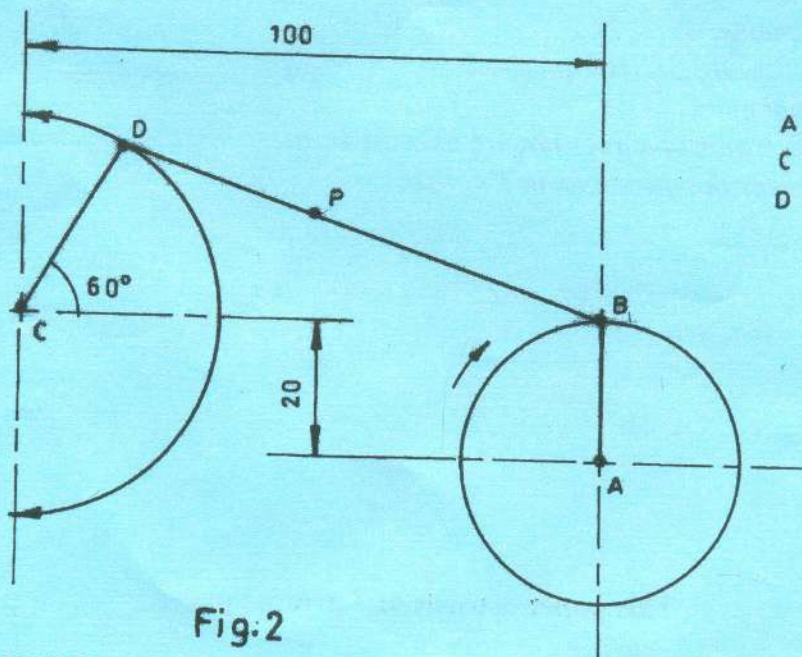


- AB = 35
- AE = 40
- BC = 25
- CD = 55
- DE = 45

Fig.1

(c) **Figure 2** shows the layout of a link mechanism. Crank AB rotates about centre A, crank CD oscillates about centre C and the arm BD connects the two cranks. Plot the locus of point P for one revolution of crank AB in clockwise direction.

(10 marks)



- AB = 20
- CD = 35
- DP = 40

Fig.2

1. (a) State **two** uses of each of the following drawing instruments:

- (i) T-square;
- (ii) Set square.

(4 marks)

(b) **Figure 1** shows an irregular pentagon ABCDE. Enlarge the figure so that AB' is 50 mm long. (6 marks)

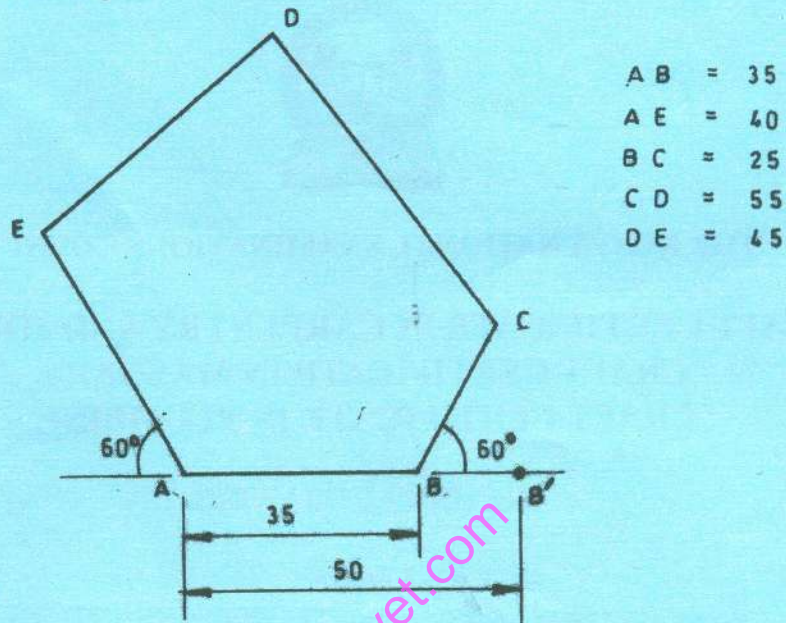


Fig 1

(c)

Figure 2 shows the layout of a link mechanism. Crank AB rotates about centre A, crank CD oscillates about centre C and the arm BD connects the two cranks. Plot the locus of point P for one revolution of crank AB in clockwise direction. (10 marks)

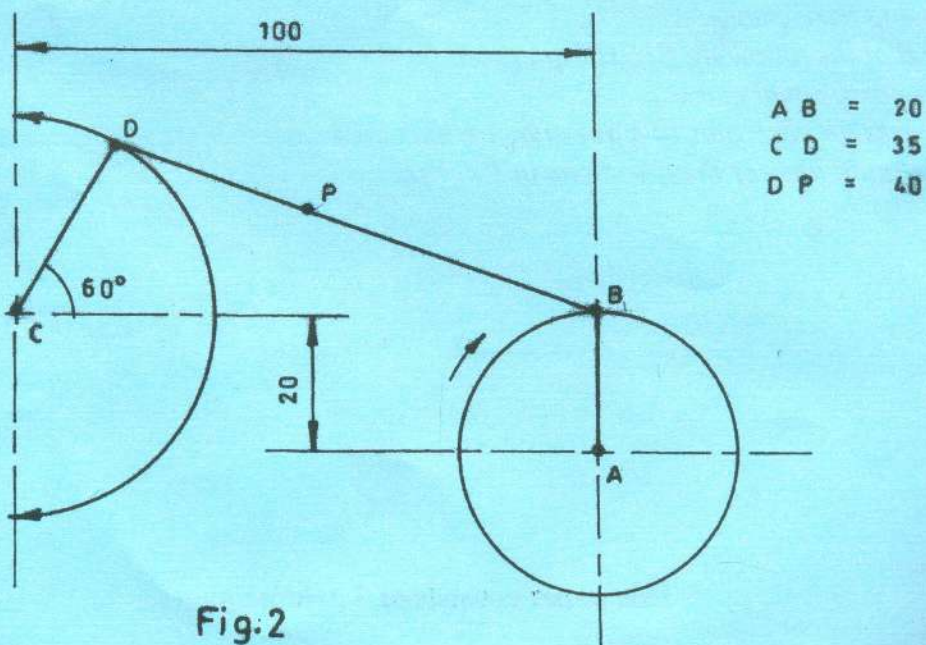


Fig:2

2

2.

Figure 3 shows the front elevation and the plan of a shaped block drawn in first angle projection. Copy the views and draw the following:

- (a) End elevation; (10 marks)
- (b) An isometric view of the block making 'X' the lowest point. (10 marks)

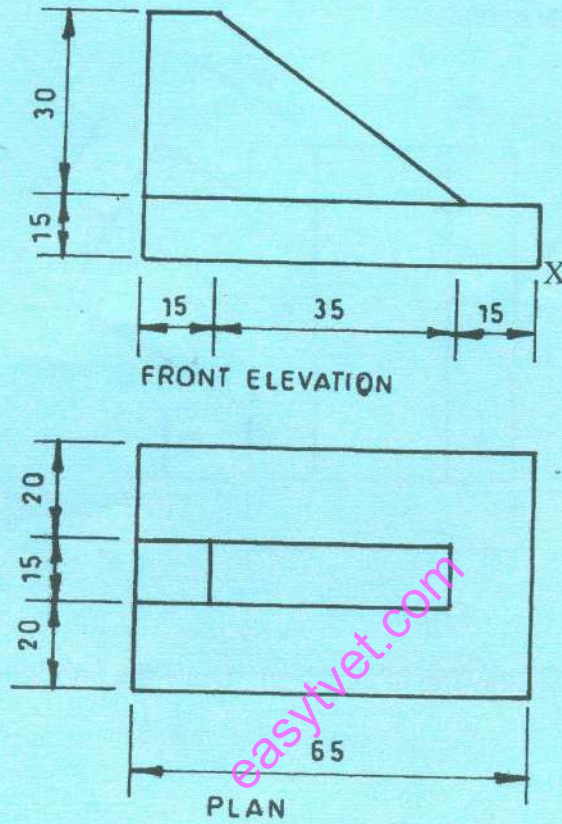


Fig.3

3.

Figure 4 shows the front elevation of a hexagonal prism intersected by a cylinder. Copy the given view and raw the following:

- (i) the plan;
- (ii) curve of interpenetration;
- (iii) development of the cylinder.

(20 marks)

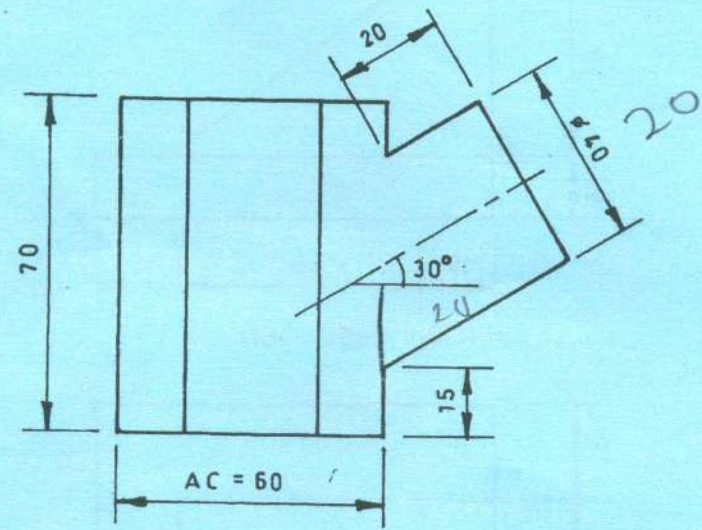


Fig.4

4.

Figure 5 shows a pictorial drawing of an object. Draw the orthographic views in third angle projection.

(20 marks)

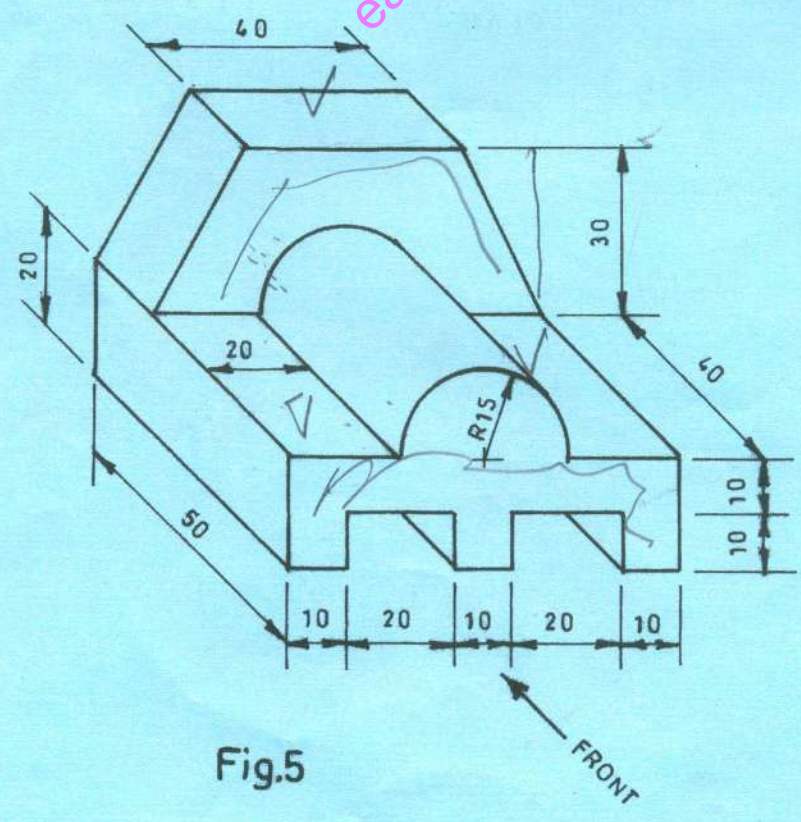


Fig.5

5. **Figure 6** shows the front elevation of a truncated square pyramid. Draw the following:

- (i) end elevation in the direction of arrow EE;
- (ii) plan.
- (iii) the surface development.

(20 marks)

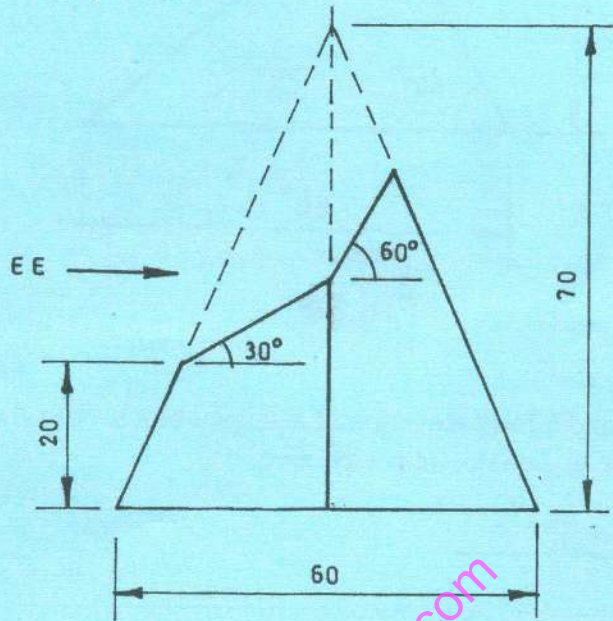


Fig.6

6. (a) Make freehand sketches of the following tools:

- (i) wire brush;
- (ii) flat file.

(6 marks)

(b) **Figure 7** shows two unequal circles. Construct an arc of radius 40 mm to touch two circle externally.

(5 marks)

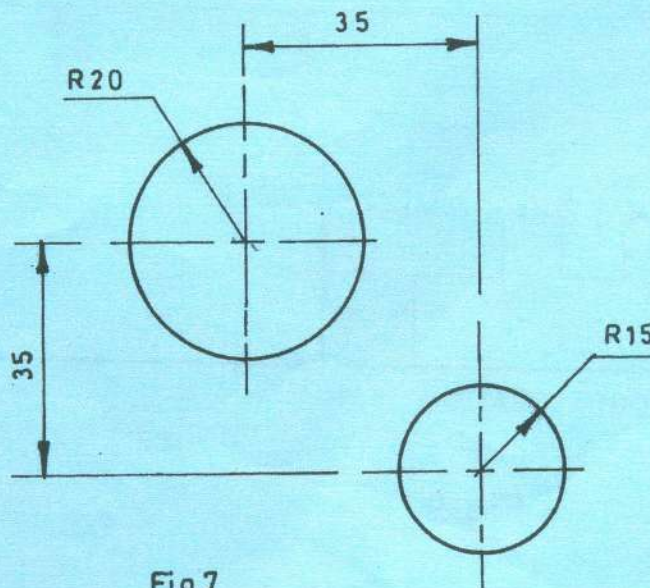


Fig.7

- (c) **Figure 8** shows an outline of a triangle. Construct a square equal in area to the triangle. (9 marks)

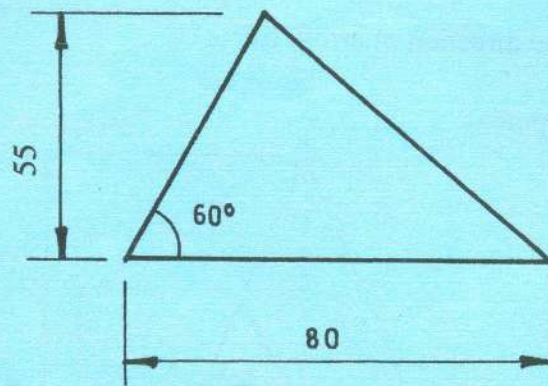


Fig.8

7. **Figure 9** shows a plan and a front elevation of a shaped block. Use the given layout to draw the block in a one point perspective. (20 marks)

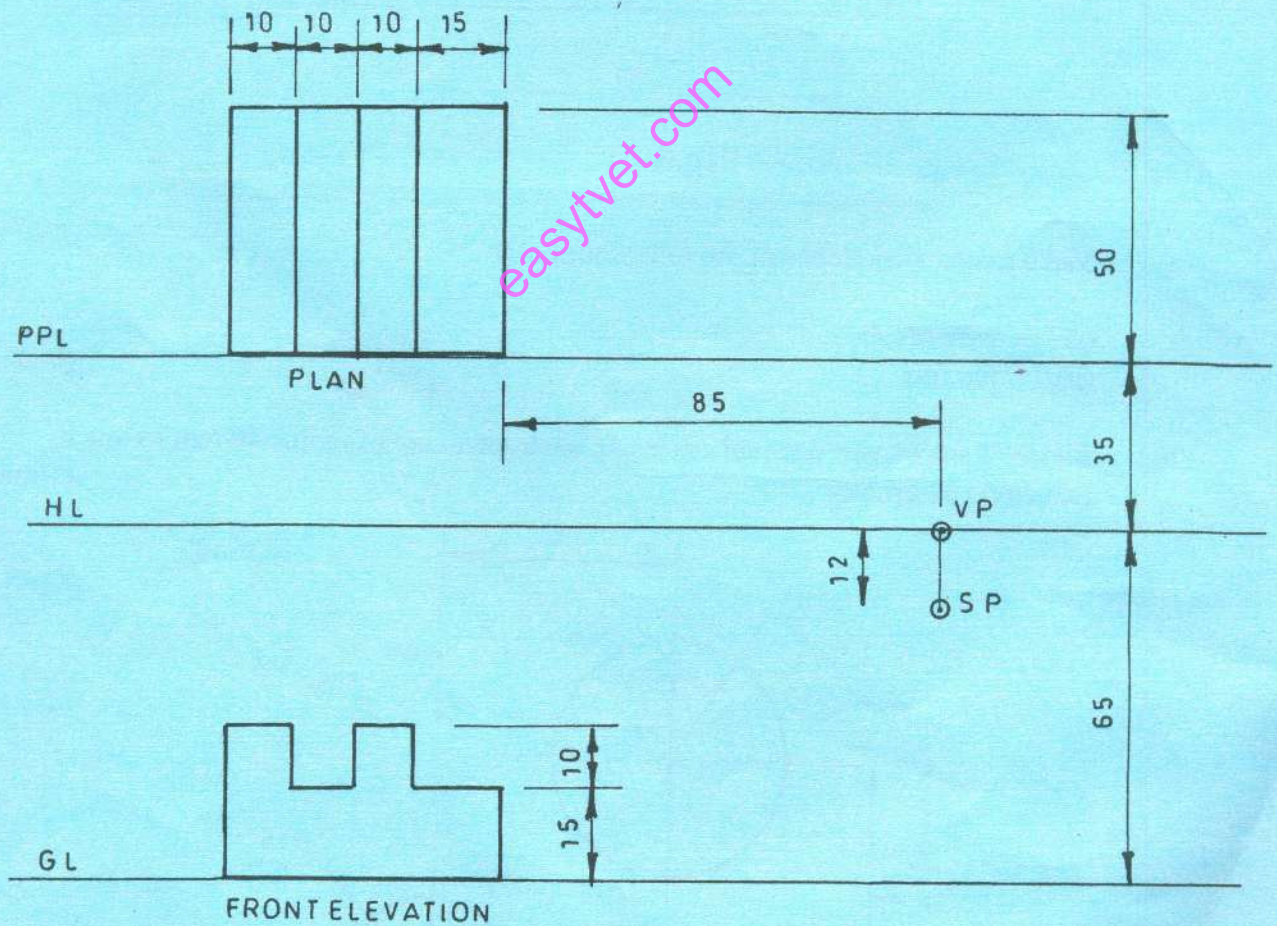


Fig.9

8. (a) To a scale of 1:10 draw, draw a vertical section through a strip foundation upto floor slab level given the following information:

Foundation depth	-	900 mm
Foundation concrete	-	200 mm thick
Wall thickness	-	200 mm
Hardcore fillings	-	250 mm
Blinding	-	50 mm
Concrete slab	-	150 mm

Assume any other relevant information not given.

(12 marks)

- (b) To a scale of 1:10, draw a vertical section of a pitched roof showing open eaves details given the following specifications:

Rafter	-	100 x 50 mm
Purlin	-	75 x 50 mm
Tie beam	-	100 x 50 mm
Wall plate	-	100 x 50 mm
Fascia board	-	200 x 25 mm
Half-round gutter	-	150 mm diameter
Roof pitch	-	30°
Roof covering	-	30 G GCI sheets

Assume any other information not given.

(8 marks)

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