1308/312
SURVEY DRAWING
June/July 2023
Time: 3 hours

THE KENYA NATIONAL EXAMINATIONS COUNCIL

CRAFT CERTIFICATE IN LAND SURVEYING

SURVEY DRAWING

3 hours

INSTRUCTIONS TO CANDIDATES

You should have the following for this examination:
  Answer booklet;
  Drawing paper;
  Drawing instruments;
  Scientific calculator.
*This paper consists of **EIGHT** questions in **TWO** sections A and B.*
*Answer **FIVE** questions choosing at least **TWO** questions from each section.*
Maximum marks for each part of a question are as indicated.
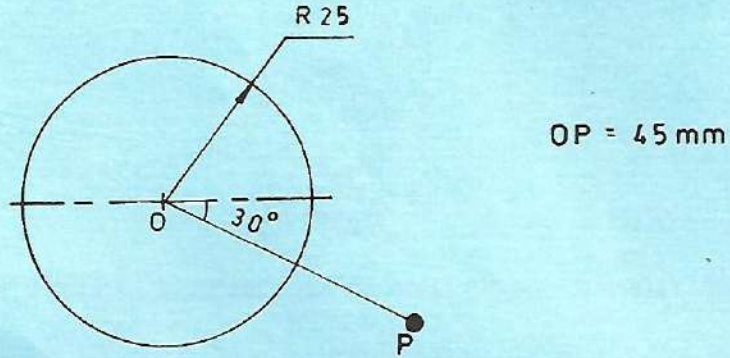**Candidates should answer the questions in English.**

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.

Turn over

*Answer at least **TWO** questions from this section.*

1.   (a)   **Figure 1** shows a circle and point P placed outside the circle.

R 25

OP = 45 mm

30°

O

P
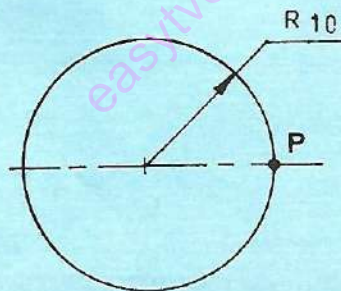
Fig.1

Construct a tangent from point P to touch the circle.   (10 marks)

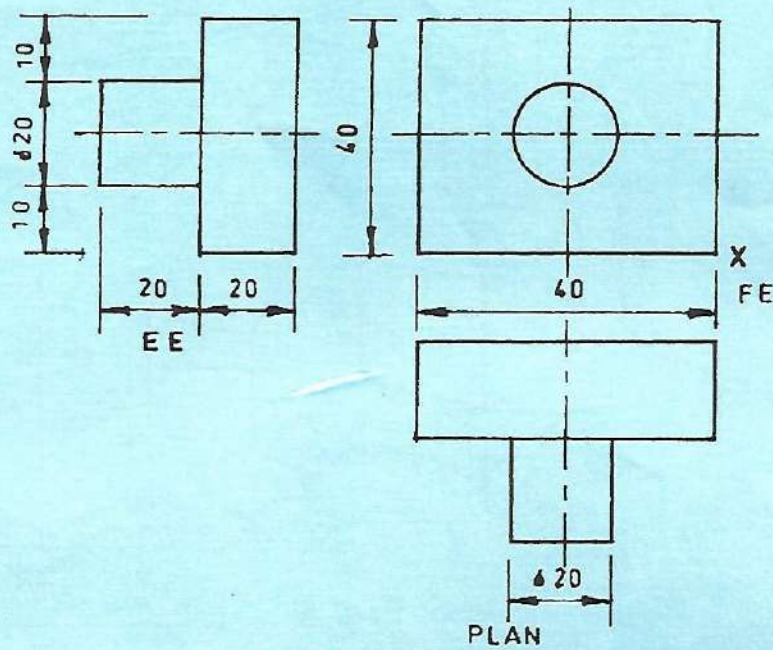   (b)   **Figure 2** shows the cross-section of a cylinder with a string wound around its circumference.

R 10

P

Fig.2

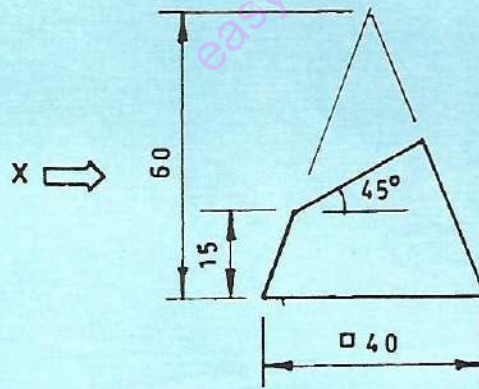Construct an archimedean spiral of point P for a complete rotation.   (10 marks)

2. (a) **Figure 3** shows views of a block drawn in orthographic projection.

Fig.3

Make a freehand pictorial sketch of the block with X as the lowest point.   (8 marks)

(b) **Figure 4** shows an elevation of a truncated square based pyramid.

Fig.4

Draw the following views in first angle projection:

(i)   given elevation;

(ii) plan;

(iii) end elevation from direction X.

(12 marks)

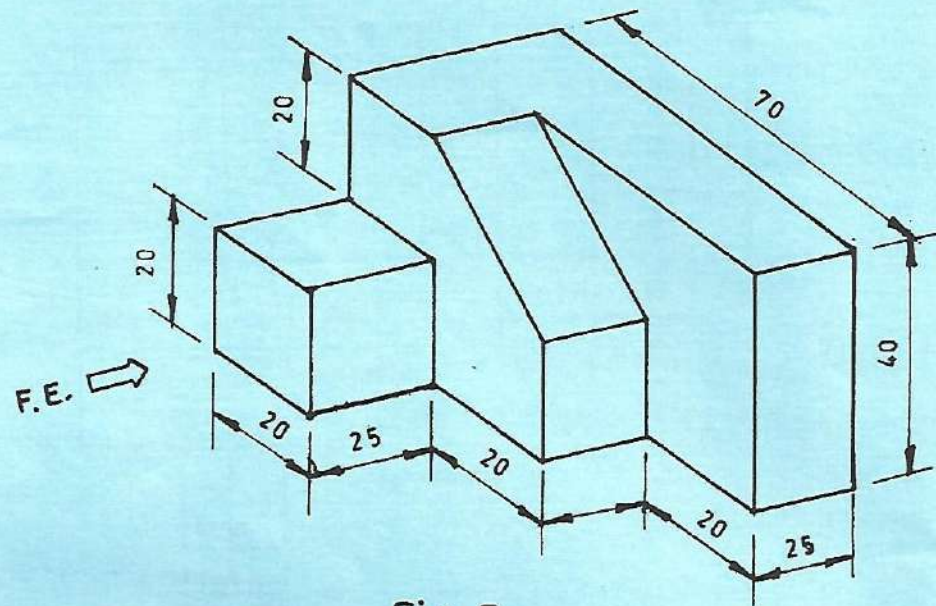3.   **Figure 5** shows a pictorial view of a shaped object.
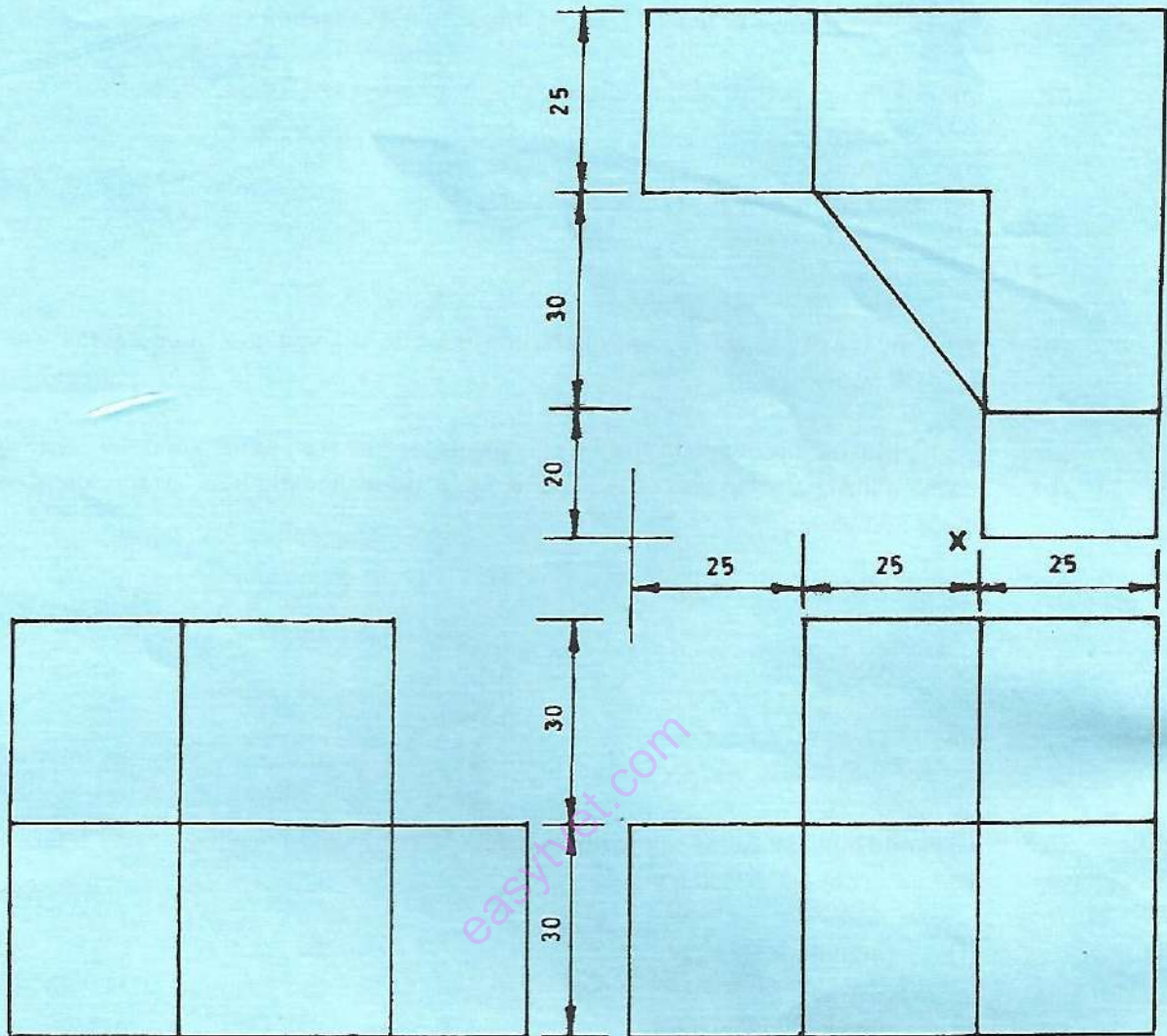

Fig. 5

Draw the following views in first angle projection.

(a)   front elevation;

(b)   end elevation;

(c)   plan.

(20 marks)

4.   **Figure 6** shows views of a shaped object drawn in third angle projection.

Fig. 6

Draw the object in isometric projection with X as the lowest point.   (20 marks)
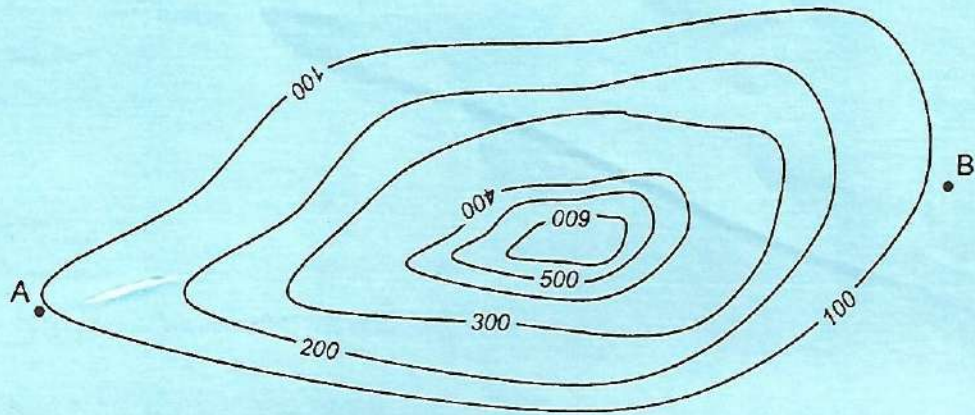
SECTION B: CARTOGRAPHY

*Answer at least **TWO** questions from this section.*

5. (a) Outline the properties of the following types of inks used for drawing:

    (i)   water proof;

    (ii) water colours.

    (8 marks)

    (b) With the aid of a diagram, outline the construction of a rectangular grid at the scale of 1:1,000.
    (12 marks)

6. (a) Using illustrations, explain **four** variables of 'text' as used in mapping.   (8 marks)
    (b) Explain the characteristics of the following features showing how to represent them on maps and plans.

    (i)   rivers;

    (ii) boreholes;

    (iii) county.

    (12 marks)

7. (a) Illustrate how the following features would be represented on a map using both geometric and pictorial symbols:

    (i)   mountain;

    (ii) hotel and restaurant;

    (iii) parking bay;

    (iv) forest.

    (8 marks)

    (b) With reference to map communication explain the following using a sketch:

    (i)   information source;

    (ii) signal;

    (iii) encoder;

    (iv) feedback.

    (12 marks)

8. (a) Outline **four** factors that affect the selection of contour intervals during contour interpolation. (8 marks)

    (b) Using information in **figure 7**:

Fig. 7

    (i) Construct a profile from point A to B;

    (ii) Calculate the gradient from the highest point at scale 1:25,000;

    (iii) Comment on the slope of the area.

(12 marks)

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