2506/104
2507/104
ENGINEERING DRAWING
June/July 2023
Time: 3 hours

THE KENYA NATIONAL EXAMINATIONS COUNCIL

DIPLOMA IN AERONAUTICAL ENGINEERING (AIRFRAMES AND ENGINES OPTION) (AVIONICS OPTION)

MODULE I

ENGINEERING DRAWING

3 hours

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INSTRUCTIONS TO CANDIDATES

You should have the following for this examination:
Answer booklet;
Drawing papers size A3;
Drawing instruments;
A non-programmable scientific calculator;
Drawing table/board.
*This paper consists of **FIVE** questions in **TWO** sections; **A** and **B**.*
*Answer question **ONE** in Section **A** (**compulsory**) and **THREE** questions from Section **B**.*
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 6 printed pages.

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

SECTION A (40 marks)

Compulsory

1. Figure 1 shows an isometric view of a machine block.
Draw the following in first angle projection:

(a) a sectional front elevation along the cutting plane X - X;
(b) end elevation in the direction of arrow Y;
(c) plan.

Include **six** major dimensions. (40 marks)

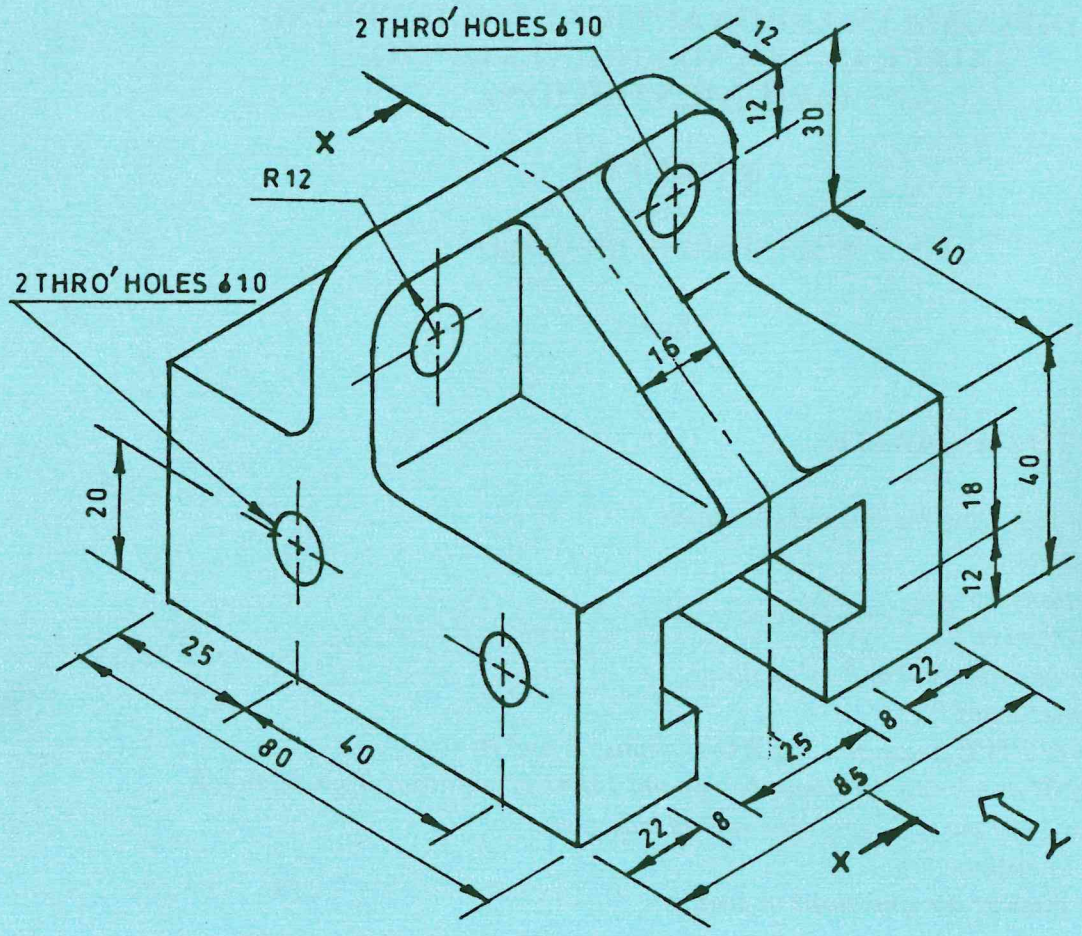

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Fig. 1

·ALL FILLET RADII 3 mm

SECTION B (60 marks)

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

2. (a) Construct the locus of a point P on the circumference of the circle shown in figure 2 which rolls on a straight line without slipping, for one complete revolution. (8 marks)

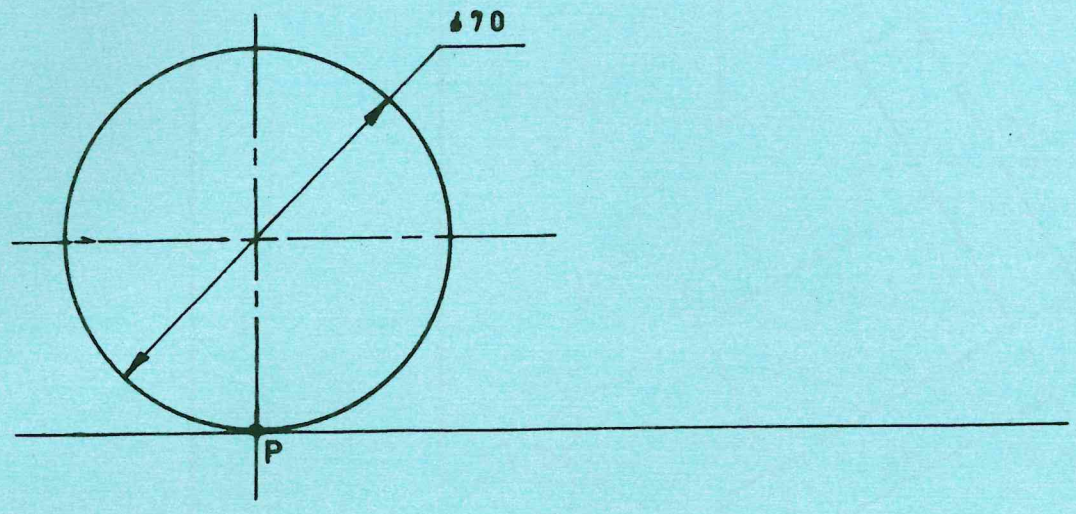

Fig.2

(b) Construct a regular heptagon whose length of side is 45 mm. (6 marks)

(c) Construct a common external tangent to two circles of diameters 80 mm and 60 mm respectively when their centres are 130 mm apart. (6 marks)

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3. Figure 3 shows the front elevation of two unequal intersecting square pipes:

(i) copy and complete the given view;
(ii) draw the plan;
(iii) draw the development of the line of interpenetration.

(20 marks)

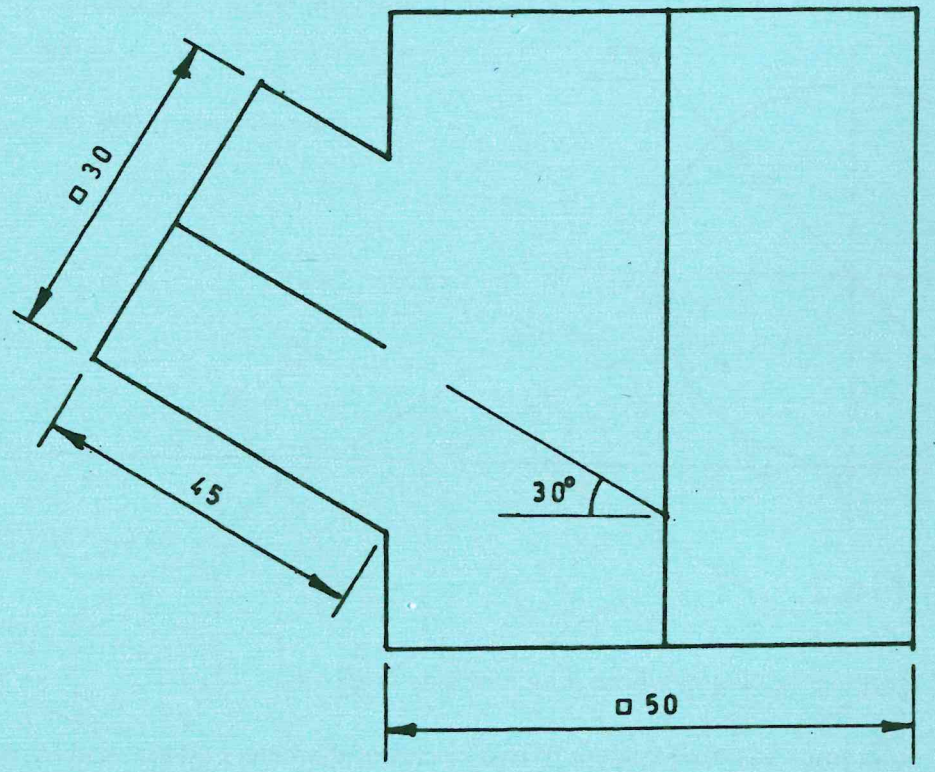

Fig. 3

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4. Figure 4 shows the elevation of a cone cut along a plane N - N parallel to the slant side.

Draw full size, the following views:

(a) given elevation;
(b) complete plan;
(c) end elevation as seen from the left hand side;
(d) true shape of the cut portion.

(20 marks)

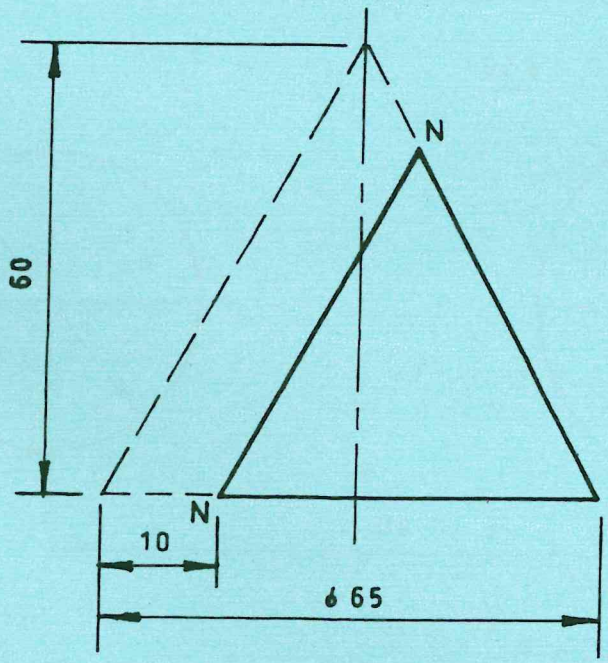

Fig. 4

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5. (a) Outline:

(i) **four** characteristics of a good drawing paper;

(ii) **two** uses of dividers in technical drawing.

(6 marks)

(b) Explain **three** types of lines used in technical drawing. (3 marks)

(c) (i) Draw a common internal tangent to the circles shown in figure 5.

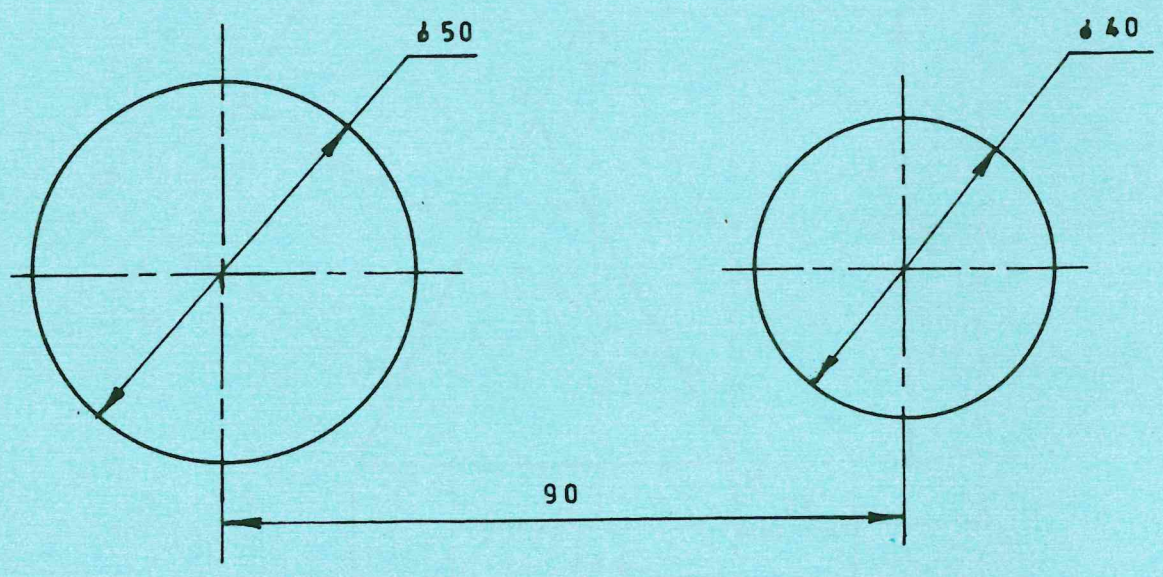

Fig.5

(ii) Draw a triangle whose perimeter is 120 mm and ratio of sides is 4. 3. 2. Circumscribe a circle around the triangle.

(11 marks)

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