

1601/104
1602/104
TECHNICAL DRAWING I
June/July 2017
Time: 3 hours

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THE KENYA NATIONAL EXAMINATIONS COUNCIL

**CRAFT CERTIFICATE IN ELECTRICAL AND ELECTRONIC TECHNOLOGY
(POWER OPTION)
(TELECOMMUNICATION OPTION)**

MODULE I

TECHNICAL DRAWING I

3 hours

INSTRUCTIONS TO CANDIDATES

You should have the following for this examination:

- Drawing instruments;*
- Drawing papers;*
- Computer installed with AutoCAD software;*
- Printer;*
- Printing paper;*

Answer any FIVE of the 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. Figure 1 shows a pictorial drawing of an object. Draw full size in first angle projection the following views:

- (a) front elevation in the direction of arrow A;
- (b) end elevation in the direction of arrow B;
- (c) a plan in the direction of arrow P.

Insert six major dimensions and include the hidden details.

(20 marks)

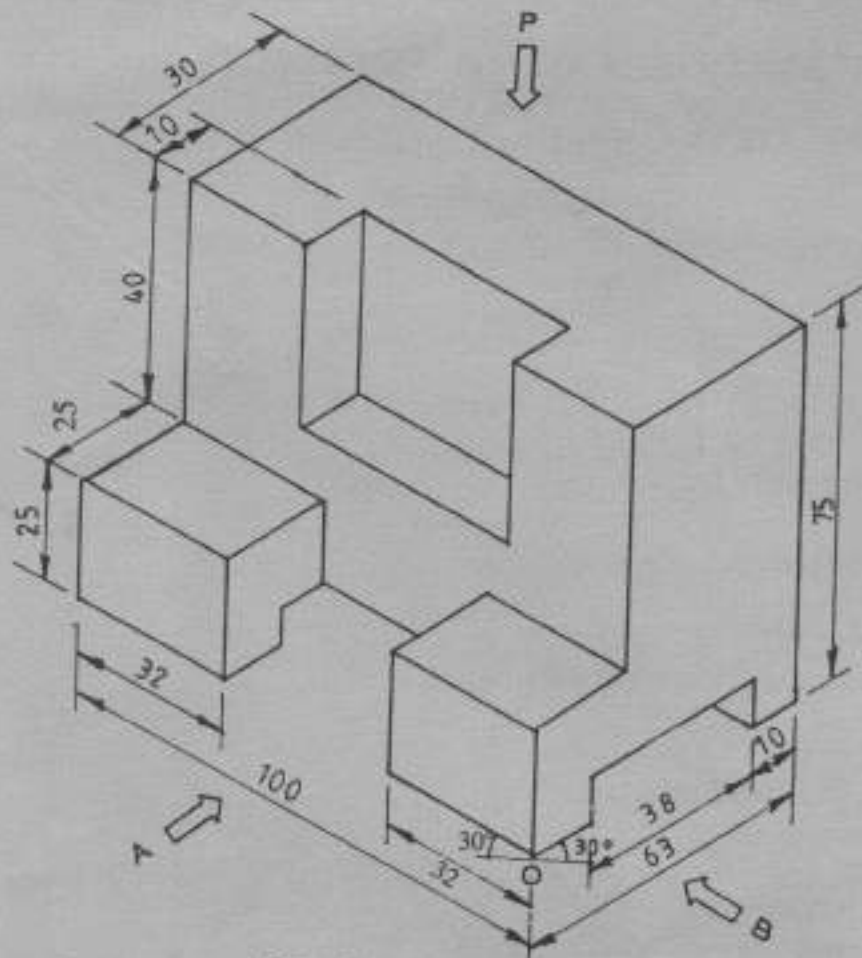


Fig. 1

2. Figure 2 shows two views of a solid drawn in first angle projection. Draw an isometric view of the object taking corner X as the lowest point. (20 marks)

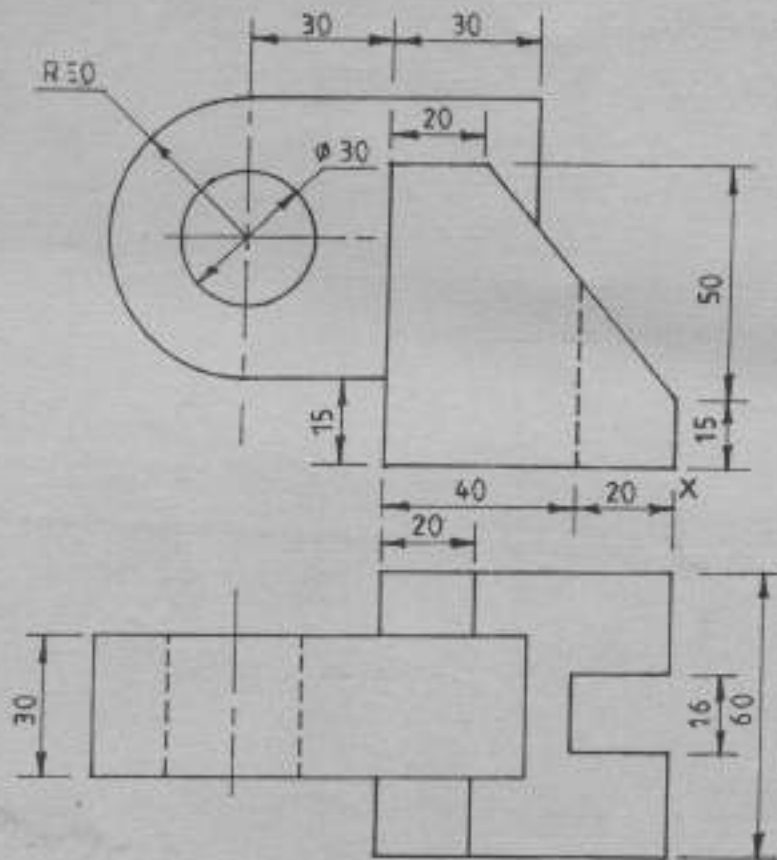


Fig. 2

3. (a) Use free hand to sketch the following tools:

- (i) centre punch;
- (ii) ball peen hammer;
- (iii) flat screw driver;
- (iv) spirit level;
- (v) gimlet.

(10 marks)

(b) Draw the following electrical and electronic symbols:

- (i) thermistor;
- (ii) buzzer;
- (iii) motor;
- (iv) cell;
- (v) heating element;
- (vi) NOR gate;
- (vii) voltmeter;
- (viii) junction of conductors;
- (ix) zener diode;
- (x) variable capacitor.

(10 marks)

4. (a) Figure 3 shows an electronic circuit diagram. Using any electrical software:

- (i) draw the circuit using the preferred electronic symbols. Showing the pin connections and pin names for the transistors Q1 and Q2.
- (ii) print and hand over your work. (10 marks)

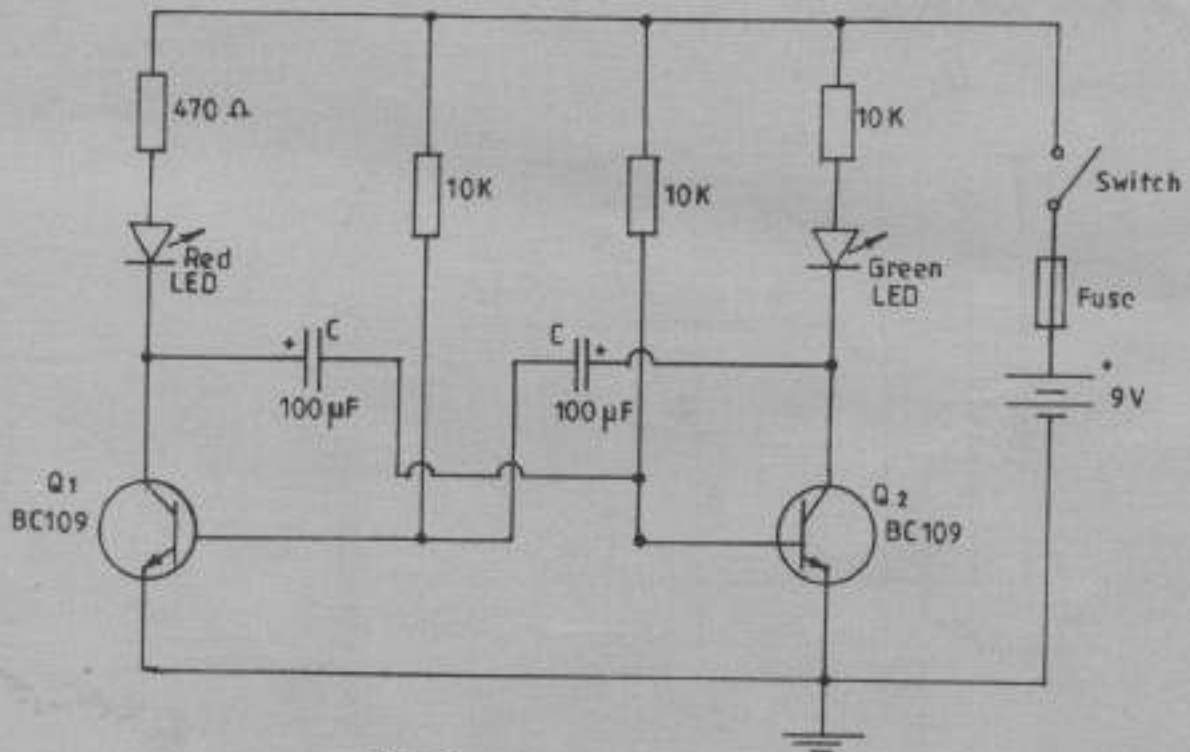


Fig. 3

- (b) Create the drawing shown in figure 4 using AutoCAD software. Print and hand over the drawing. (10 marks)

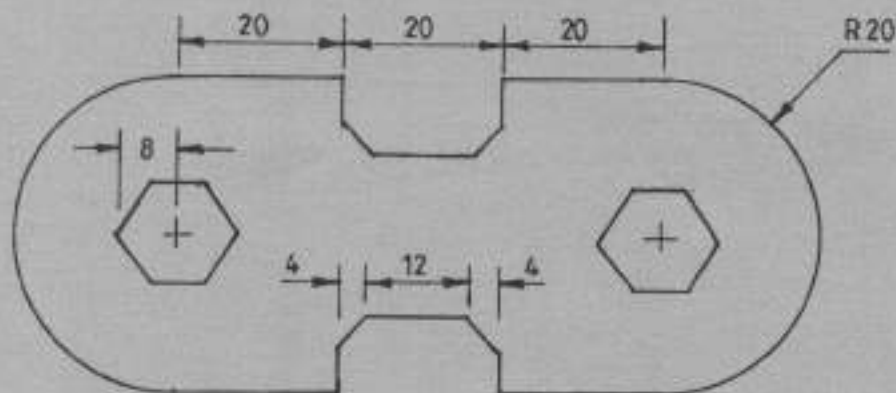


Fig. 4

5. Figure 5 shows the views of incomplete elevation and plan of two dissimilar hexagonal prisms meeting at an angle. Copy the given views and complete:

- (i) the elevation and the plan;
- (ii) line of intersection;
- (iii) end elevation.

(20 marks)

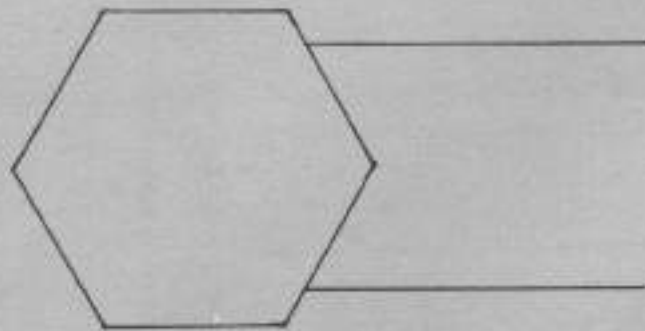
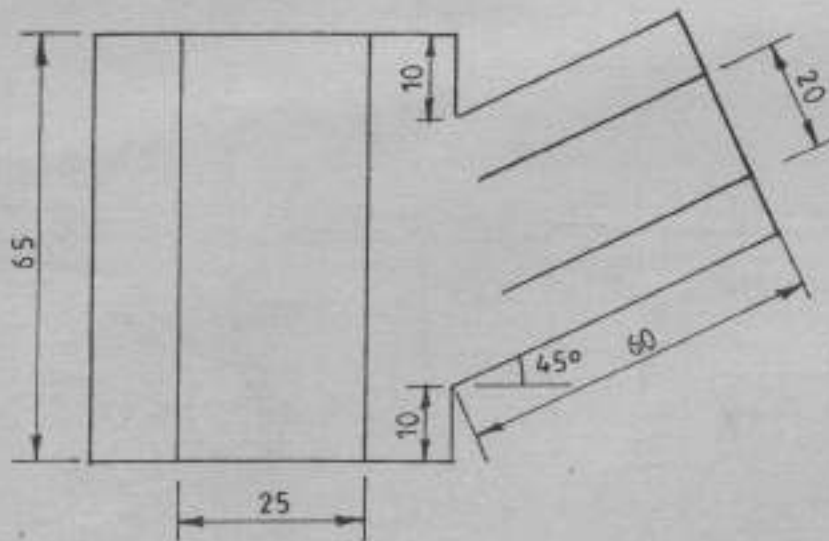


Fig. 5

6. Figure 6 shows a pictorial view of a machine component. Draw to full scale, in first angle projection the following views:

(a) sectional front elevation along X - X;

(b) plan.

(20 marks)

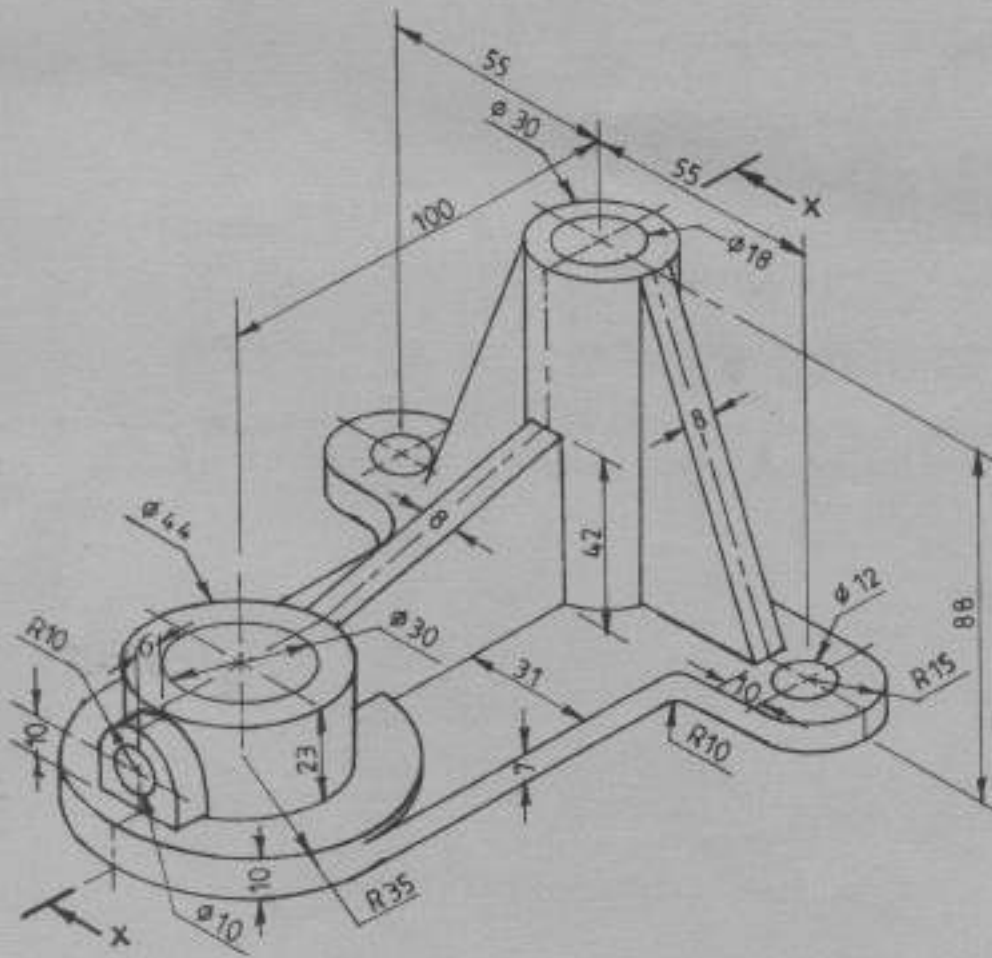


Fig. 6

7. (a) Draw an ellipse using the rectangular method given the major and minor axis as 120 mm and 90 mm respectively. (10 marks)
- (b) Construct an inscribed circle in a triangle ABC given $AB = 90$ mm, $BC = 80$ mm, $CA = 70$ mm. (6 marks)
- (c) Sketch the conventional symbols for each of the following:
- (i) first angle projection;
- (ii) third angle projection. (4 marks)
8. (a) Construct a diagonal scale 50 mm = 1 mm, 3 mm long to read 0.01 mm. On the scale, show a reading of 2.76 mm and 1.28 mm. (10 marks)
- (b) Construct a regular heptagon given the length of one side as 25 mm. (6 marks)
- (c) Construct a triangle ABC where $AB = 40$ mm, $BC = 50$ mm and $CA = 30$ mm. Draw a similar triangle with a perimeter of 130 mm. (4 marks)

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