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

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)

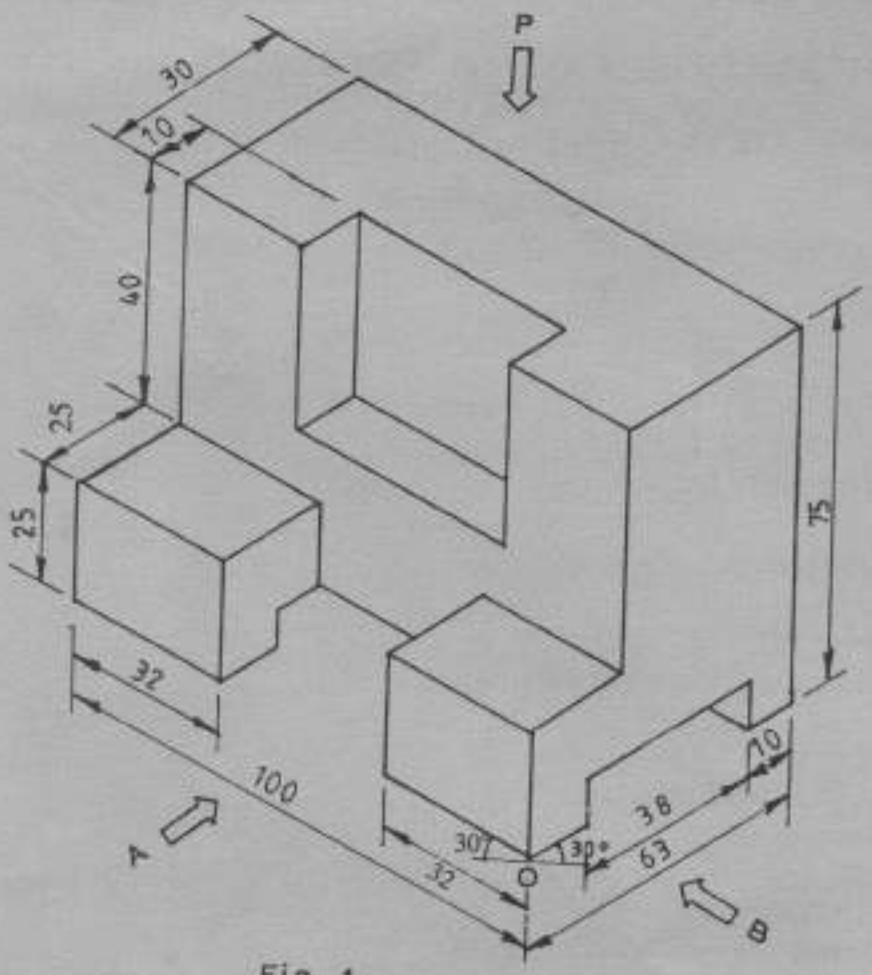


Fig. 1

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)

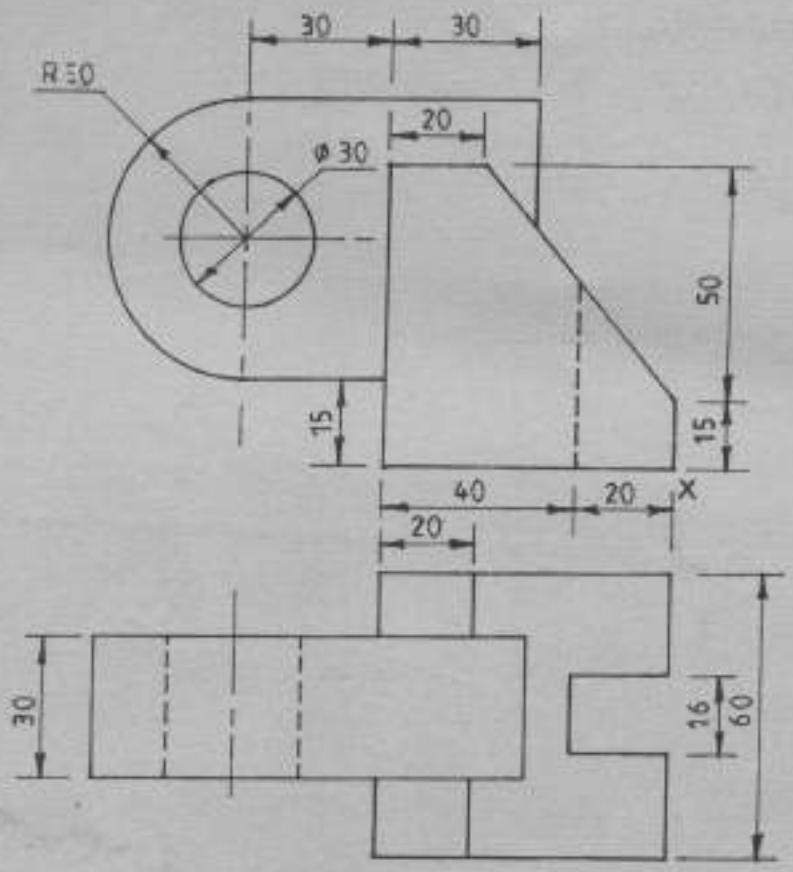


Fig. 2

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

(i) centre punch;

(ii) ball pein 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)

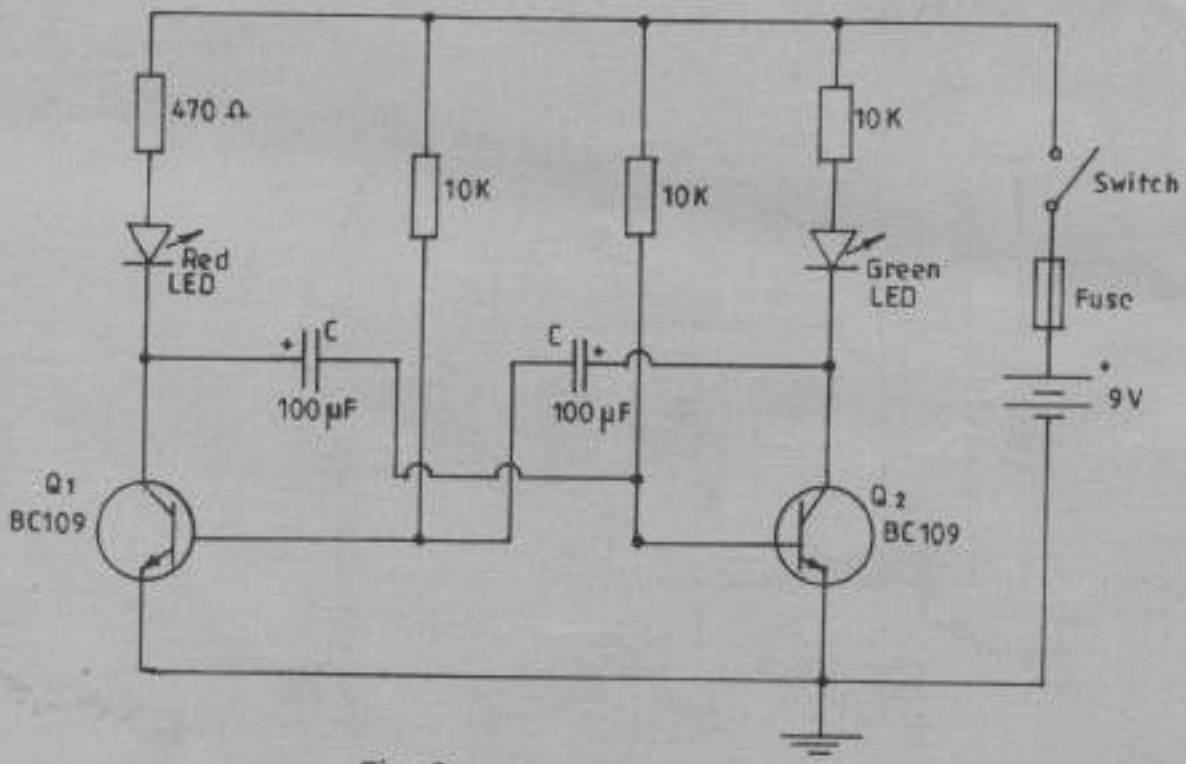


Fig. 3

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

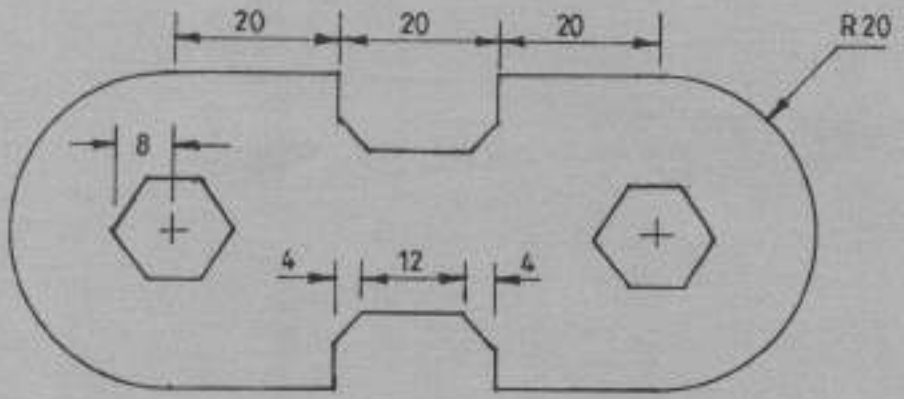


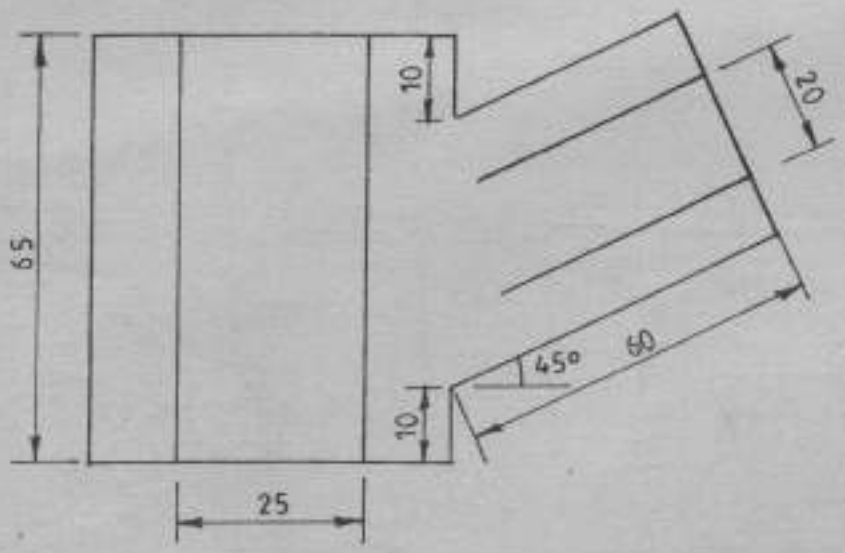
Fig. 4

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)



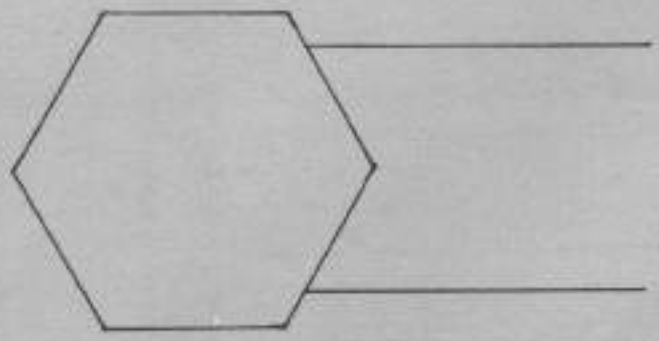


Fig. 5

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)

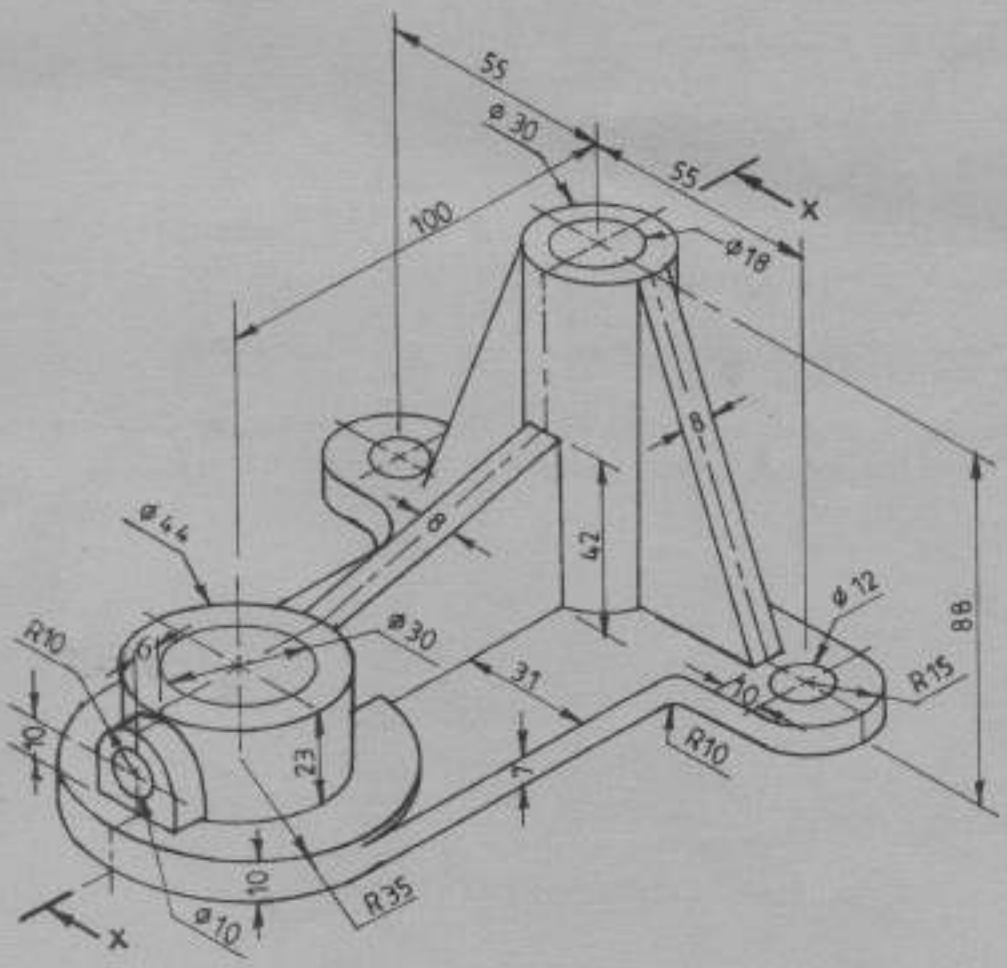


Fig. 6

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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