higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE

ENGINEERING DRAWING N1

(8090261)

1 April 2021 (X-paper)
09:00–13:00

REQUIREMENTS: ONE A2 drawing sheet

Drawing instruments may be used.

This question paper consists of 8 pages.

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DEPARTMENT OF HIGHER EDUCATION AND TRAINING
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE
ENGINEERING DRAWING N1
TIME: 4 HOURS
MARKS: 100

INSTRUCTIONS AND INFORMATION

1. Answer all the questions.
2. Read all the questions carefully.
3. Number the answers according to the numbering system used in this question paper.
4. Use both sides of the drawing sheet.
5. A 15 mm border must be drawn on both sides of the drawing sheet.
6. Only the candidate information on the drawing sheet must be done in ink. All other drawing work must be done in pencil.
7. All drawing work must conform to the latest SANS 10111 Code of Practice for Engineering Drawing.
8. Write neatly and legibly.

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QUESTION 1: TERMS OF GENERAL ENGINEERING DRAWING

1.1 Draw, full size, the answer block shown in FIGURE 1 on the drawing sheet.

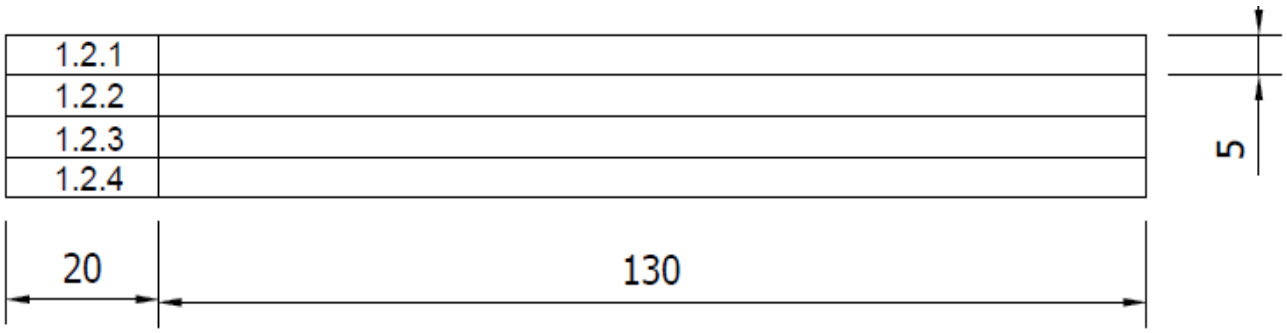

FIGURE 1 (1)

1.2 Answer the following questions. Write the answers in tan answer block on the DRAWING SHEET, drawn in QUESTION 1.1:

1.2.1 What is the meaning of the abbreviation, *ASSY* used in Engineering Drawing terms?

1.2.2 What abbreviation is used to indicate a *hexagon*?

1.2.3 What symbol is used to indicate a *diameter* on a drawing?

1.2.4 Explain what an *equilateral triangle* is.

(4 × 1) (4)
[5]

QUESTION 2: FREEHAND DRAWING

FIGURE 2 shows a view of a hammer. Using only a pencil and an eraser, draw the view of the hammer in good proportion, twice the given size.

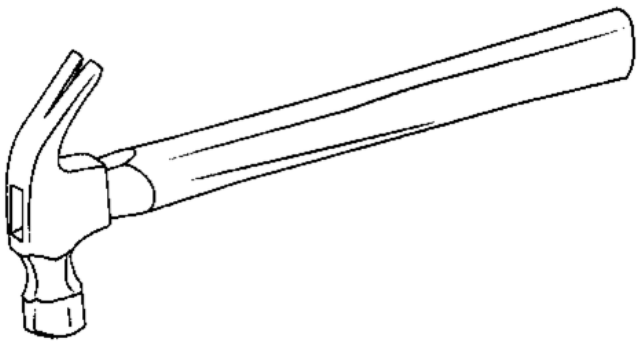

FIGURE 2 **[10]**

QUESTION 3: GEOMETRICAL CONSTRUCTION/REPRODUCTION DRAWING

FIGURE 3 shows a view of a cover plate.

3.1 Use a scale of 2:1 and draw the view of the cover plate.

Use the four-centre method to construct the ellipse. Show all construction lines. (15)

3.2 Insert TWO dimensions on your drawing. (1)

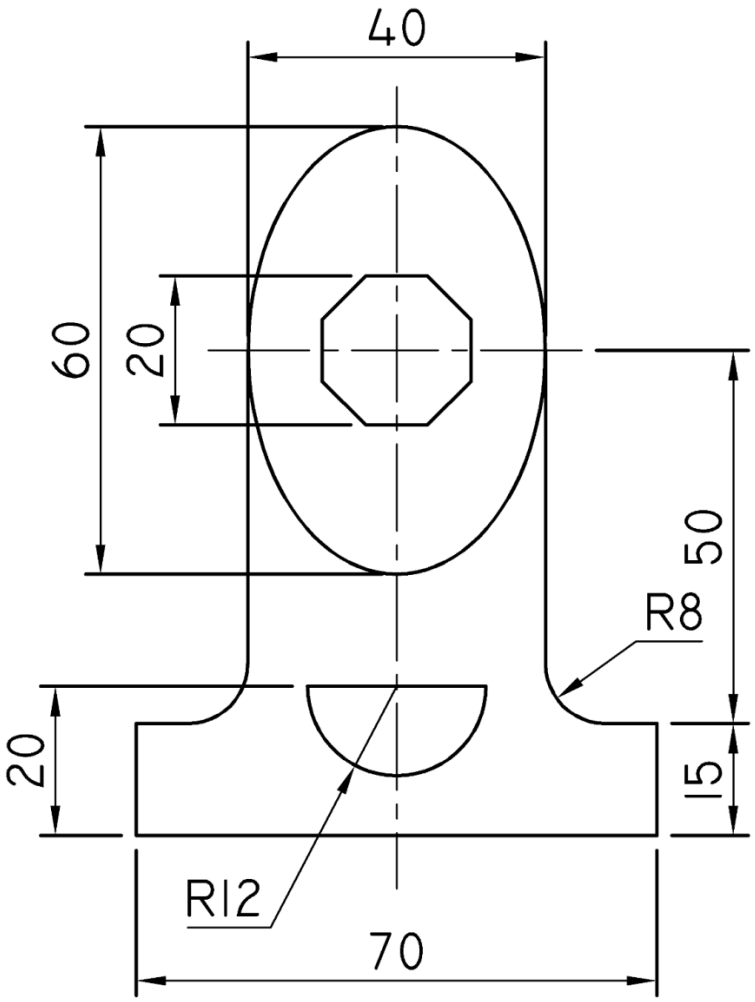

FIGURE 3 **[16]**

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QUESTION 4: FIRST-ANGLE ORTHOGRAPHIC PROJECTION

FIGURE 4 shows an isometric view of a component.

Draw to scale 1:1 and in first-angle orthographic projection the following views of the component:

4.1 A front view as seen in the direction of arrow F (5)

4.2 A left view as seen in the direction of arrow L (4)

4.3 A top view as seen in the direction of arrow T (5)

4.4 Draw the symbol for first-angle orthographic projection beneath the layout (1)

NO hidden detail is required.

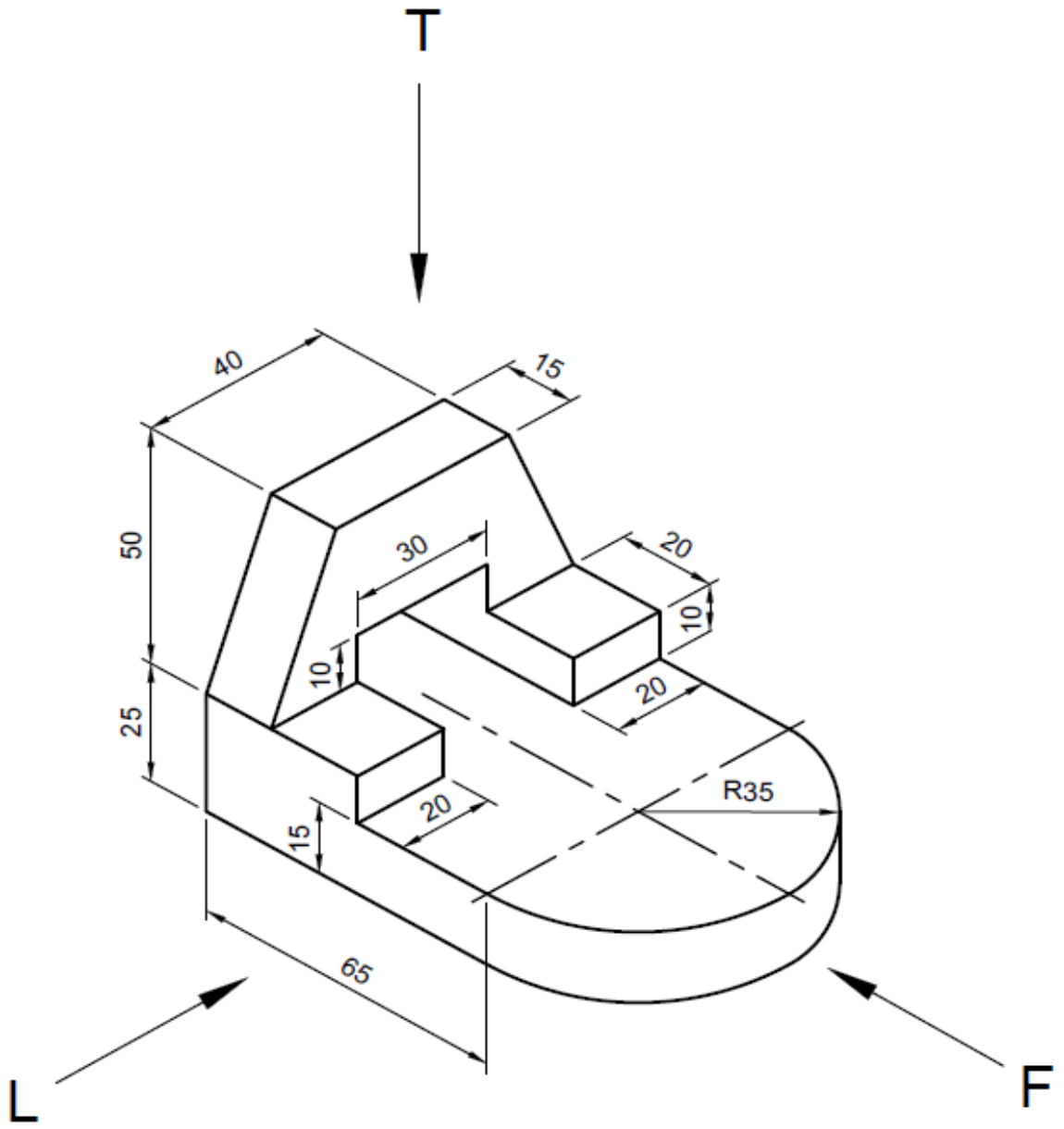

FIGURE 4

[15]

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QUESTION 5: ISOMETRIC DRAWING

FIGURE 5 shows TWO primary views of a geometric model in first-angle orthographic projection.

Draw, according to scale 1:1, an isometric view of the model.

Point P must be the lowest point on your drawing.

NO hidden detail is required.

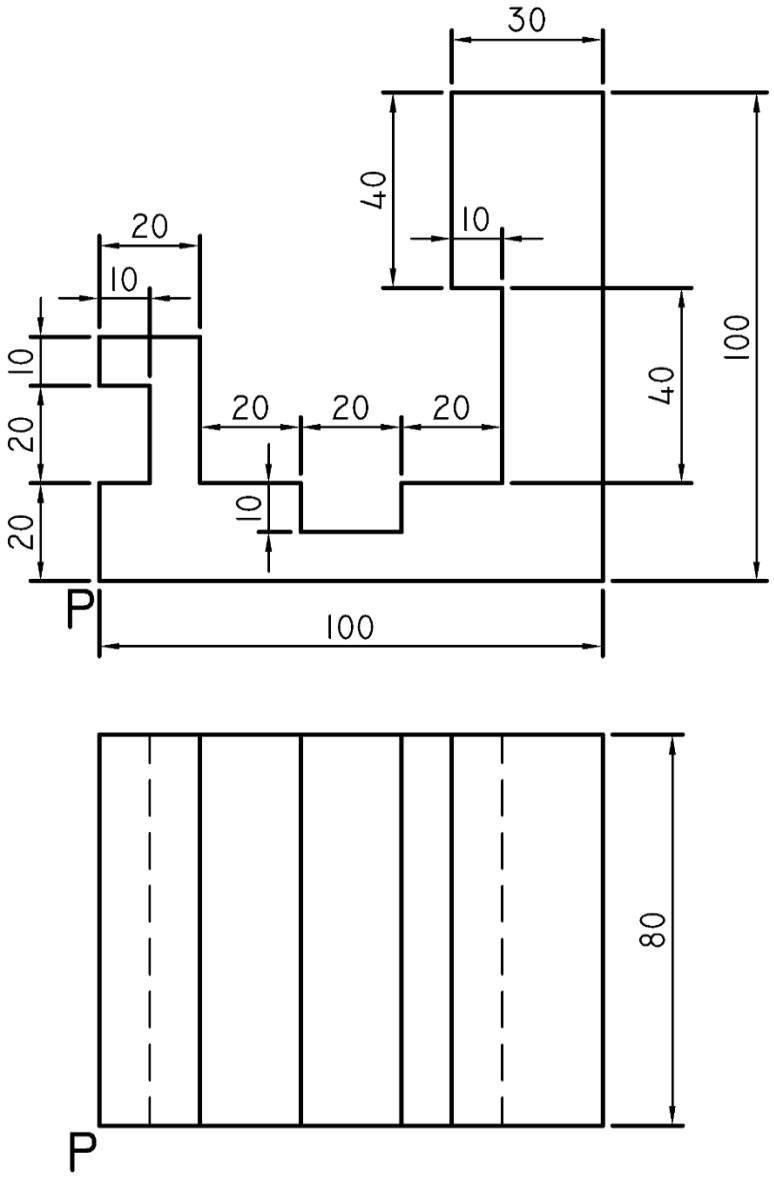

FIGURE 5 **[17]**

QUESTION 6: SECTIONAL DRAWING

FIGURE 6 shows TWO primary views of a casting in first-angle orthographic projection.

Draw, according to scale 1:1, in first-angle orthographic projection the following views of the casting:

6.1 A full sectional front view (6)

6.2 A full sectional top view (6)

6.3 An outside left view (4)

6.4 Print the following title and scale centrally beneath the layout:

CASTING
SCALE 1:1 (1)

NO hidden detail is required.

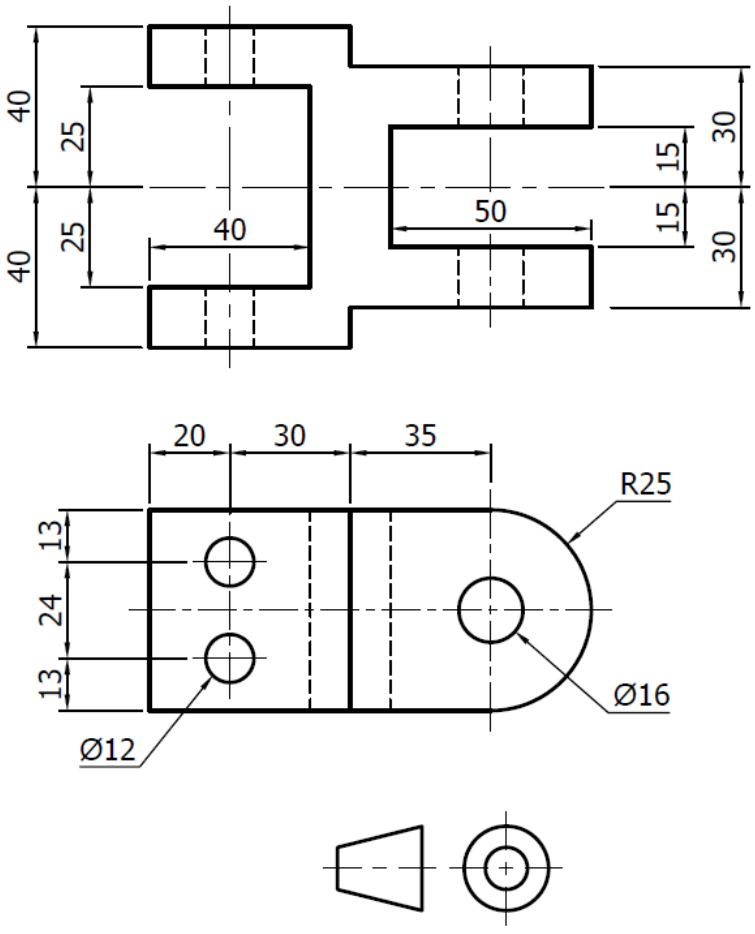

FIGURE 6 **[17]**

QUESTION 7: PRISMS AND PYRAMIDS

FIGURE 7 shows the front view and an auxiliary view of a hexagonal prism.

Draw, in first-angle orthographic projection and to scale 1:1, the following views of the hexagonal prism:

7.1 The given front and auxiliary views (4)

7.2 A top view as seen in the direction of arrow T (6)

NO hidden detail is required.

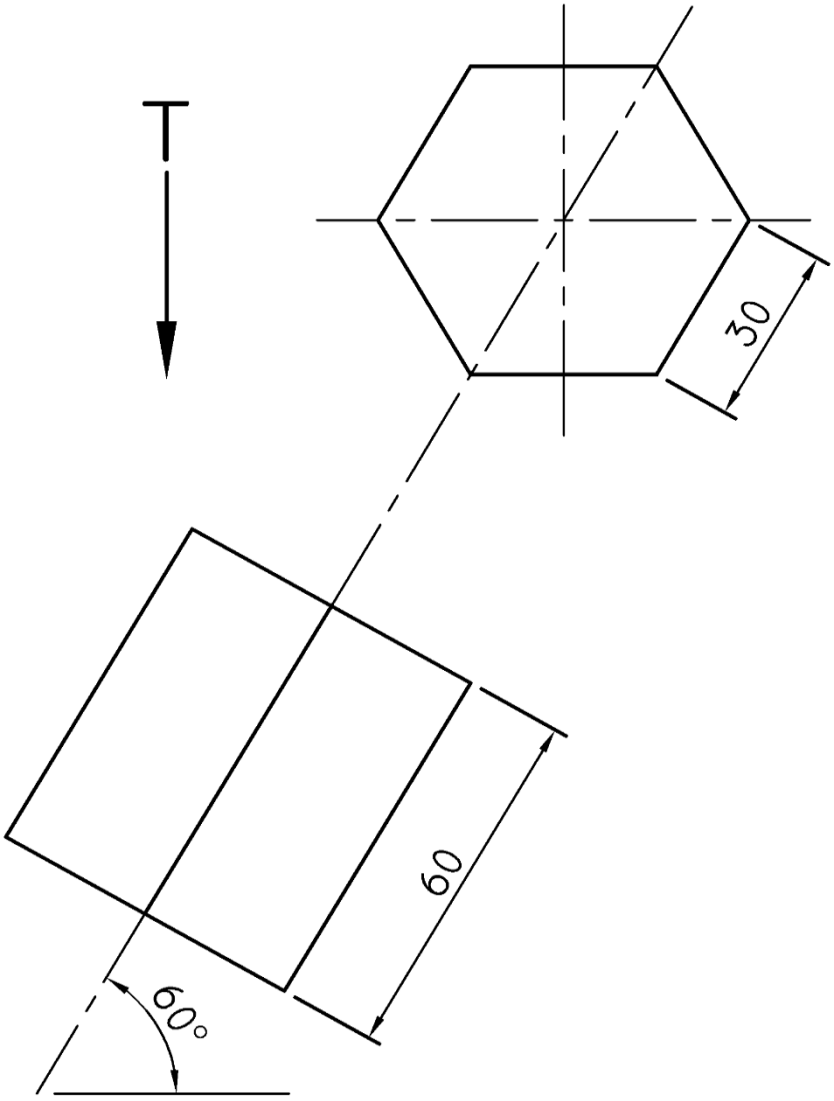

FIGURE 7 **[10]**

Balanced layout and neatness of the completed DRAWING SHEET. **[10]**

TOTAL: 100

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