



higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

T590(E)(M24)T

NATIONAL CERTIFICATE

ENGINEERING DRAWING N1

(8090261)

24 March 2017 (X-Paper)

09:00–13:00

REQUIREMENTS: A2 drawing paper

Drawing instruments and calculators may be used.

This question paper consists of 5 pages and 6 diagram sheets.

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. ALL drawings must be done neatly using drawing instruments.
 5. ALL drawings must conform to the latest SANS Code of Practice 0111 of 1990.
 6. ALL work you do not want to be marked must be clearly crossed out.
 7. Marks will be deducted for untidy work.
 8. Write neatly and legibly.
-

QUESTION 1: FREEHAND DRAWING

FIGURE 1 (DIAGRAM SHEET 1 attached) shows a view of a workpiece.

Only use a pencil and eraser and draw the view of the workpiece freehand in good proportion approximately 1,5 times the given size.

[10]**QUESTION 2: REPRODUCTION DRAWING AND GEOMETRICAL CONSTRUCTION**

- 2.1 Draw to scale 1 : 2 the view of the metal piece shown in FIGURE 2 (DIAGRAM SHEET 2 attached).
- 2.2 Show ALL construction lines used in the construction of the ellipse.
- 2.3 Insert any FOUR dimensions.
- 2.4 Print the following title and scale centred below the layout:

METAL PIECE

SCALE 1 : 2

[15]**QUESTION 3: FIRST-ANGLE ORTHOGRAPHIC PROJECTION**

FIGURE 3 (DIAGRAM SHEET 3 attached) shows an isometric view of a casting.

Do NOT draw the given view, but draw to scale 1 : 1 and in first-angle orthographic projection the following views:

- 3.1 A front view as seen from direction F (4)
- 3.2 A left view as seen from direction L (4)
- 3.3 A top view as seen from direction T (4)
- 3.4 Draw the following title and scale centred below the layout:

CASTING

SCALE 1 : 1

(2)

- 3.5 Draw the symbol for first-angle orthographic projection beneath the layout.

**(1)
[15]**

QUESTION 4: ISOMETRIC DRAWING

FIGURE 4 (DIAGRAM SHEET 4 attached) shows two views of a workpiece in first-angle orthographic projection.

Do NOT draw the given views, but draw to scale 1 : 1 an isometric view of the workpiece.

Point P must be the lowest point.

NO hidden detail required.

[13]

QUESTION 5: SECTIONAL DRAWING

FIGURE 5 (DIAGRAM SHEET 5 attached) shows two views of a pedestal bearing drawn in first-angle orthographic projection.

5.1 Draw the following to scale 1 : 1 and in first-angle orthographic projection:

5.1.1 A front view (6)

5.1.2 A full sectional top view on cutting plane A – A (4)

5.1.3 A full sectional left view on cutting line B – B (4)

5.2 Print the following title and scale centred below the layout:

PEDESTAL BEARING

SCALE 1 : 1

(2)

5.3 Draw the symbol for first-angle orthographic projection beneath the layout.

(2)

[18]

QUESTION 6: PRISMS AND PYRAMIDS

FIGURE 6 (DIAGRAM SHEET 6 attached) shows a triangular pyramid.

Draw the following:

6.1 The given front and auxiliary view (2)

6.2 A top view as seen from direction T (5)

6.3 A left view as seen from direction L (5)

NOTE: Hidden detail MUST be shown.
Overall accuracy.

(1)

[13]

QUESTION 7: ABBREVIATIONS

Draw a full-sized answer block as shown in the table below on the DRAWING SHEET.

7.1	7.1.1		(3 × 1)	(3)
	7.1.2			
	7.1.3			
7.2	7.2.1		(3 × 1)	(3)
	7.2.2			
	7.2.3			

- 7.1 Print the abbreviations of the following terminology in the answer block on the DRAWING SHEET:
- 7.1.1 Radius
 - 7.1.2 Inside diameter
 - 7.1.3 Cylinder
- (3 × 1) (3)

- 7.2 Print the answers of each of the following questions in the table drawn on the DRAWING SHEET.
- 7.2.1 Name ONE computer hardware device used with the CAD system.
 - 7.2.2 Name ONE input device a draughtsman uses to produce a drawing.
 - 7.2.3 Name ONE output device a draughtsman uses to produce a drawing.
- (3 × 1) (3)

NOTE: A balanced layout and neatness of the complete DRAWING SHEET. (10)
[16]

TOTAL: 100

DIAGRAM SHEET 1

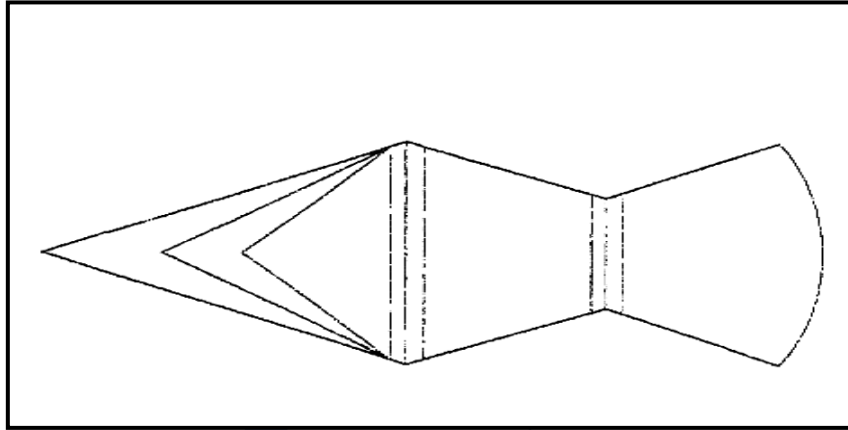


FIGURE 1

ESR

DIAGRAM SHEET 2

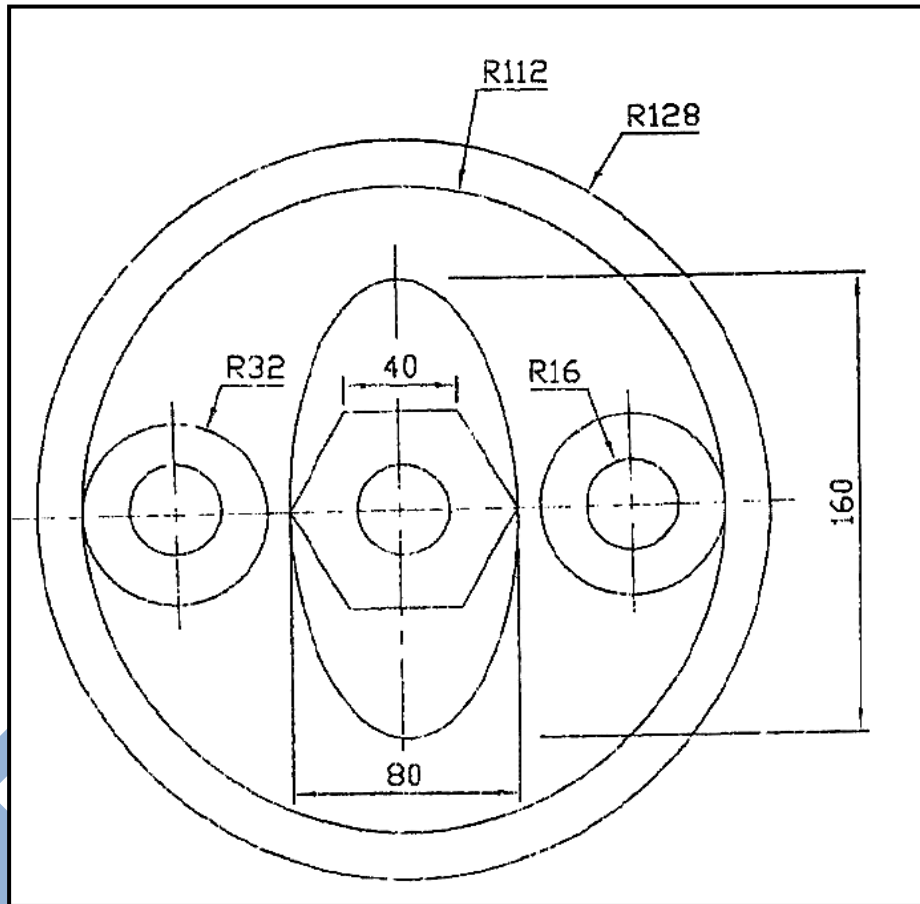


FIGURE 2

DIAGRAM SHEET 3

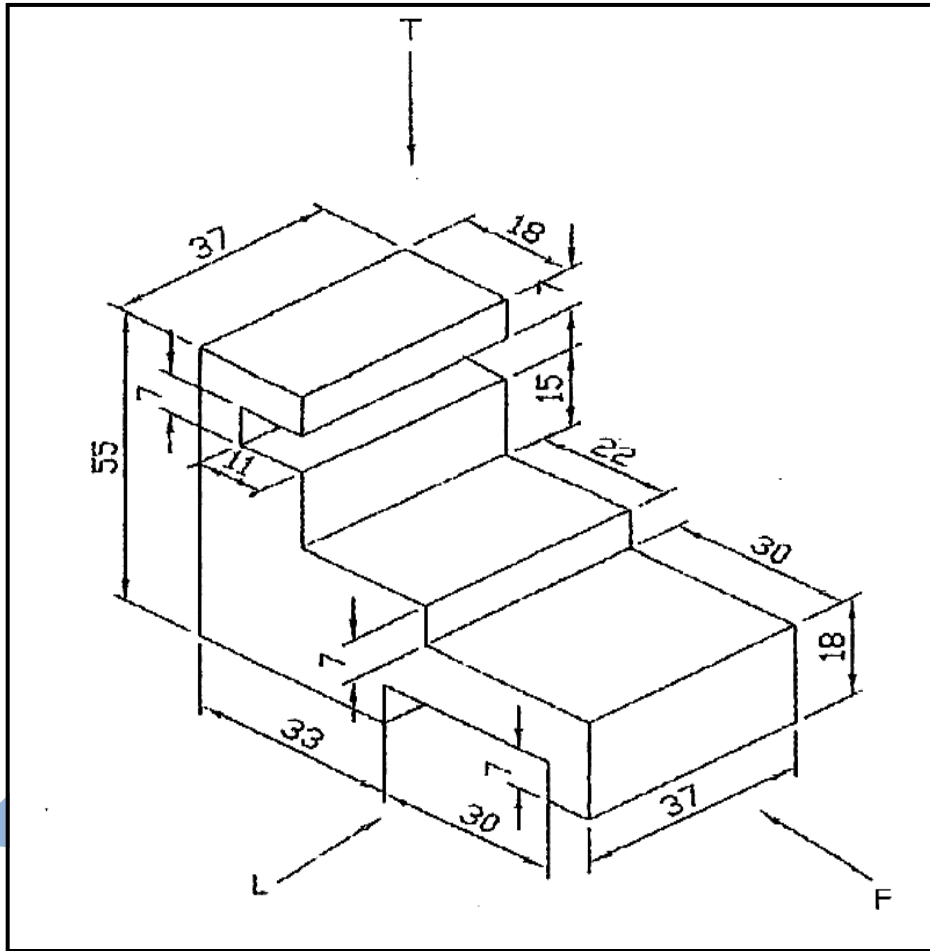


FIGURE 3

DIAGRAM SHEET 4

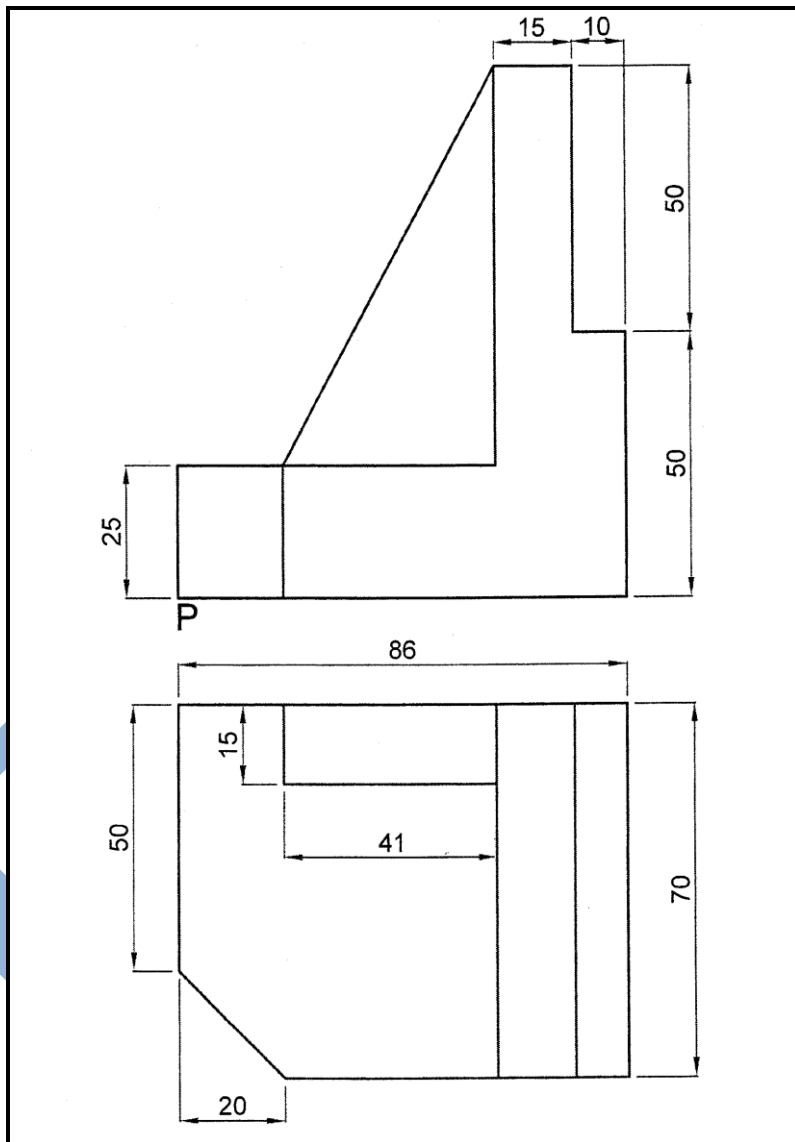


FIGURE 4

DIAGRAM SHEET 5

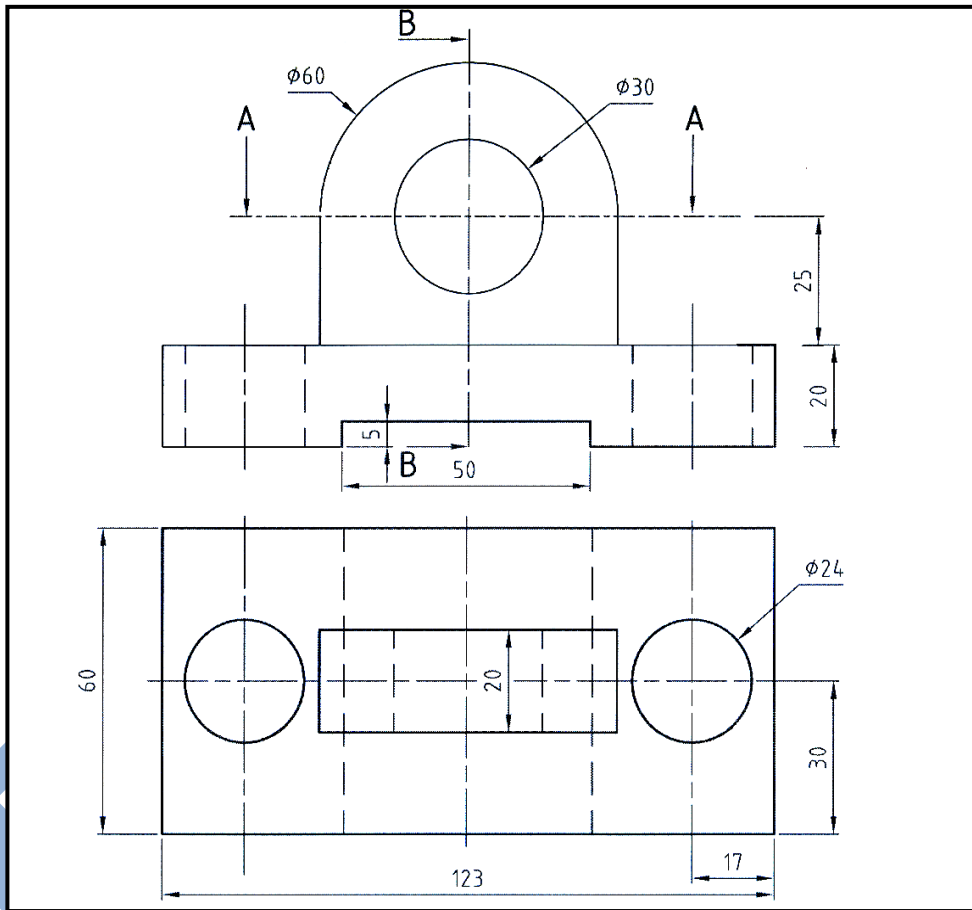


FIGURE 5

DIAGRAM SHEET 6

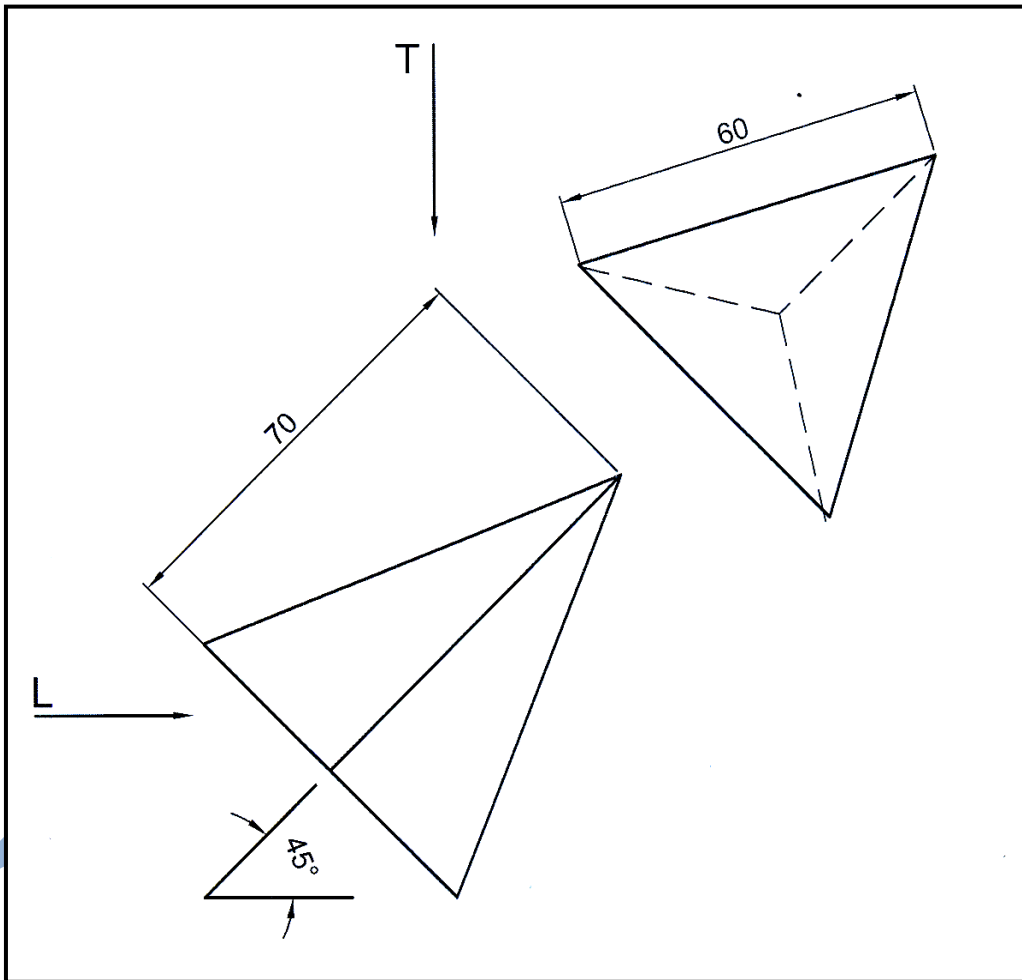


FIGURE 6