



**higher education
& training**

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

**NATIONAL CERTIFICATE
ENGINEERING DRAWING N3**

(8090283)

**15 April 2021 (X-paper)
09:00–13:00**

REQUIREMENTS: ONE A 2 drawing sheet.

This question paper consists of 8 pages.

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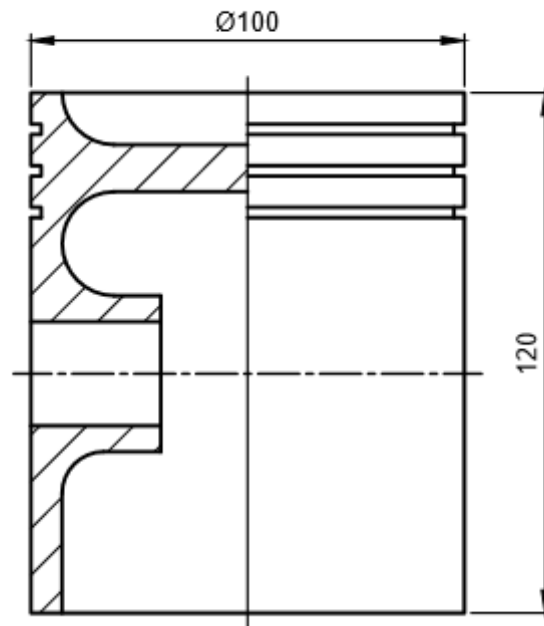
DEPARTMENT OF HIGHER EDUCATION AND TRAINING
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NATIONAL CERTIFICATE
ENGINEERING DRAWING N3
TIME: 4 HOURS
MARKS: 100

INSTRUCTIONS AND INFORMATION

1. Answer all the questions.
 2. Read all the questions carefully.
 3. Number the answers correctly 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. A radius curve stencil may be used to draw smaller arcs.
 8. Unspecified radii must be R3.
 9. All drawing work must conform to the latest SANS 10111 Code of Practice for Engineering Drawings.
 10. A balanced layout is important and candidates will be penalised for poor planning.
 11. Work neatly.
-

QUESTION 1: FREEHAND DRAWING

Make a freehand drawing, approximately full size, of the given view of the component in FIGURE 1.

**FIGURE 1****[10]**

QUESTION 2: SECTIONAL DRAWING

FIGURE 2 shows two primary views of a component.

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

- | | | |
|-----|--|-----|
| 2.1 | A full sectional front view | (8) |
| 2.2 | A right view | (8) |
| 2.3 | A full sectional top view on cutting plane X-X | (9) |

Show hidden detail in the right view only.

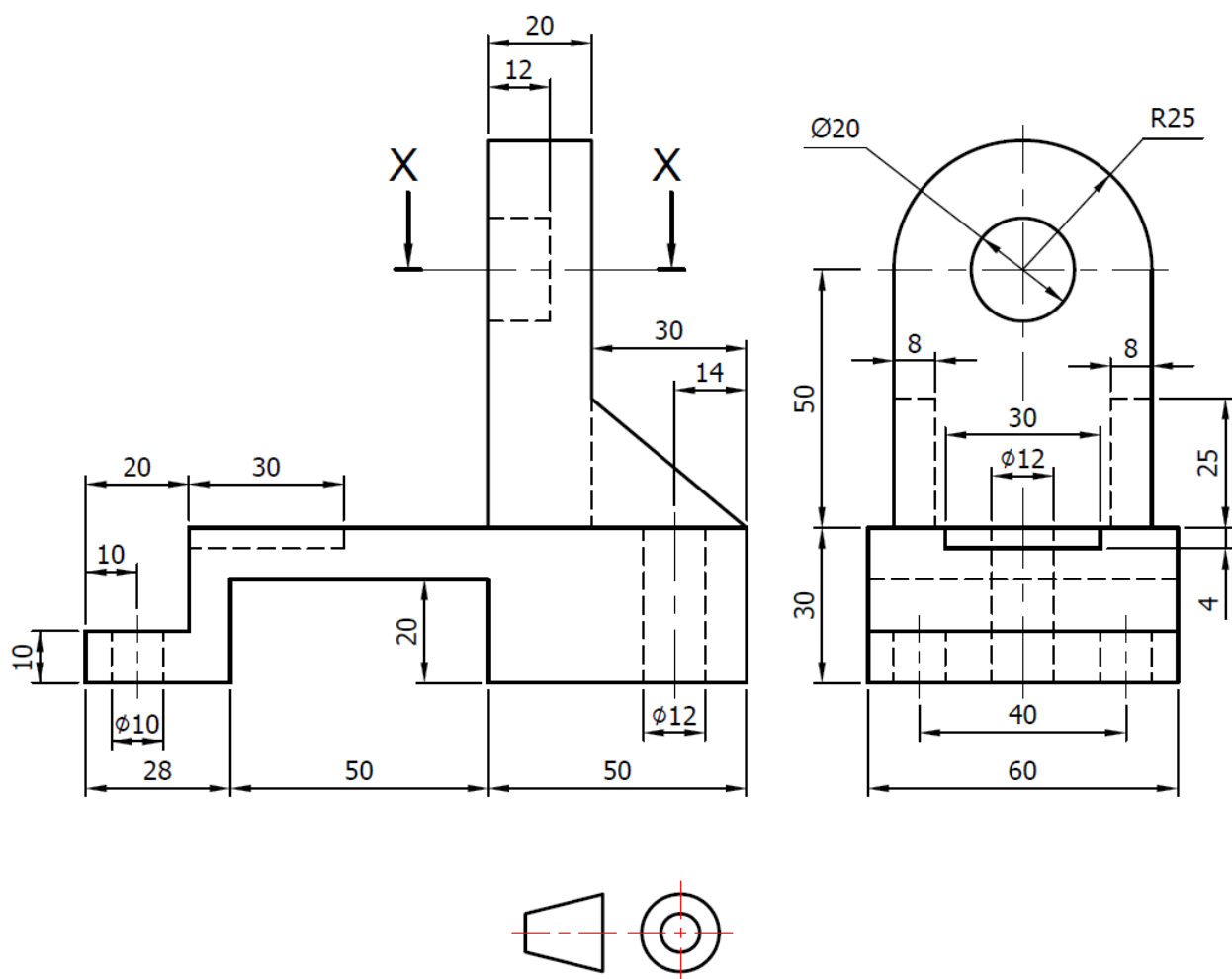


FIGURE 2

[25]

QUESTION 3: ASSEMBLY DRAWING

FIGURE 3 shows primary views of the components of a guide roller assembly.

The complete list of parts is as follows:



ITEM	DESCRIPTION	QUANTITY
1	Base	1
2	Bush	1
3	End cap	2
4	Bolt	1
5	Washer	1
6	M12 hexagonal nut	1

Draw as an assembly drawing, to scale 1:1, a full sectional front view of the guide roller assembly.



QUESTION 4: DETAILED DRAWING

FIGURE 4 shows primary views of a bearing assembly.

Draw, to scale 1:1, detailed drawings of the items below.

- 4.1 The base (Item 1) showing the following views in third-angle orthographic projection:

- ### 4.1.1 A full sectional front view

- #### 4.1.2 A right view

- 4.2 Bearing cap (Item 2) showing a full sectional front view.

No hidden detail is necessary.

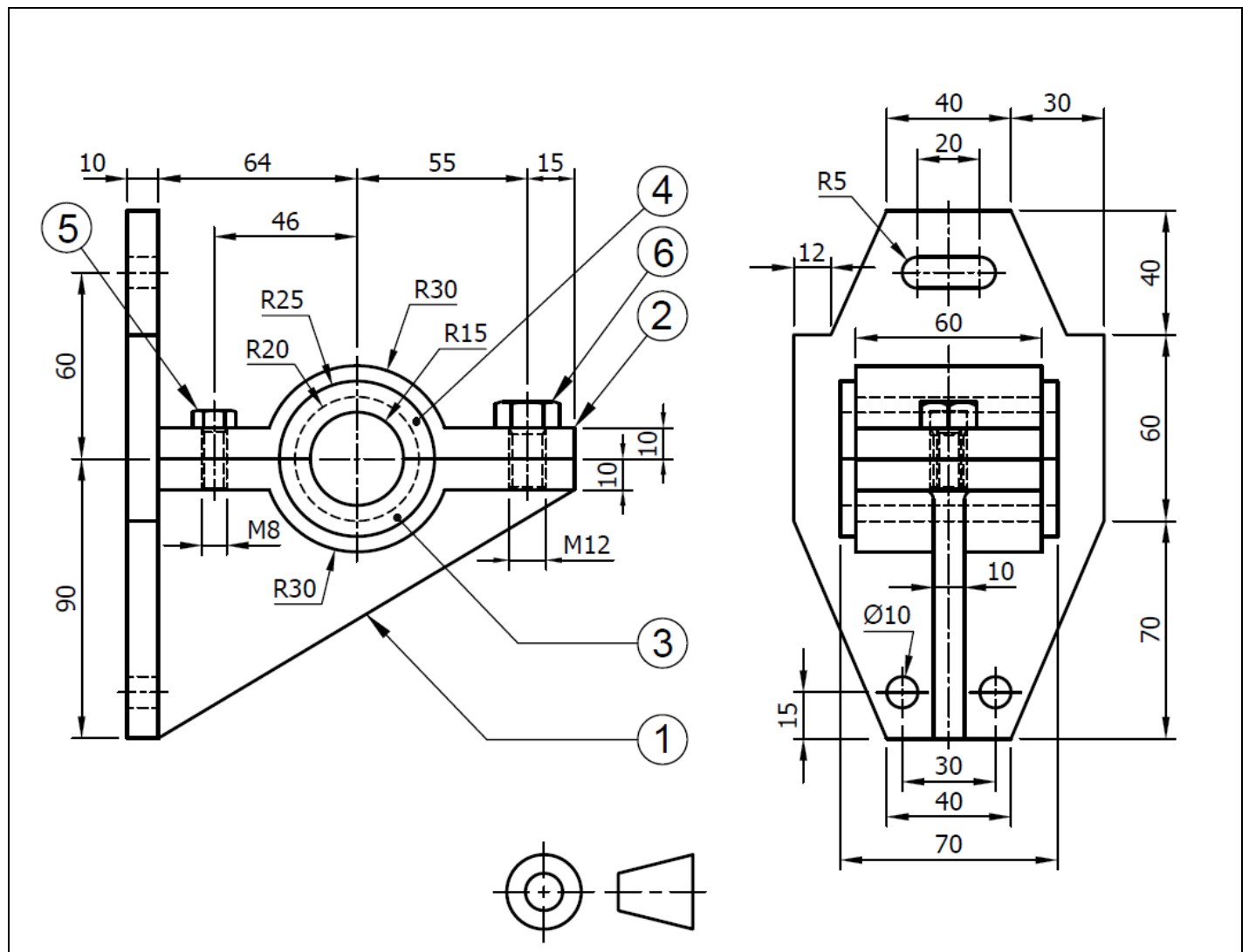


FIGURE 4

[20]

QUESTION 5: ISOMETRIC PROJECTION

FIGURE 5 shows primary views of a geometric model.

Construct an isometric scale and then draw an isometric projection of the model. Point P must be the lowest point in the drawing.

No hidden detail is necessary.

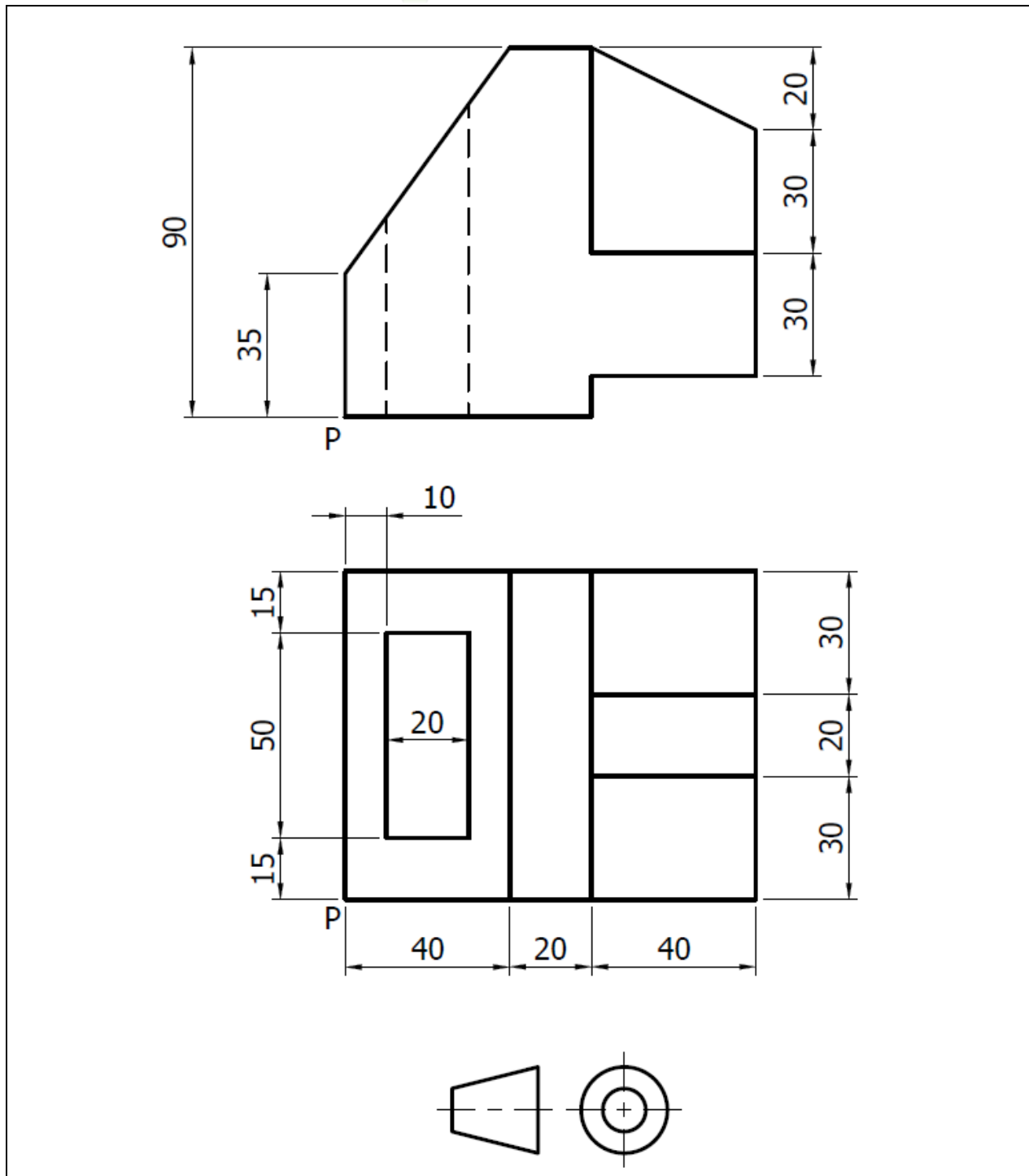


FIGURE 5

[15]

TOTAL: 100