higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE

ENGINEERING DRAWING N3

(8090283)

9 April 2020 (X-paper)
09:00–13:00

This question paper consists of 10 pages.

195Q1A2009

DEPARTMENT OF HIGHER EDUCATION AND TRAINING
REPUBLIC OF SOUTH AFRICA

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 according to the numbering system used in this question paper.
4. Use both sides of the DRAWING SHEET.
5. Draw a 15 mm border on both sides of the DRAWING SHEET.
6. Fill in candidate information on the DRAWING SHEET with a black or blue pen. Do all other drawing work in pencil.
7. Use a radius curve stencil 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 Drawing.
10. A balanced layout is very important and candidates will be penalised for poor planning.
11. Work neatly.

MARK ALLOCATION

QUESTION 1: FREEHAND DRAWING		**[10]**
Correctness		4
Line work		3
Accuracy and proportion		3
QUESTION 2: SECTIONAL DRAWING		**[25]**
2.1	Correctness – Full-sectional front view	6
2.2	Correctness – Full-sectional left view	5
2.3	Correctness – Full-sectional top view	6
Line work		3
Accuracy		3
Layout and neatness		2
QUESTION 3: ASSEMBLY DRAWING		**[30]**
Correctness		18
Line work		5
Accuracy		5
Layout and neatness		2
QUESTION 4: DETAIL DRAWING		**[20]**
4.1	Correctness – Full-sectional front view (Item 1)	5
4.2	Correctness – Full-sectional right view (Item 1)	3
4.3	Correctness – Full-sectional front view (Item 2)	4
Line work		3
Accuracy		3
Layout and neatness		2
QUESTION 5: ISOMETRIC PROJECTION		**[15]**
Correctness		8
Isometric scale		2
Line work		2
Accuracy		2
Layout and neatness		1
	TOTAL:	**100**

QUESTION 1: FREEHAND DRAWING

FIGURE 1 shows a sectional view of a lubricating device.

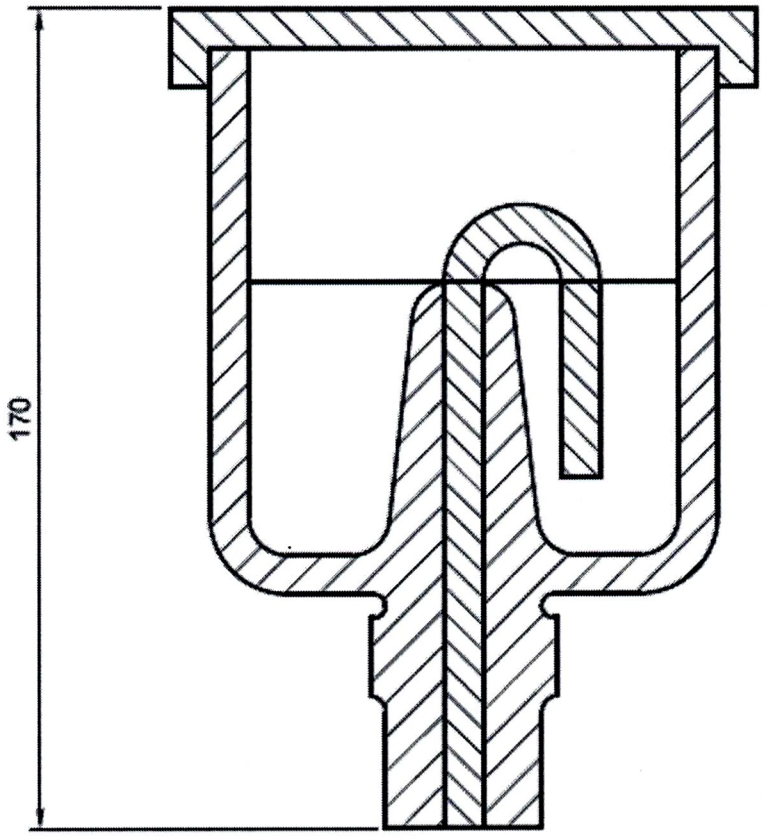

FIGURE 1

Make a freehand drawing of the given view approximately full size. **[10]**

QUESTION 2: SECTIONAL DRAWING

FIGURE 2 shows two primary views of a component.

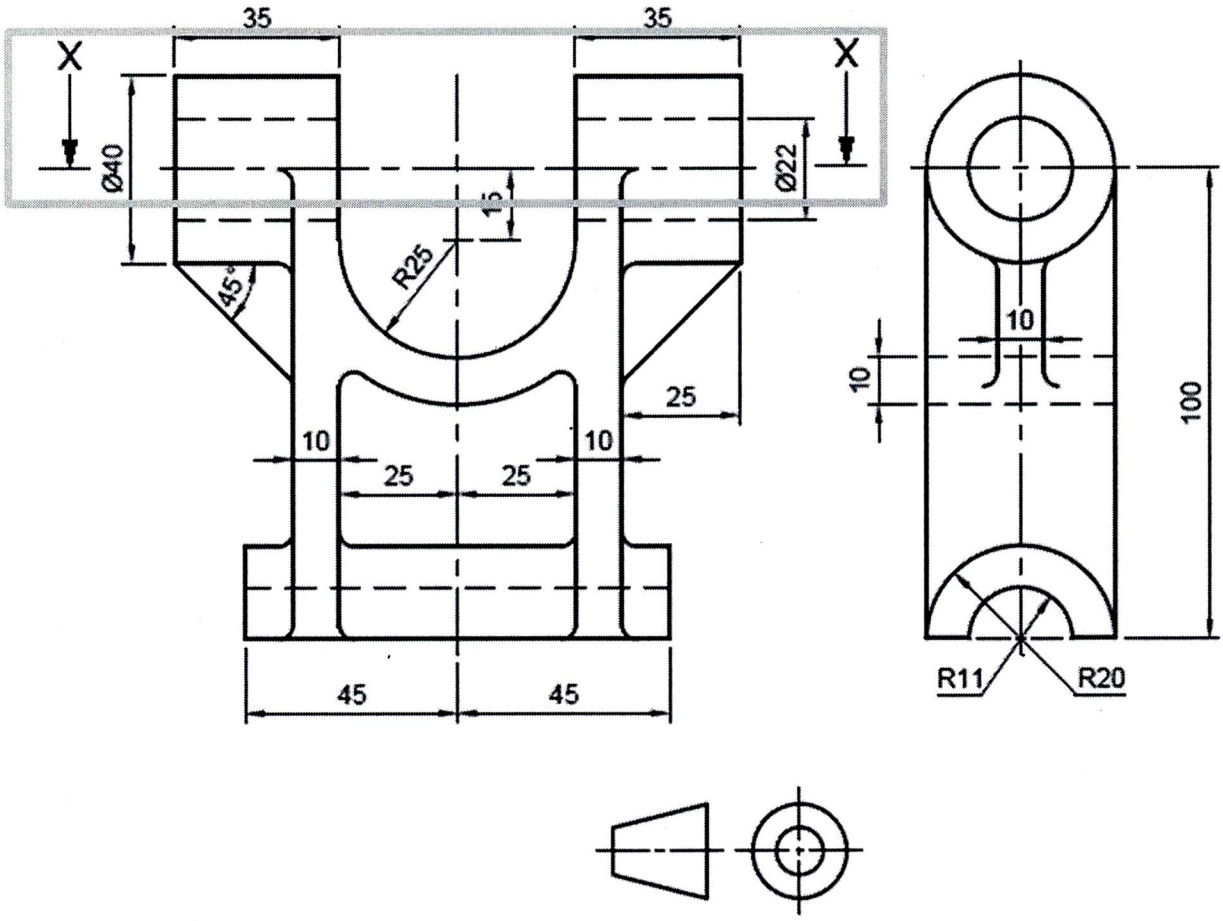

FIGURE 2

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

2.1 A full-sectional front view (6)

2.2 A full-sectional left view (5)

2.3 A full-sectional top view on cutting plan X-X (6)

Line work, accuracy, layout and neatness (8)
[25]

QUESTION 3: ASSEMBLY DRAWING

FIGURE 3 on the next page shows the primary views of the components of a bearing puller.

The complete list of parts is as follows:

ITEM	DESCRIPTION	QUANTITY
1	Lever adjuster	1
2	Lever	2
3	Shaft	1
4	Handle	1
5	Dead centre	1
6	Pin	2

Draw, to scale 1:1, an assembly drawing of a full-sectional front view of the bearing puller assembly with the point of the dead centre 65 mm below the bottom edge of the lever adjuster.

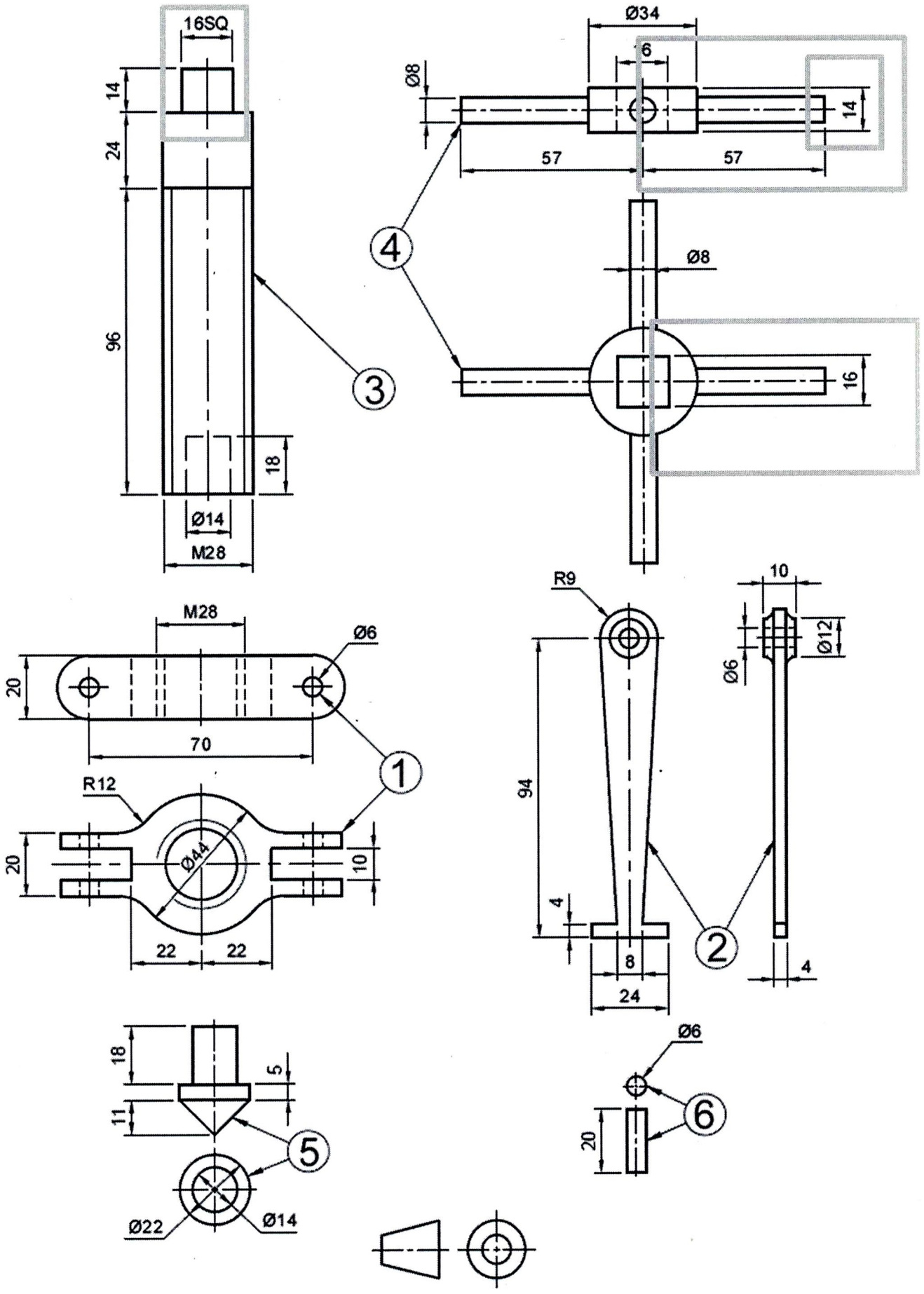

FIGURE 3 **[30]**

QUESTION 4: DETAIL DRAWING

FIGURE 4 on the next page shows the primary views of an offset connecting bar assembly.

Draw, to scale 1:1, detail drawings of the following items in third-angle orthographic projection:

4.1 The fork (Item 1) showing the following views:

4.1.1 A full-sectional front view (5)

4.1.2 A full-sectional right view (3)

4.2 The offset arm (Item 2) showing a full-sectional front view (4)

Line work, accuracy, layout and neatness (8)

No hidden detail is necessary.

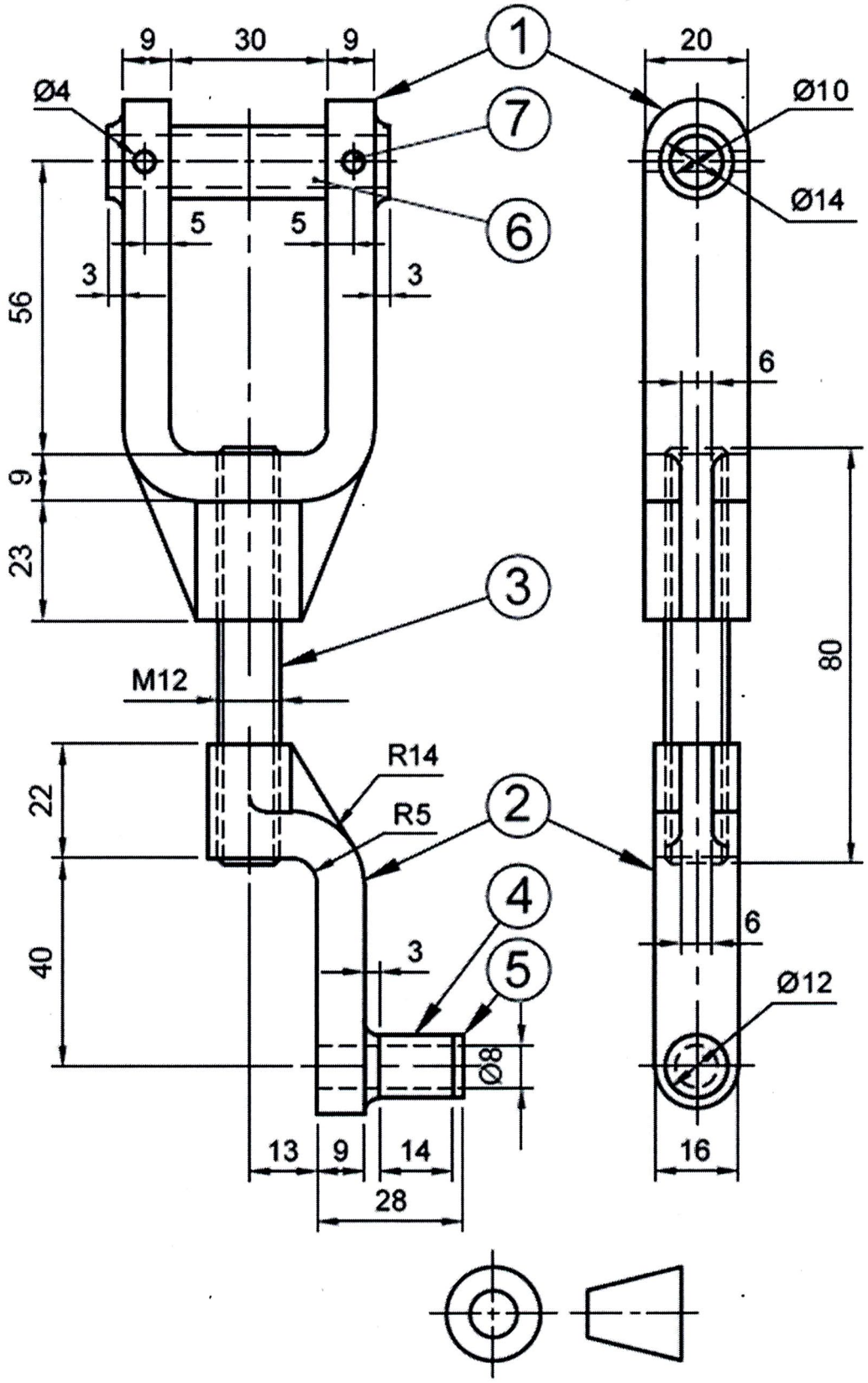

FIGURE 4 **[20]**

QUESTION 5: ISOMETRIC PROJECTION

FIGURE 5 shows the primary views of a geometric model.

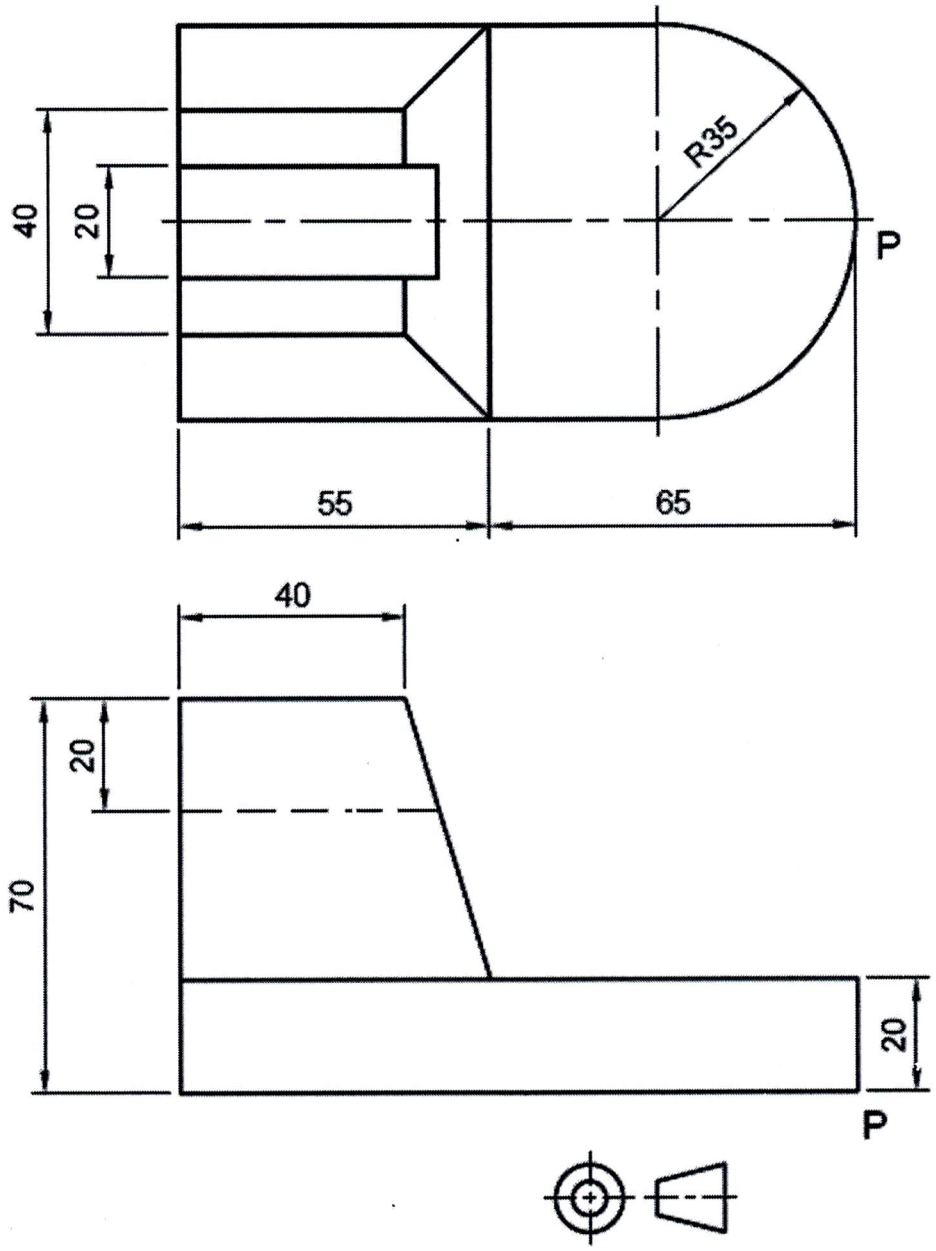

FIGURE 5

Construct an isometric scale and draw an isometric projection of the model. Point P must be the lowest point in the drawing. No hidden detail is necessary. **[15]**

TOTAL: 100