



higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE ENGINEERING DRAWING N3

(8090238)

**5 August 2021 (X-paper)
09:00–13:00**

REQUIREMENTS: A2 drawing sheet.

Drawing instruments may be used.

This question paper consists of 9 pages.

203Q1G2105

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. Only the candidate information on the drawing sheet must be done in ink. All other drawing work must be done in pencil.
 7. Use a radius curve stencil to draw smaller arcs.
 8. Unspecified radii must be R3.
 9. A balanced layout is very important and candidates will be penalised for poor planning.
 10. All drawing work must conform to the latest SANS 10111 Code of Practice for Engineering Drawing.
 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 right 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	4.1.1 Correctness – Front view (Item 1)	3
	4.1.2 Correctness – Right view (Item 1)	5
4.2	Correctness – Half-sectional front view (Item 2)	4
	Line work	3
	Accuracy	3
Layout and neatness		2
QUESTION 5: ISOMETRIC PROJECTION		[15]
	Correctness	9
	Line work	3
	Accuracy	3
TOTAL:		100

QUESTION 1: FREEHAND DRAWING

FIGURE 1 below shows an isometric view of a component. ❖

Make a freehand drawing of the given view, approximately full size.

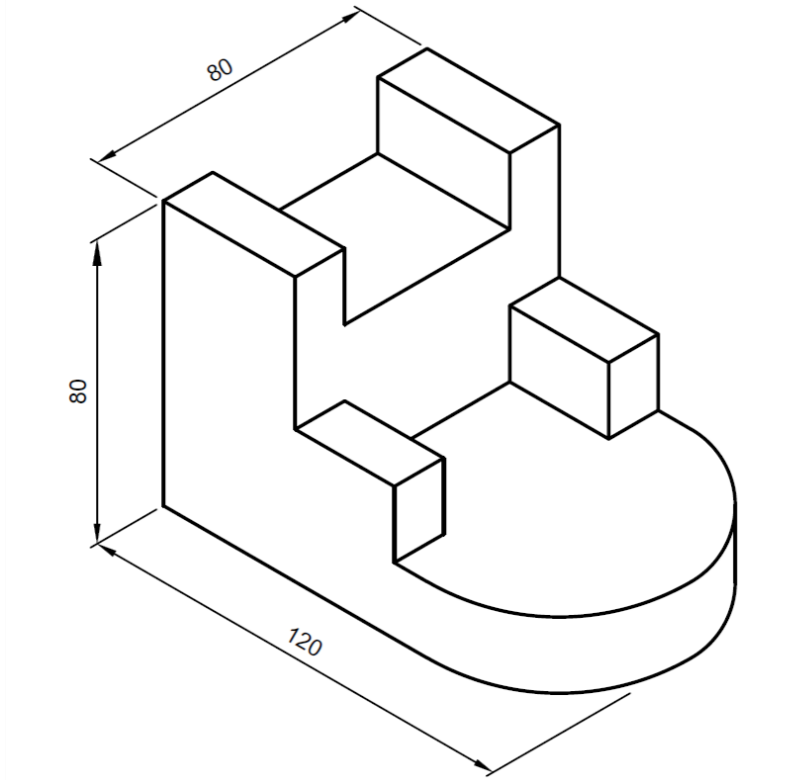


FIGURE 1

[10]

QUESTION 2: SECTIONAL DRAWING

FIGURE 2 below shows two primary views of a component. ❖

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

- 2.1 A full-sectional front view (6)
- 2.2 A full-sectional right view on cutting plane X–X (5)
- 2.3 A full-sectional top view on cutting plane Y–Y (6)
- Line work, accuracy, layout and neatness ❖ (8)

No hidden detail is required.

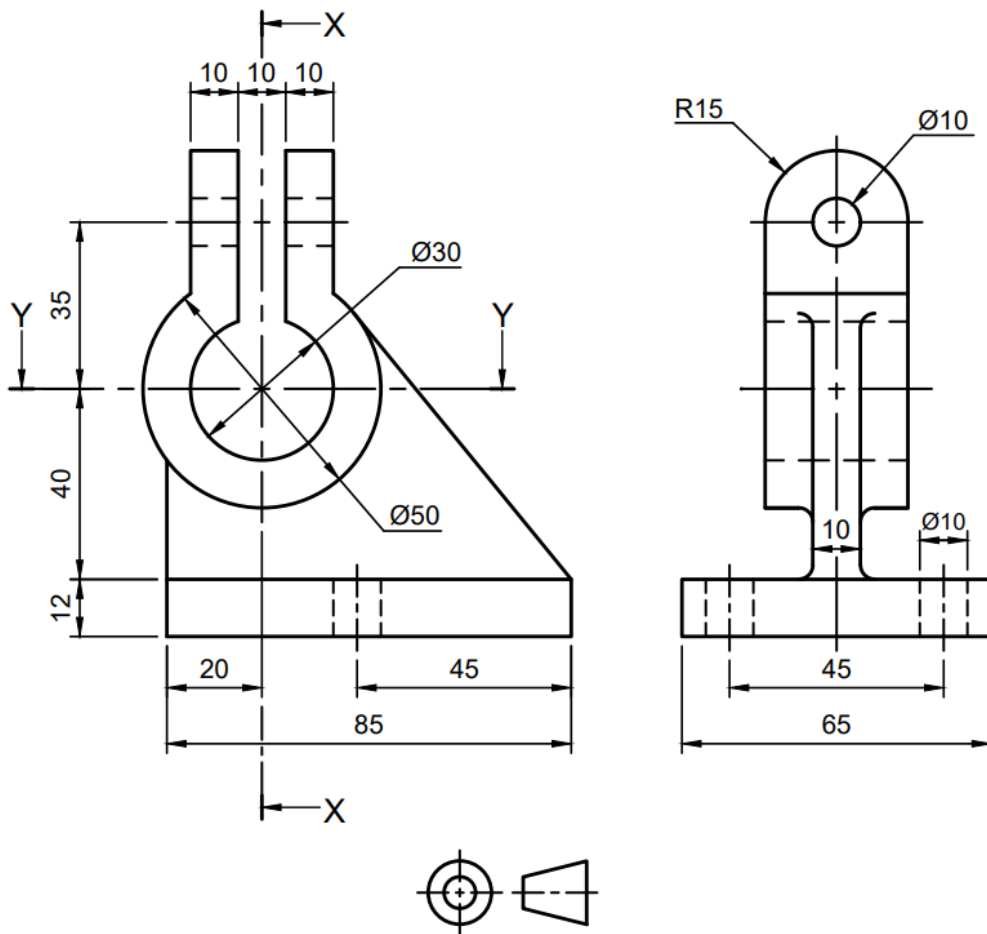



FIGURE 2


[25]

QUESTION 3: ASSEMBLY DRAWING

FIGURE 3 below shows primary views of the components of an anti-vibration mounting.

The complete list of parts is as follows: 

ITEM	DESCRIPTION	QUANTITY
1	Pivot arm	1
2	Base	1
3	Bush	2
4	Washer	1
5	M20 hexagon head bolt	1
6	M20 hexagonal nut	1

Draw, to scale 1:1, a half-sectional front view of the anti-vibration assembly with the right half in section. 

Show hidden details on the half not in section.

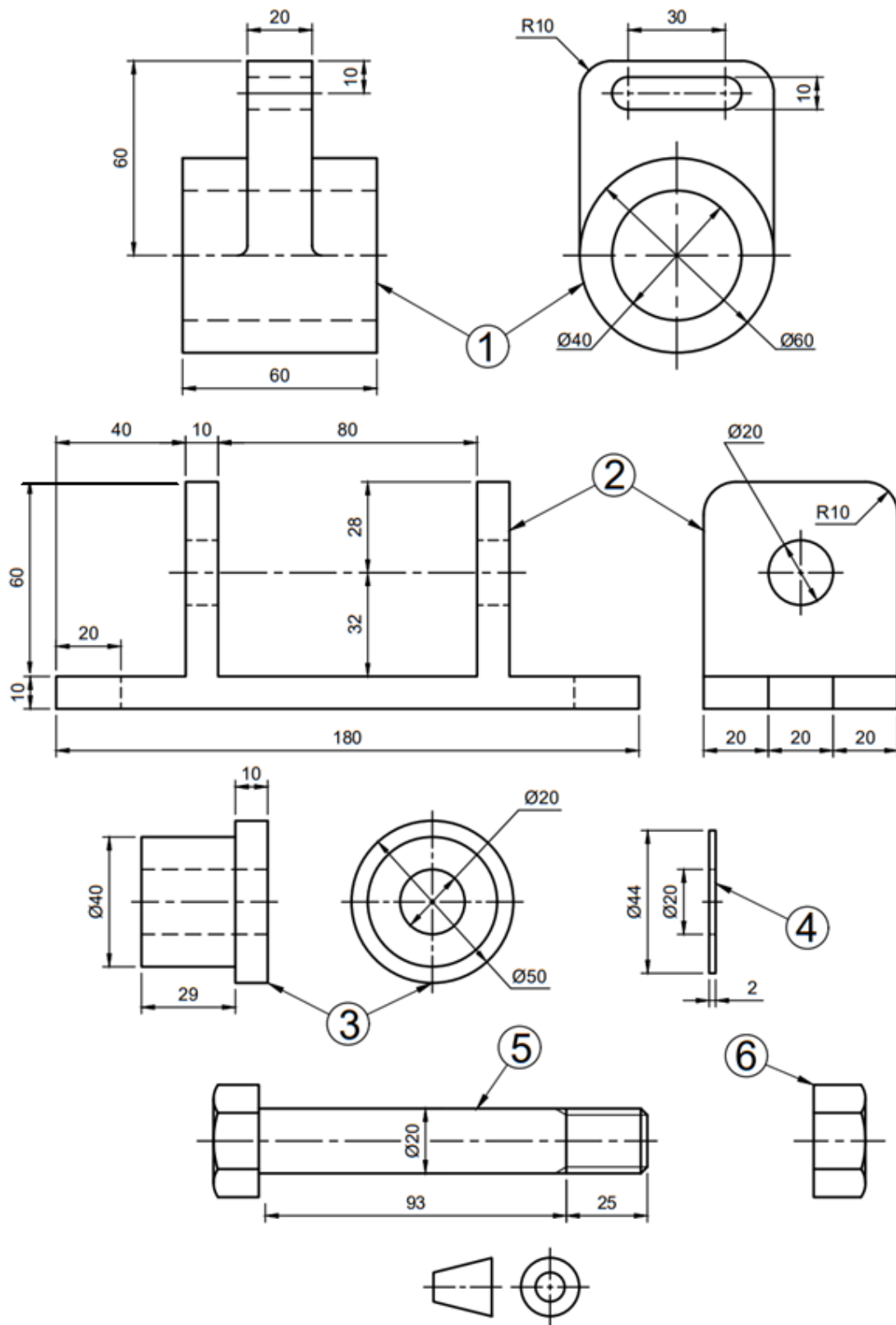


FIGURE 3

[30]

QUESTION 4: DETAILED DRAWING

FIGURE 4 below shows two primary views of a pulley assembly.

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



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

4.1.1 A front view (3)

4.1.2 A right view (5)

Show all hidden detail.



4.2 The pulley (Item 2) showing a half-sectional front view with the top half in section. (4)

Show hidden detail on the half not in section.

Line work, accuracy, layout and neatness  (8)

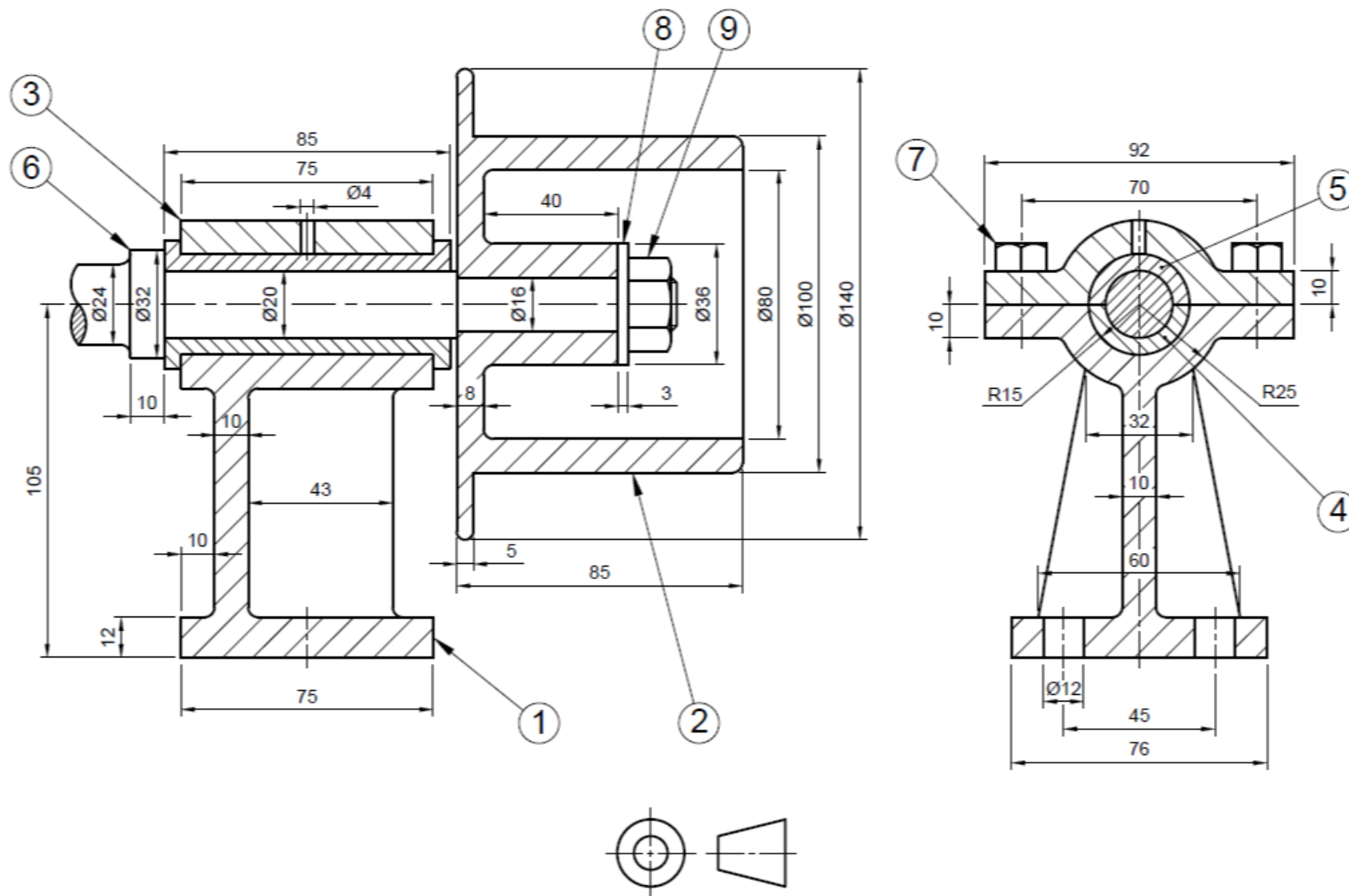


FIGURE 4

[20]

QUESTION 5: ISOMETRIC PROJECTION

FIGURE 5 shows two 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 your drawing.

No hidden detail is necessary. ❖

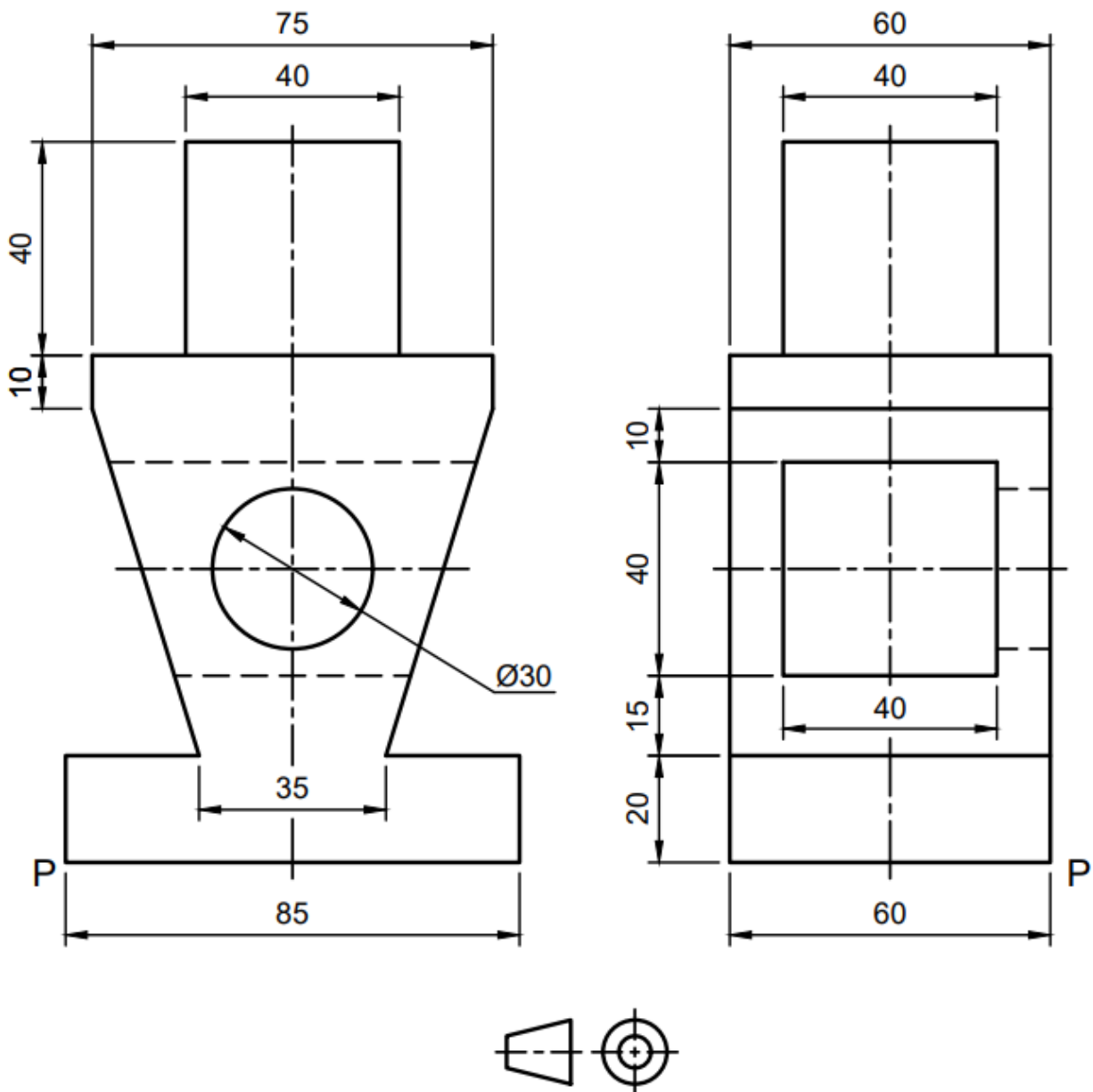


FIGURE 5

[15]

TOTAL: 100