higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

T610**(E)**(A22)T

NATIONAL CERTIFICATE

ENGINEERING DRAWING N3

(8090283)

22 March 2017 (X-Paper)
09:00–13:00

REQUIREMENTS: One A2 drawing sheet

This question paper consists of 9 pages.

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. A 15 mm border must be drawn on both sides of the drawing sheet.
6. ALL drawing work including candidate information must be done in pencil.
7. A radius curve stencil may be used 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.

MARK ALLOCATION

QUESTION 1: FREEHAND DRAWING		**[10]**
	Correctness	(6)
	Line work	(2)
	Accuracy and proportion	(2)
QUESTION 2: SECTIONAL DRAWING		**[25]**
2.1	Correctness – full-sectional front view	(6)
2.2	Correctness – full-sectional top view	(5)
2.3	Correctness – full-sectional right view	(4)
	Line work	(5)
	Accuracy	(3)
Layout and neatness		(2)
QUESTION 3: ASSEMBLY DRAWING		**[30]**
3.1	Correctness – assembly of components, full-sectional drawing	(16)
	Line work	(5)
	Accuracy	(5)
	Title and scale	(2)
Layout and neatness		(2)
QUESTION 4: DETAILED DRAWING		**[20]**
4.1	Correctness – full-sectional front view (item 1)	(5)
4.2	Correctness – full-sectional front view (item 2)	(4)
4.3	Correctness – top view (item 3)	(3)
	Line work – 1 mark per view	(3)
	Accuracy – 1 mark per view	(3)
Layout and neatness		(2)
QUESTION 5: ISOMETRIC PROJECTION		**[15]**
	Correctness	(8)
	Line work	(2)
	Accuracy	(2)
	Scale	(2)
Layout and neatness		(1)
	TOTAL:	**100**

QUESTION 1: FREEHAND DRAWING

FIGURE 1 (below) shows a full-sectional front view of a link mechanism assembly. Make a freehand drawing of the given view, approximately full size.

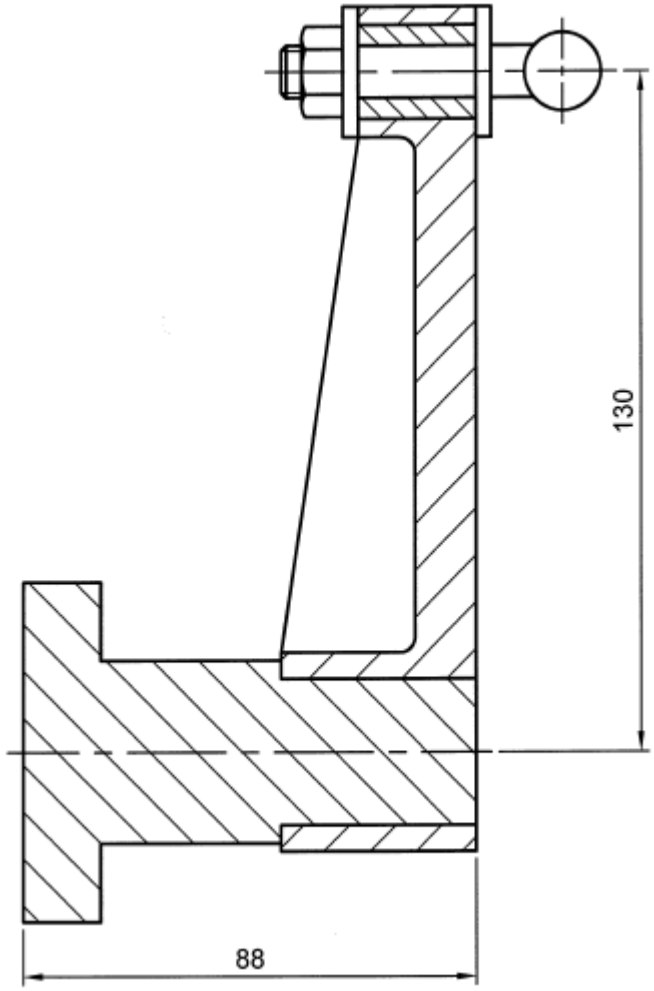

FIGURE 1 **[10]**

QUESTION 2: SECTIONAL DRAWING

FIGURE 2 (below) shows two primary views of a bracket.

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

2.1 A full-sectional front view on cutting plane Y–Y (9)

2.2 A full-sectional top view on cutting plane X–X (9)

2.3 A full-sectional right view on cutting plane Z–Z (7)

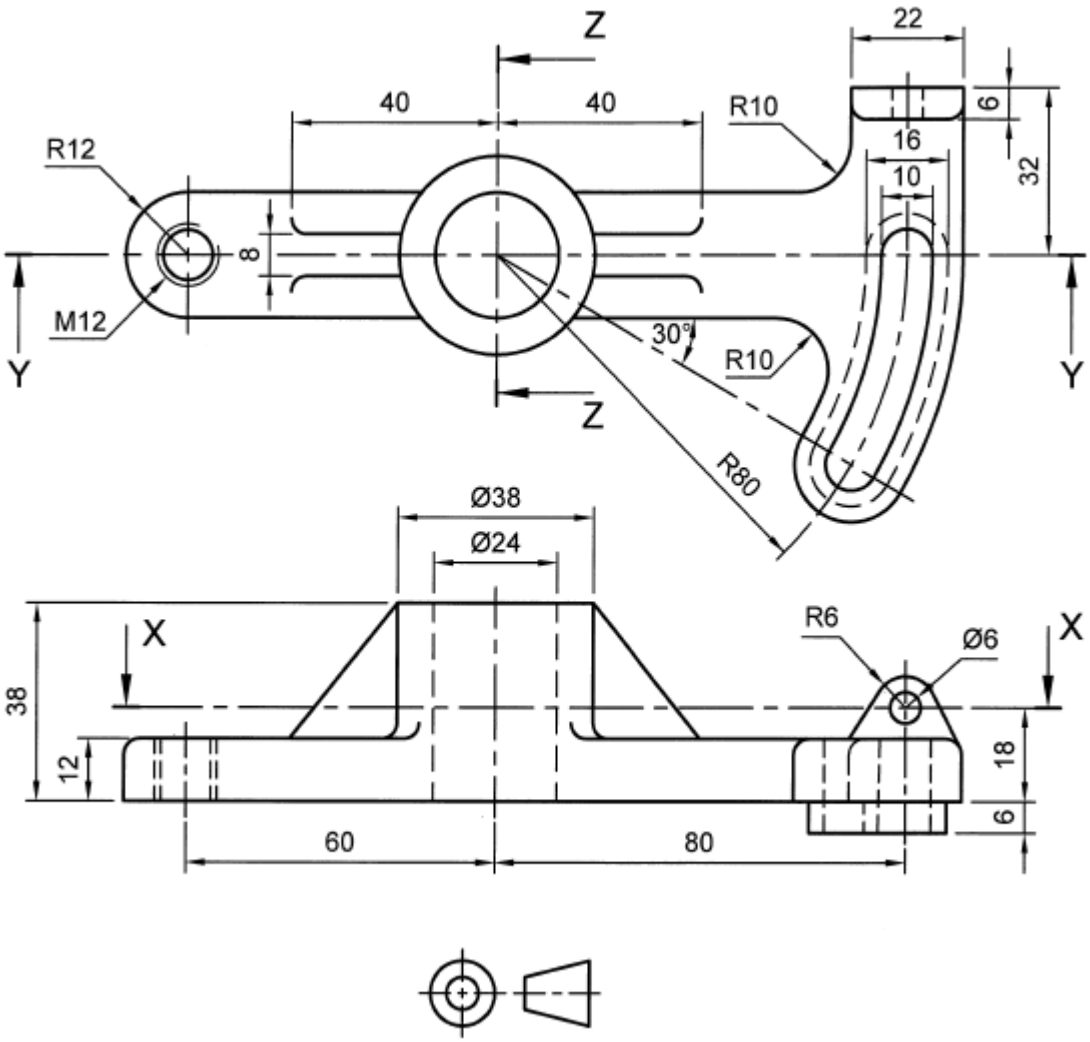

FIGURE 2

[25]

QUESTION 3: ASSEMBLY DRAWING

FIGURE 3 (next page) shows the primary views of the components of a castor.

The complete list of parts is as follows:

ITEM	DESCRIPTION	QUANTITY
1	Top plate	1
2	Frame	2
3	Wheel	1
4	Axle	1
5	Bush	2
6	M10 hexagon head bolt	4

3.1 Draw as an assembly drawing, to scale 1 : 1, a full-sectional front view of the castor. (28)

3.2 Insert a suitable title and scale centrally below the drawing. (2)

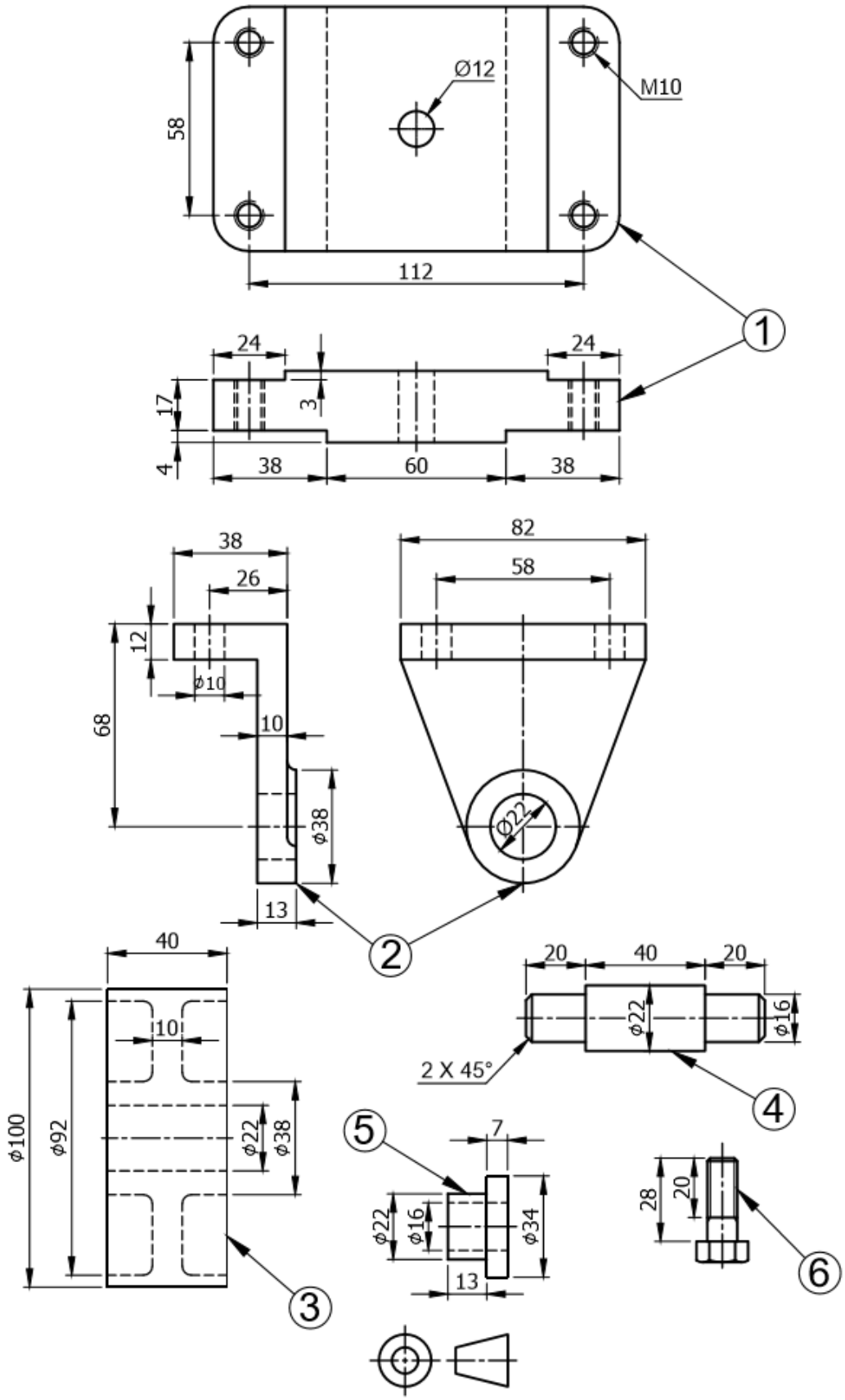

FIGURE 3 **[30]**

QUESTION 4: DETAILED DRAWING

FIGURE 4 (below) shows two primary views of a pedestal bearing.

Draw, to scale 1 : 1, detailed drawings of the following items:

4.1 The base (item 1) showing a full-sectional front view (7)

4.2 The cap (item 2) showing a full-sectional front view (7)

4.3 The bottom bearing half (item 3) showing a top view (6)

NO hidden detail is necessary.

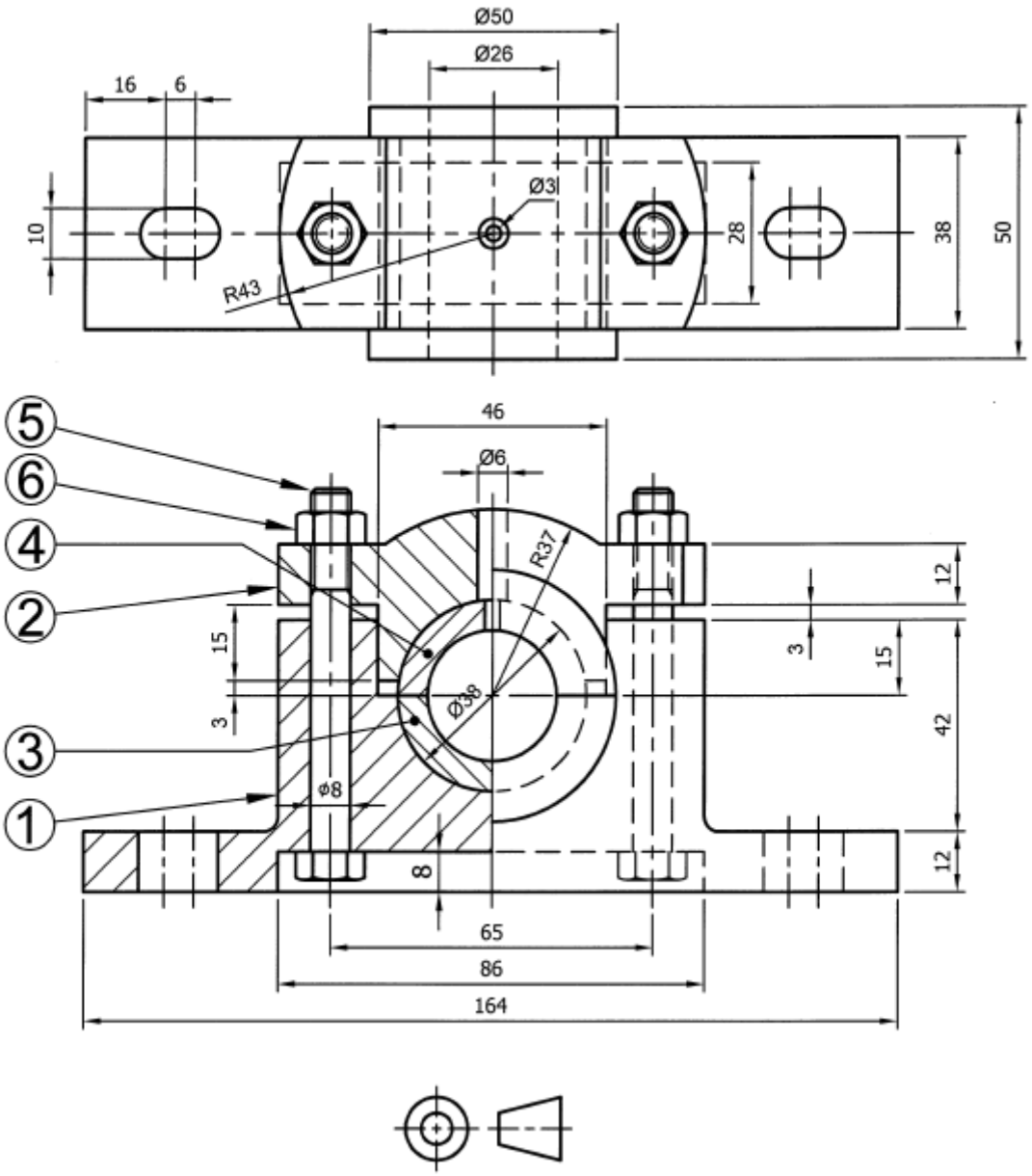

FIGURE 4

[20]

QUESTION 5: ISOMETRIC PROJECTION

FIGURE 5 (below) shows the 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 on the drawing.

NO hidden detail is necessary.

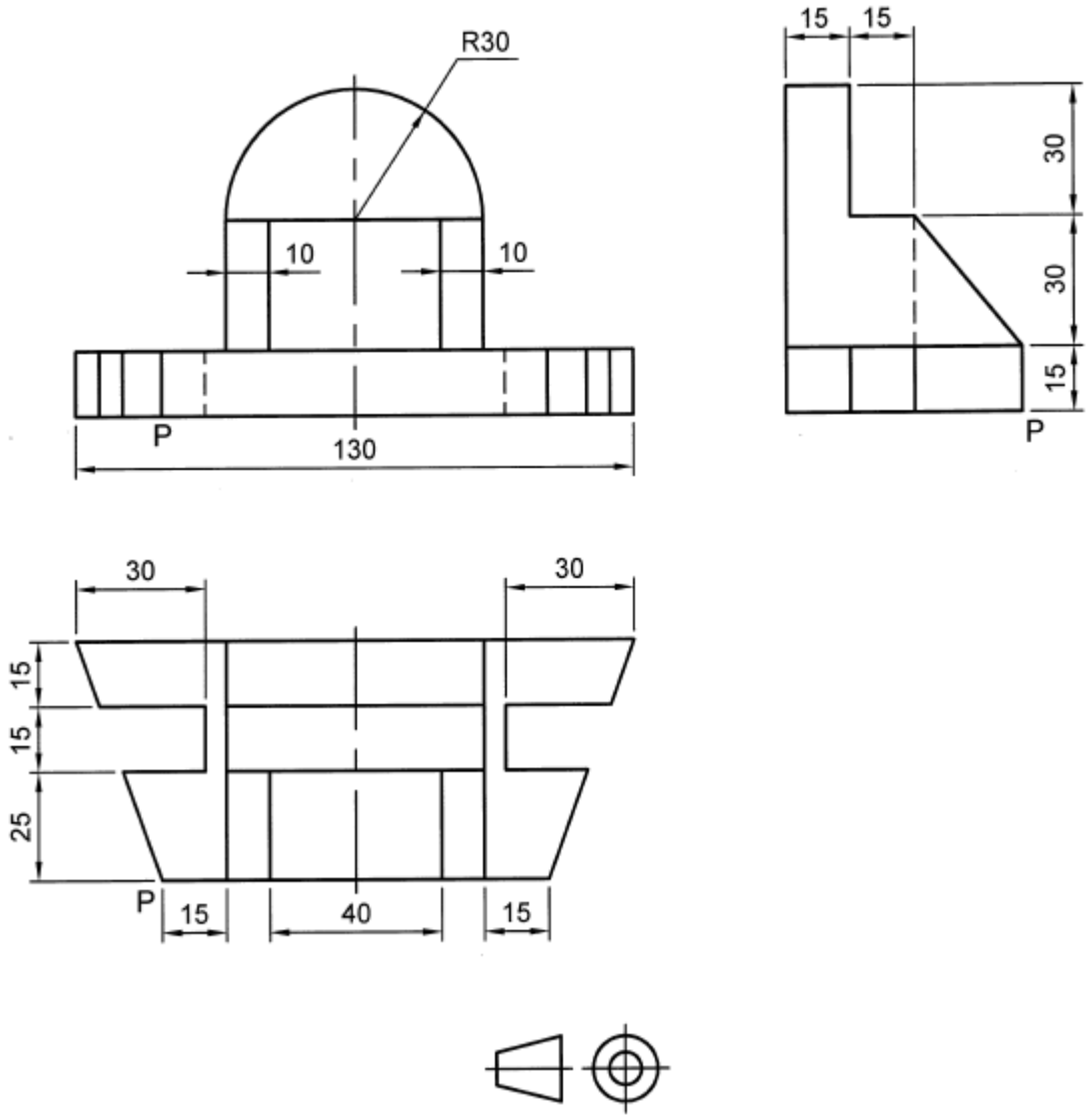

FIGURE 5 **[15]**

TOTAL: 100