



higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE ENGINEERING DRAWING N3

(8090283)

**18 November 2020 (X-paper)
09:00–13:00**

REQUIREMENTS: ONE A2 drawing sheet

This question paper consists of 10 pages and 1 answer sheet.

137Q1E2018

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. Write only the candidate information on the DRAWING SHEET in ink. 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.
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MARK ALLOCATION

QUESTION 1: FREEHAND DRAWING		
Correctness		(4)
Line work		(3)
Accuracy and proportion		(3)
		[10]
QUESTION 2: SECTIONAL DRAWING		
2.1	Correctness – full-sectional front view	(6)
2.2	Correctness – full-sectional left view	(5)
2.3	Correctness – top view	(6)
Line work		(3)
Accuracy		(3)
Layout and neatness		(2)
		[25]
QUESTION 3: ASSEMBLY DRAWING		
Correctness		(18)
Line work		(5)
Accuracy		(5)
Layout and neatness		(2)
		[30]
QUESTION 4: DETAILED DRAWING		
4.1	4.1.1 Correctness – full-sectional front view (Item 1)	(4)
	4.1.2 Correctness – top view (Item 1)	(3)
4.2	Correctness – half-sectional front view (Item 2)	(5)
Line work – 1 mark per view		(3)
Accuracy – 1 mark per view		(3)
Layout and neatness		(2)
		[20]
QUESTION 5: ISOMETRIC PROJECTION		
Correctness		(8)
Line work		(2)
Accuracy		(2)
SP + LVP + RVP		(3)
		[15]
TOTAL:		100

QUESTION 1: FREEHAND DRAWING

FIGURE 1 shows a sectional view of a component.

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

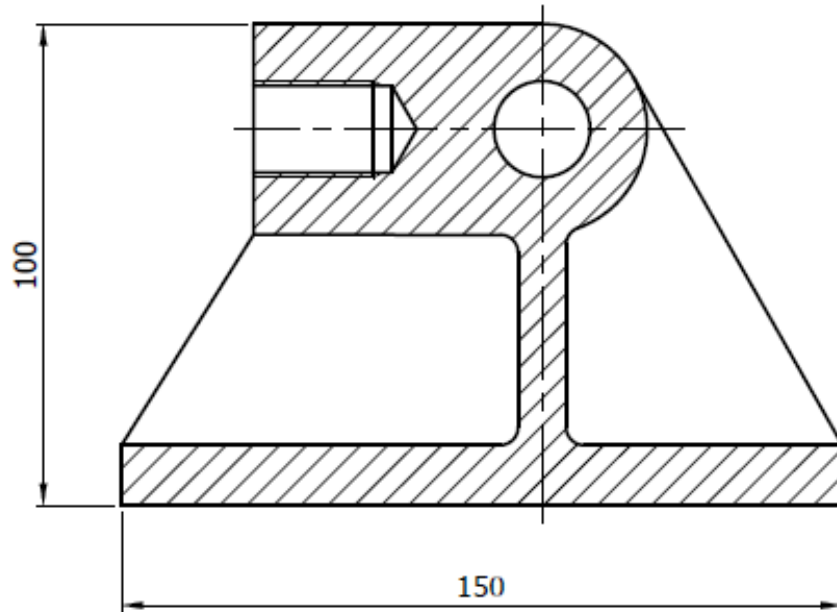
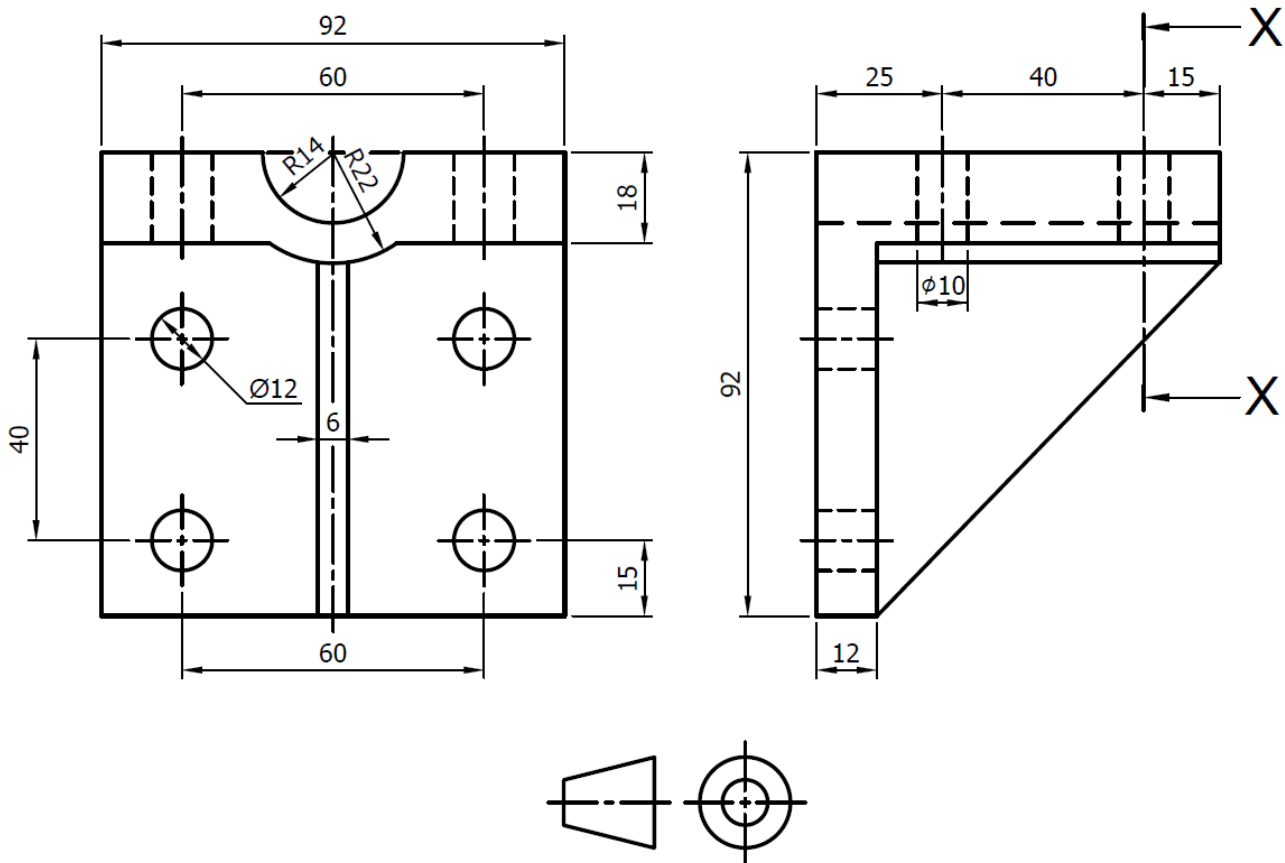


FIGURE 1

[10]

QUESTION 2: SECTIONAL DRAWING

FIGURE 2 shows two primary views of a component.

**FIGURE 2**

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

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



Show hidden details only on the view not in section.

[25]

QUESTION 3: ASSEMBLY DRAWING

FIGURE 3, on the next page, shows the primary views of the components of a one-way valve assembly.

The complete list of parts is as follows:

ITEM	DESCRIPTION	QUANTITY
1	Cylinder	1
2	Cylinder head	1
3	Valve plate	1
4	Diaphragm	1
5	Flange bolt	1
6	Washer	1
7	M20 hexagonal nut	1
8	M6 hexagon head bolt	3

Draw, to scale 1:1, an assembly drawing of the full-sectional front view of the one-way valve assembly.



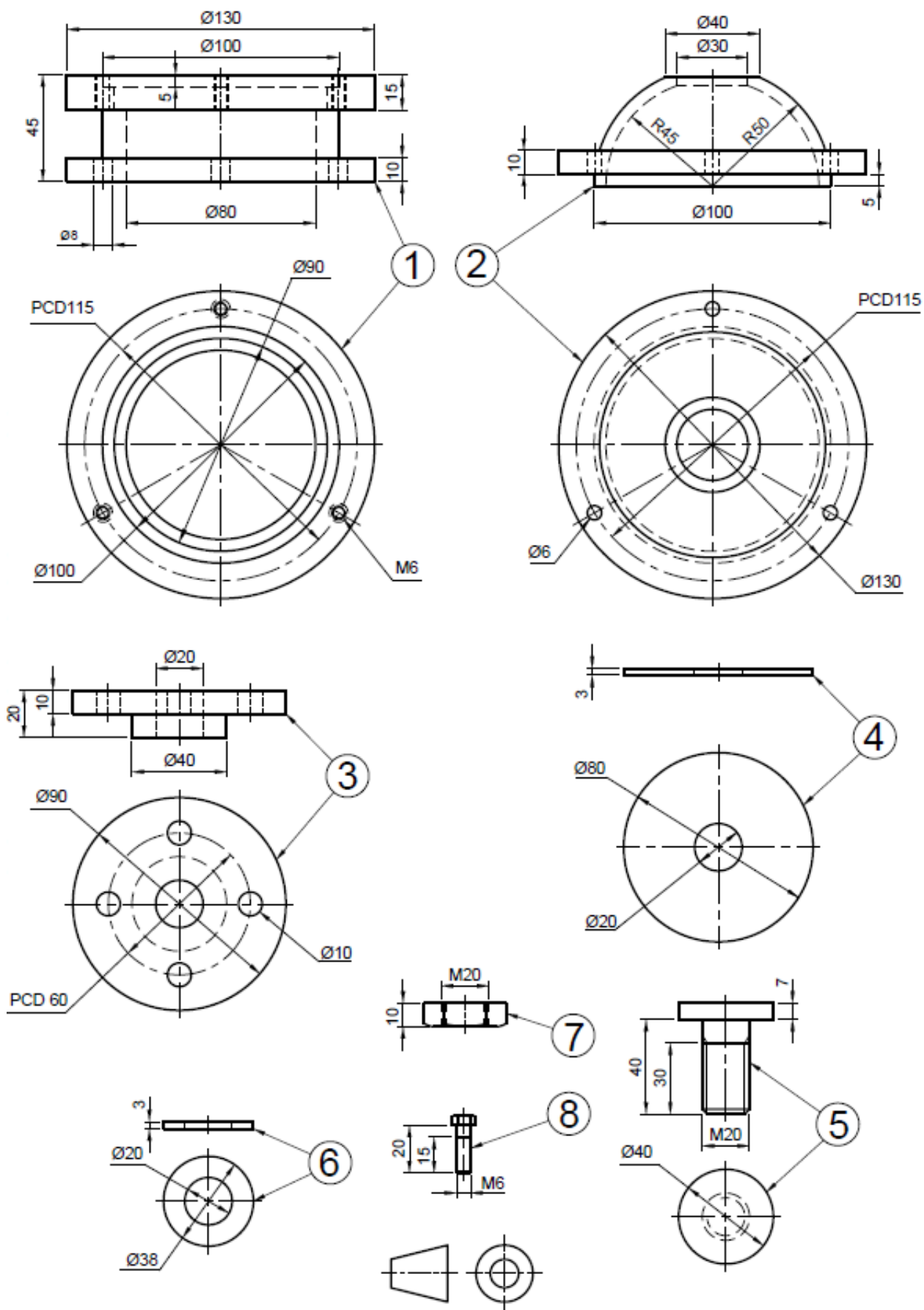


FIGURE 3

QUESTION 4: DETAILED DRAWING

FIGURE 4, on the next page, shows two primary views of a pulley assembly.

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

- 4.1 The shaft support (Item 1) showing the following views in first-angle orthographic projection:

4.1.1 Full-sectional front view

(7)

4.1.2 Top view



(6)

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

(7)

No hidden details are necessary.

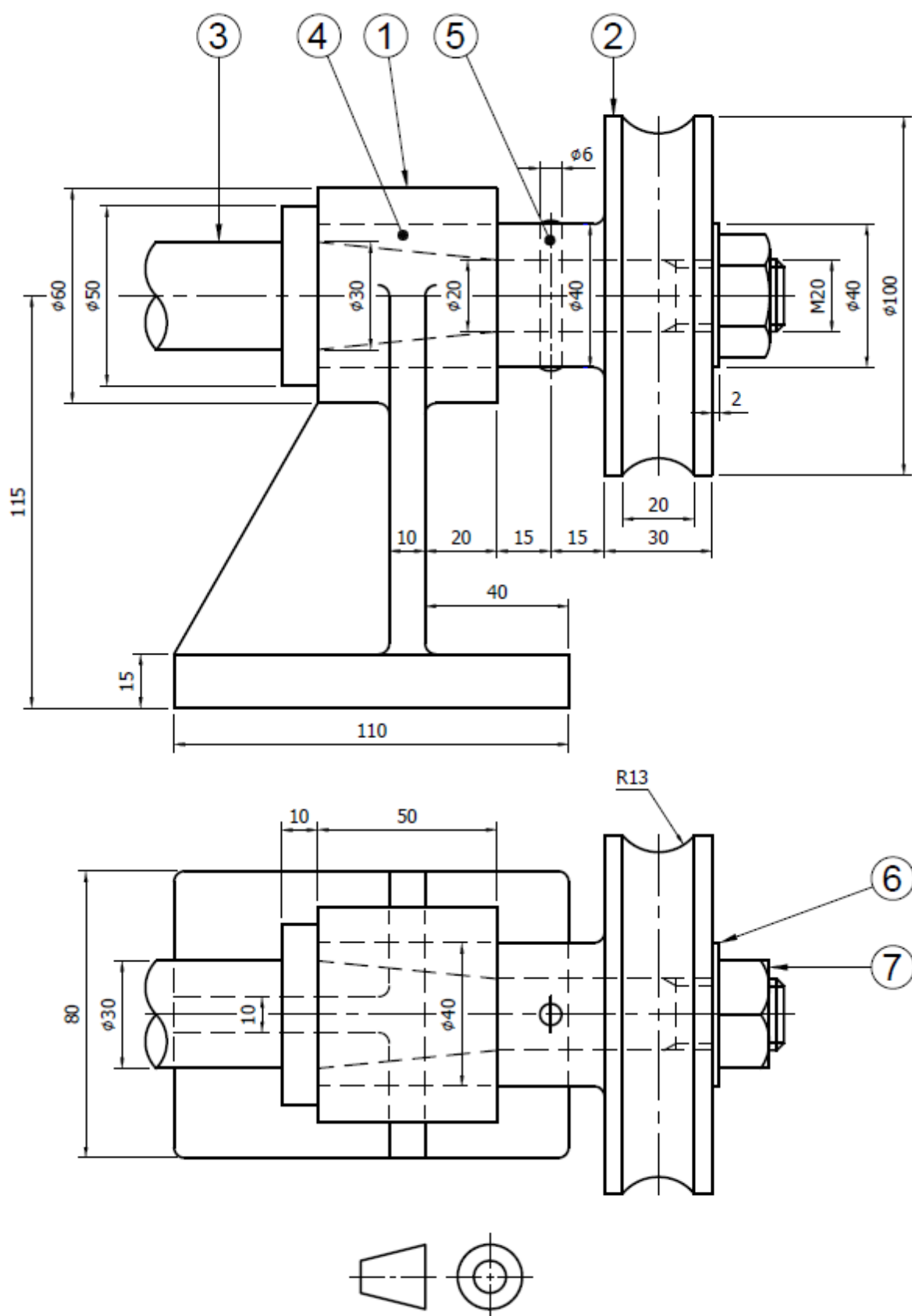


FIGURE 4

[20]

QUESTION 5: PERSPECTIVE DRAWING

NOTE: Answer this question on the A4 ANSWER SHEET (attached) and submit it with the DRAWING SHEET.

Use the information shown on ANSWER SHEET (attached) to draw a neat two-point perspective view of the machined block.



Point A is situated in line with the centre of vision and up against the picture plane. Line AB vanishes to the right at 30° . The distance of the eye in front of the picture plane is 100 mm. No hidden detail is necessary.

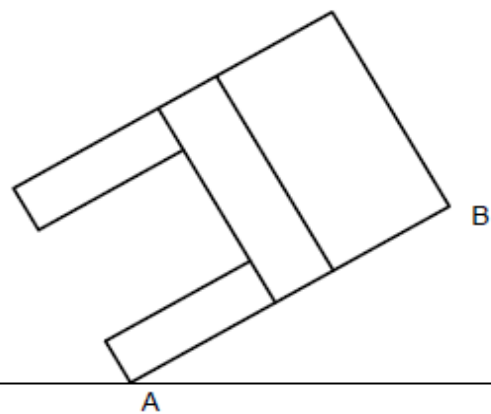
Label the left and right vanishing points (LVP and RVP) and the station point (SP) in their correction positions.

[15]**TOTAL: 100**

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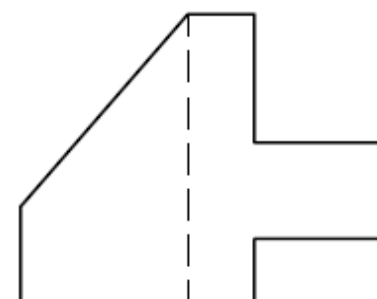
ANSWER SHEET

QUESTION 5



HORIZON LINE/PICTURE PLANE

GROUND LINE



EXAMINATION NUMBER

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