



# higher education & training

Department:  
Higher Education and Training  
**REPUBLIC OF SOUTH AFRICA**

T590(E)(J18)T

**NATIONAL CERTIFICATE**

**ENGINEERING DRAWING N3**

(8090283)

**18 July 2018 (X-Paper)**

**09:00–13:00**

**REQUIREMENTS: ONE A2 drawing sheet**

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

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

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**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. 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.
  11. Write neatly and legibly.
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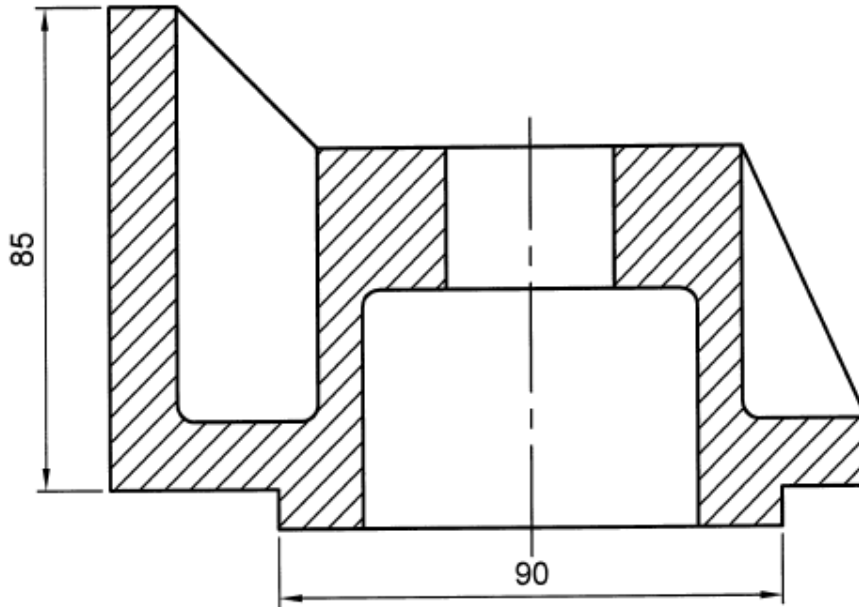
**MARK ALLOCATION**

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

**QUESTION 1: FREEHAND DRAWING**

FIGURE 1 shows a full-sectional front view of a component.

Make a freehand drawing of the given view approximately full-sized.



**FIGURE 1**

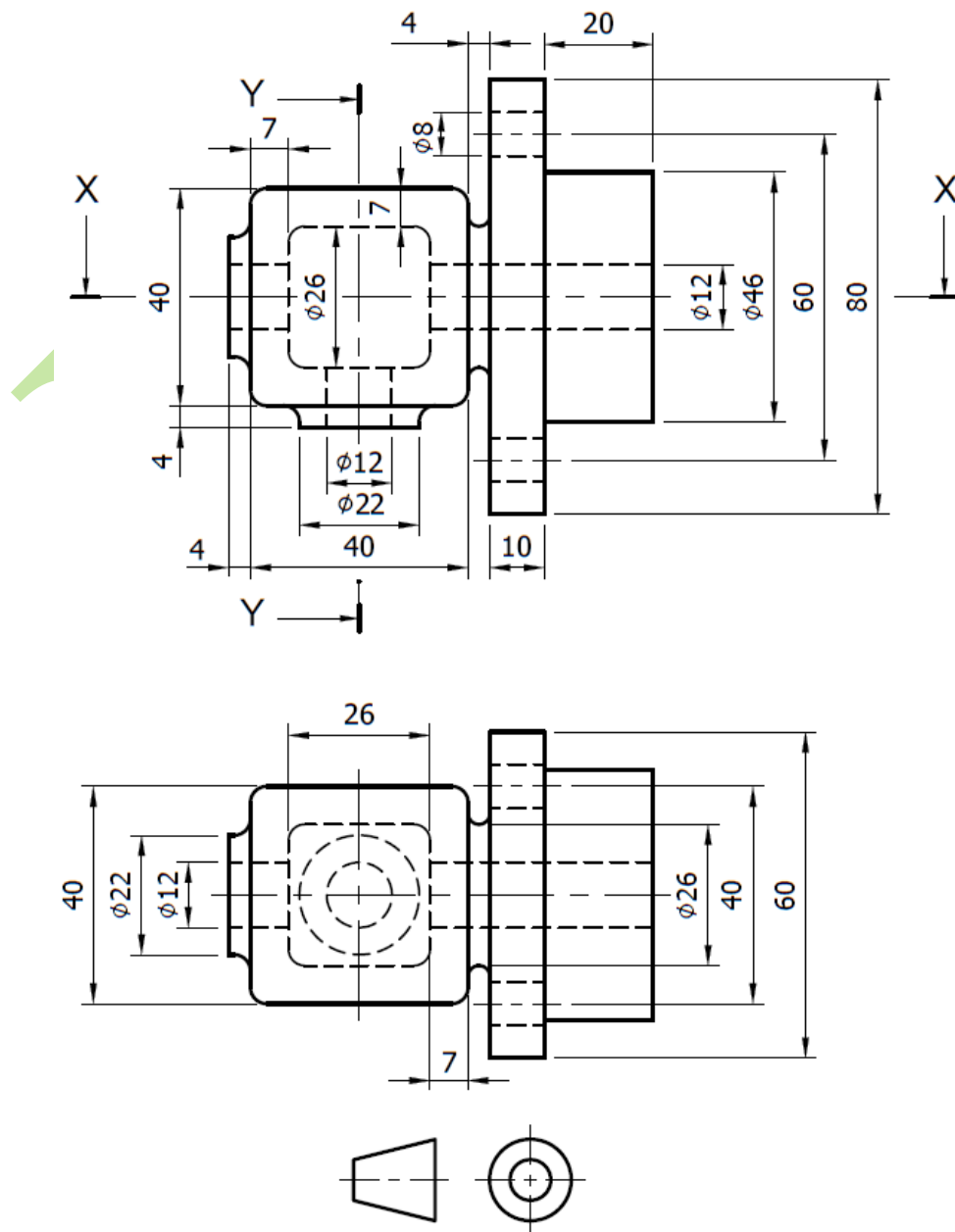
**[10]**

**QUESTION 2: SECTIONAL DRAWING**

FIGURE 2 shows two primary views of a component.

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

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



**FIGURE 2**

**[25]**

**QUESTION 3: ASSEMBLY DRAWING**

FIGURE 3 on the next page shows the primary views of the components of a piston assembly.

The complete list of parts is as follows:

ITEM	DESCRIPTION	QUANTITY
1	Piston	1
2	Connecting rod	1
3	Big end	1
4	Gudgeon pin	1
5	M10 hexagon head bolt	2
6	M10 hexagonal nut	2

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

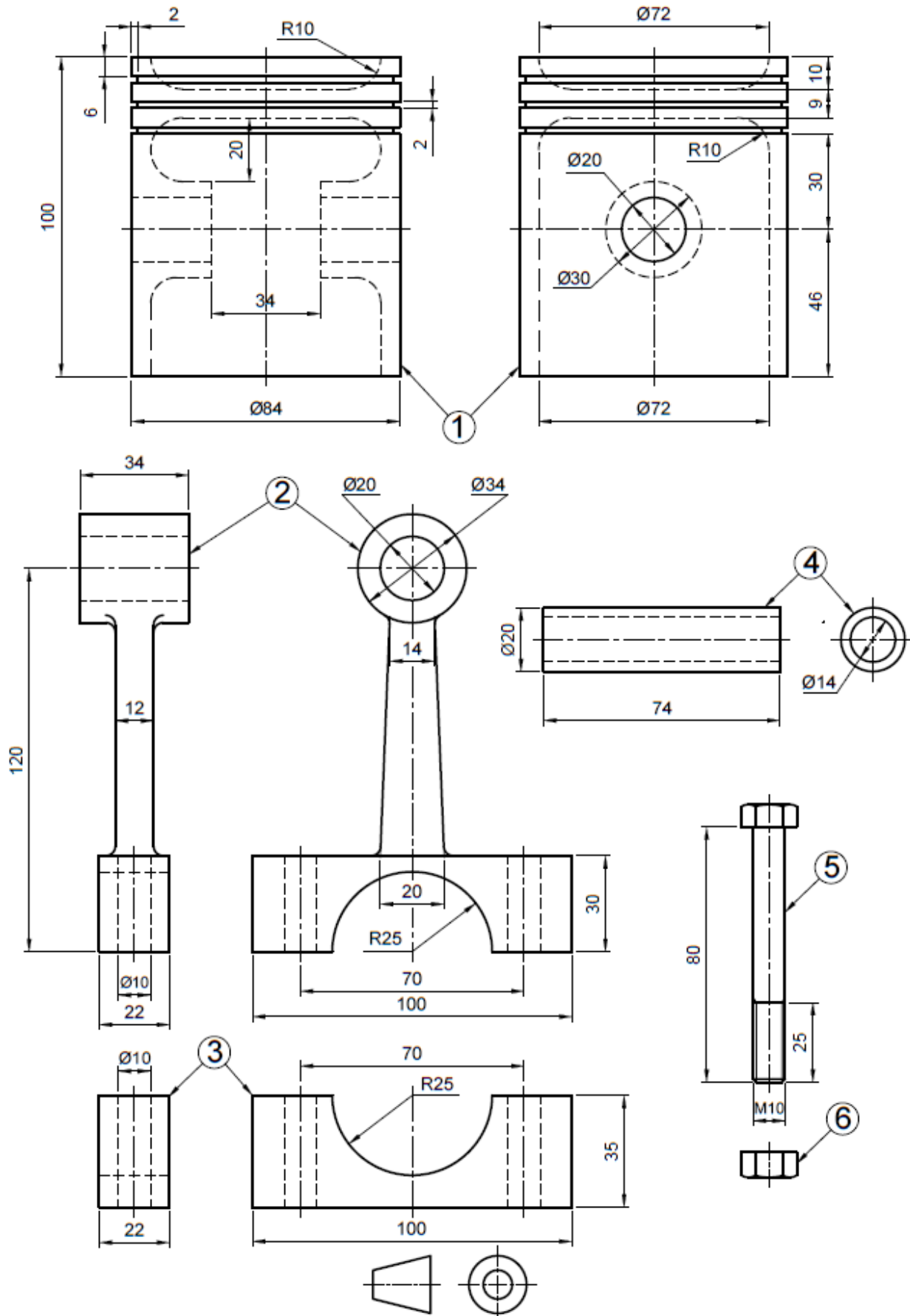


FIGURE 3

[30]

**QUESTION 4: DETAILED DRAWING**

FIGURE 4 on the next page shows two primary views of a marking machine.

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

- 4.1 The base (Item 1) showing the following views:
- 4.1.1 A full-sectional front view (6)
  - 4.1.2 A top view (7)
- 4.2 The frame (Item 2) showing a full-sectional front view (7)
- NO hidden detail is necessary.





**QUESTION 5: PERSPECTIVE DRAWING**

NOTE: This question must be answered on the ANSWER SHEET and attached to the DRAWING SHEET.

Use the information shown on the 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.

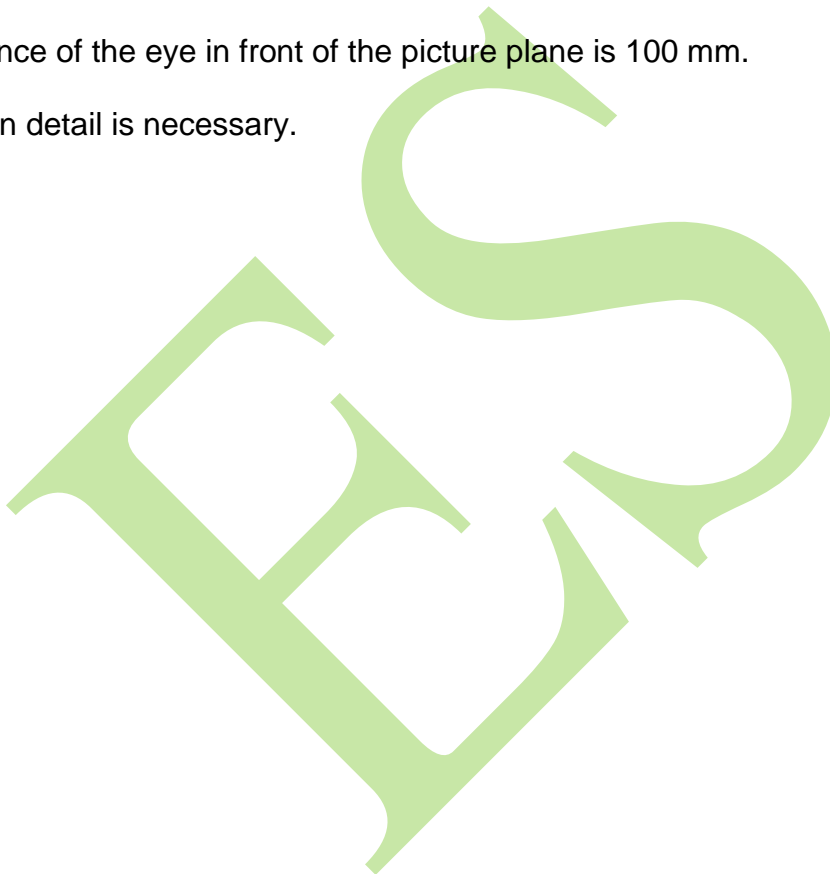
Line AB vanishes to the right at  $30^\circ$ .

The distance of the eye in front of the picture plane is 100 mm.

NO hidden detail is necessary.

[15]

**TOTAL: 100**

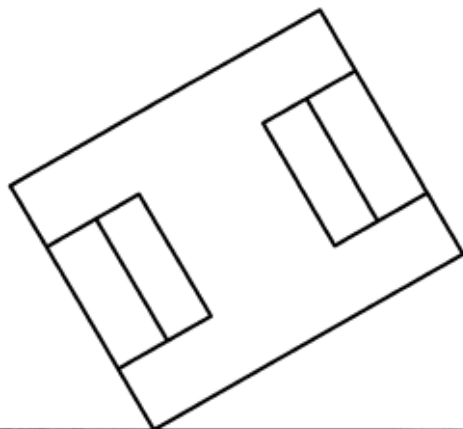


**ANSWER SHEET**

**EXAMINATION NUMBER:**

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**QUESTION 5**



HORIZON LINE/PICTURE PLANE

GROUND LINE

