

**SENIOR CERTIFICATE EXAMINATION  
SENIORSERTIFIKAAT-EKSAMEN**



**FEBRUARY / FEBRUARIE  
MARCH / MAART**

**2005**

**TECHNICAL DRAWING**

***TEGNIESE TEKENE***

**(First Paper: Descriptive  
Geometry and Locus)  
(Eerste Vraestel:  
Beskrywende Meetkunde  
en Lokus)**

**SG**

**711-2/1**

TECHNICAL DRAWING SG: Paper 1

**7 pages + cover  
7 bladsye + voorblad**



711 2 1

SG

**X05**



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GAUTENGSE DEPARTEMENT VAN  
ONDERWYS

GAUTENG DEPARTMENT OF  
EDUCATION

TEGNIесе TEKENE SG – EERSTE VRAESTEL  
(Beskrywende Meetkunde en Lokus)

TECHNICAL DRAWING SG - FIRST PAPER  
(Descriptive Geometry and Locus)

Tyd: 3 uur  
Punte: 150

TIME: 3 hours  
MARKS: 150

**INSTRUKSIES:**

**INSTRUCTIONS:**

- 1) Beantwoord alle vrae op die ANTWOORDVELLE 711-2/1
- 2) Drukskryf jou EKSAMENNOMMER in die titelblok onderaan elke antwoordvel.
- 3) Gebruik 'n skaal van 1:1 vir alle antwoorde.
- 4) Toon alle projeksie en konstruksielyste.
- 5) Tabuleer jou antwoorde waar nodig.
- 6) Kram alle antwoordvelle in numeriese volgorde.
- 7) Goeie lynwerk en netheid sal in jou guns tel.
- 8) Die gebruik van gekleurde lood en penne is verbode.

- 1) Answer all questions on ANSWER SHEETS 711-2/1.
- 2) Print your EXAMINATION NUMBER in the title block at the bottom of each sheet.
- 3) Use a scale of 1:1 for all questions.
- 4) All construction and projection lines must be shown.
- 5) Tabulate your answers where applicable.
- 6) Staple all answer sheets together in numerical order.
- 7) Neatness and clear presentations will count in your favour.
- 8) Do not use coloured pens or pencils.

| Vraag / Question | Totaal/Total |  |  |
|------------------|--------------|--|--|
| 1                | <b>26</b>    |  |  |
| 2                | <b>23</b>    |  |  |
| 3                | <b>30</b>    |  |  |
| 4                | <b>15</b>    |  |  |
| 5                | <b>26</b>    |  |  |
| 6                | <b>30</b>    |  |  |
| Totaal / Total   | <b>150</b>   |  |  |

Vraag 1

Figuur 1.1 toon die vooraansig en boaansig van 'n gutbak asook die afvoerpyp ABC. Bepaal die ware lengte van die afvoerpyp ABC.

12

Figuur 1.2 toon die isometriese aansig van lynstuk AB in die ruimte. Punt A is 10 mm bo die horisontale vlak en 15 mm voor die vertikale vlak. Punt B is 30 mm bo die horisontale vlak en 35 mm voor die vertikale vlak. Deur gebruik te maak van die gegewe X-Y grondlyn, bepaal

1.2.1 die vooraansig van die lynstuk

4

1.2.2 die boaansig van die lynstuk

4

1.2.3 die snyspore VS en HS

4

Lynwerk en netheid

2

Totaal

26

Question 1

Figure 1.1 shows the front view and top view of a gutter bin as well as a feeding pipe ABC. Determine the true length of the feeding pipe ABC.

12

Figure 1.2 shows the isometric view of line segment AB in space. Point A is 10 mm above the horizontal plane and 15 mm in front of the vertical plane. Point B is 30 mm above the horizontal plane and 35 mm in front of the vertical plane. By making use of the given X-Y line determine

1.2.1 the front view of the line segment.

4

1.2.2 the top view of the line segment.

4

1.2.3 the traces VT and HT.

4

Linework and neatness

2

Total

26

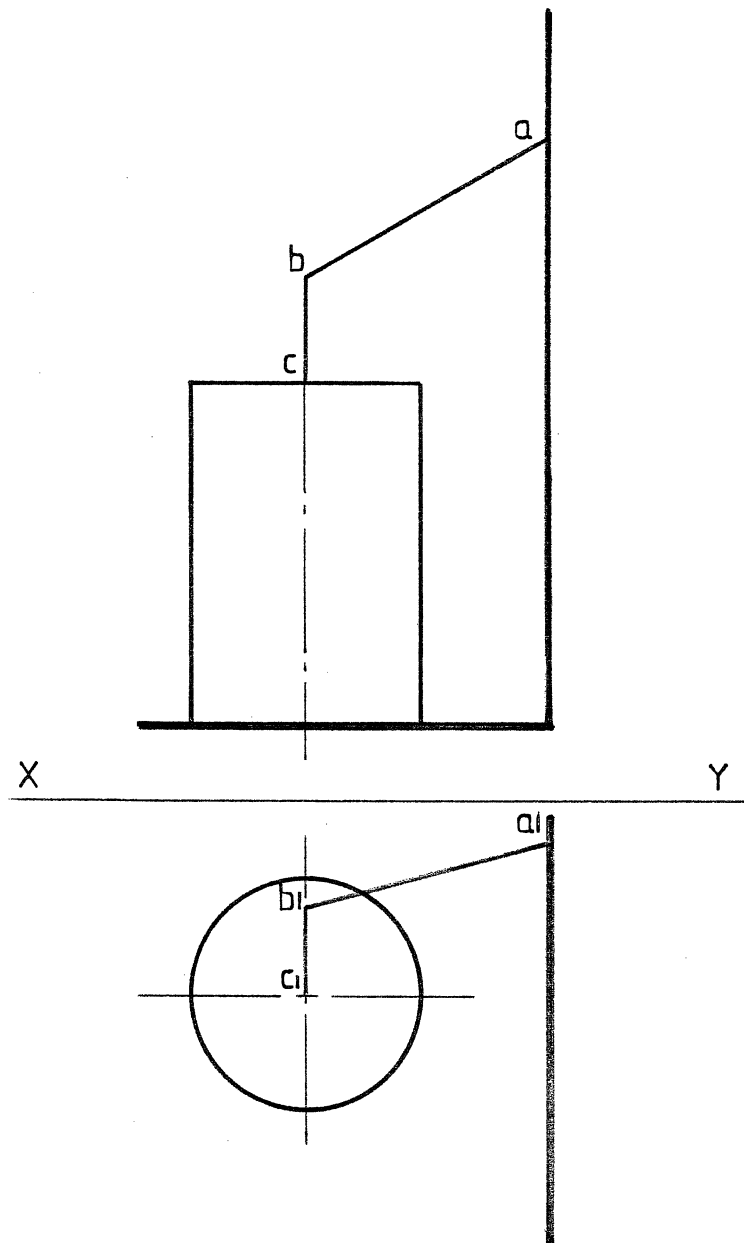


FIG. 1.1

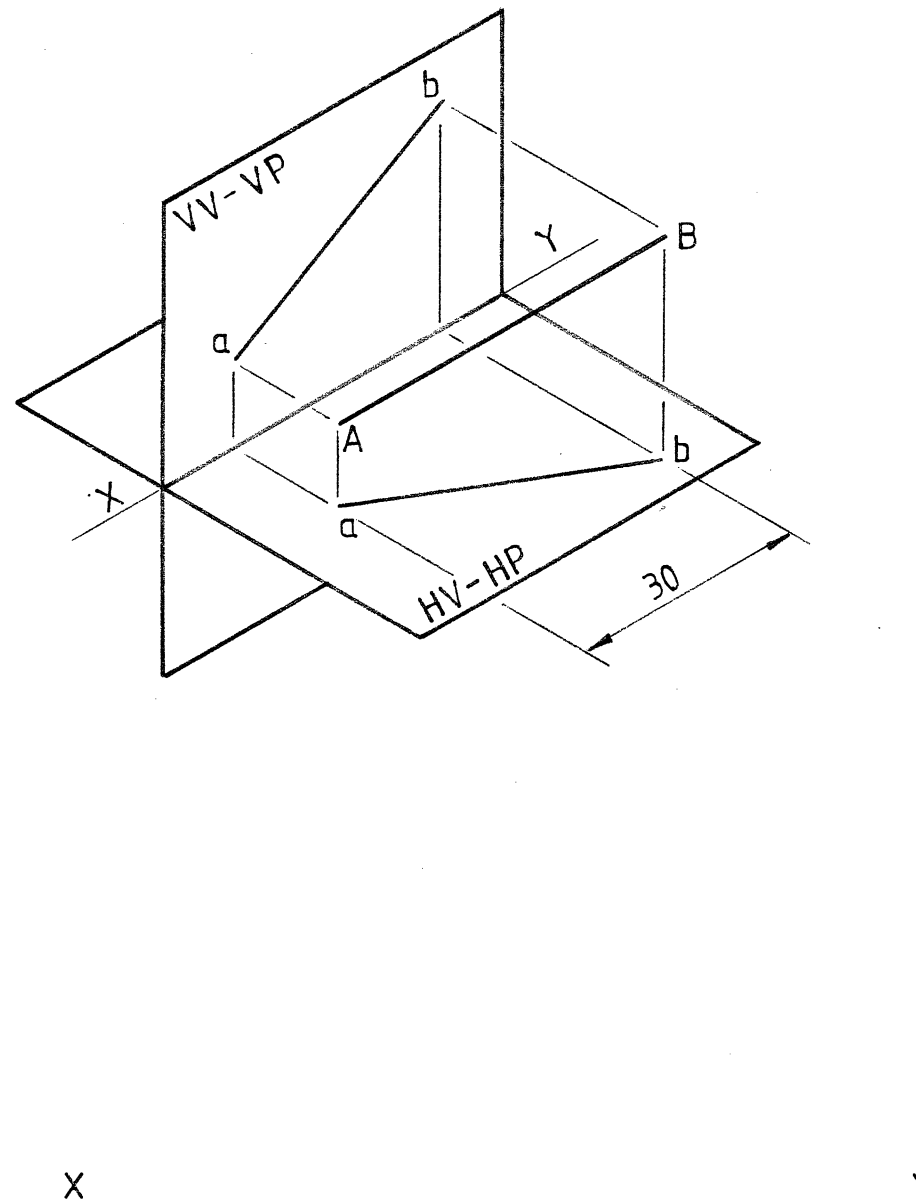
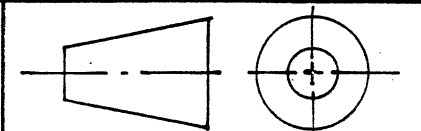


FIG. 1.2

EKSAMENNUMMER  
EXAMINATION NO.

ANTWOORDVEL 1  
ANSWER SHEET

VRAAG 1  
QUESTION



VERPLASINGSDIAGRAM  
 DISPLACEMENT DIAGRAM

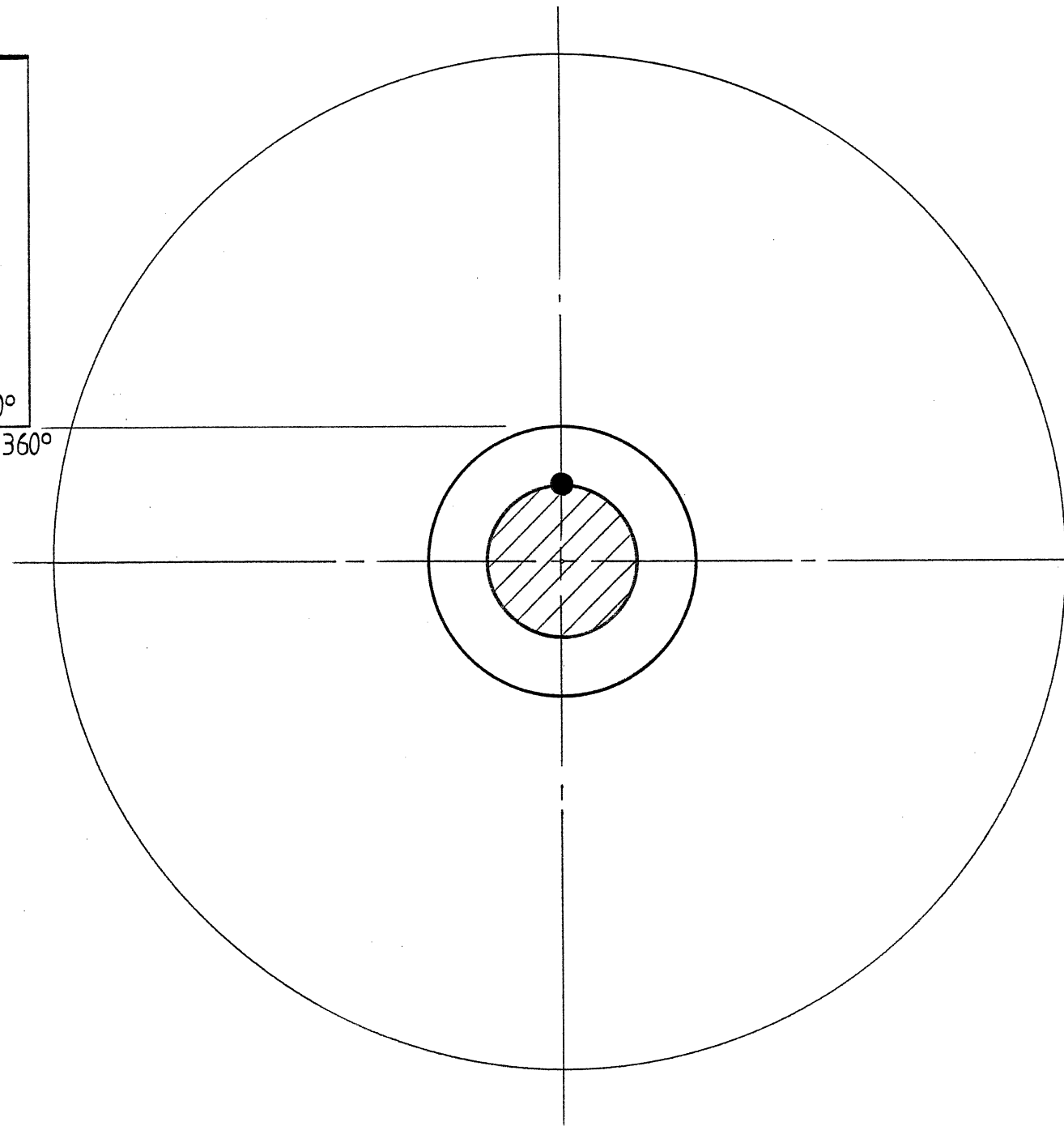
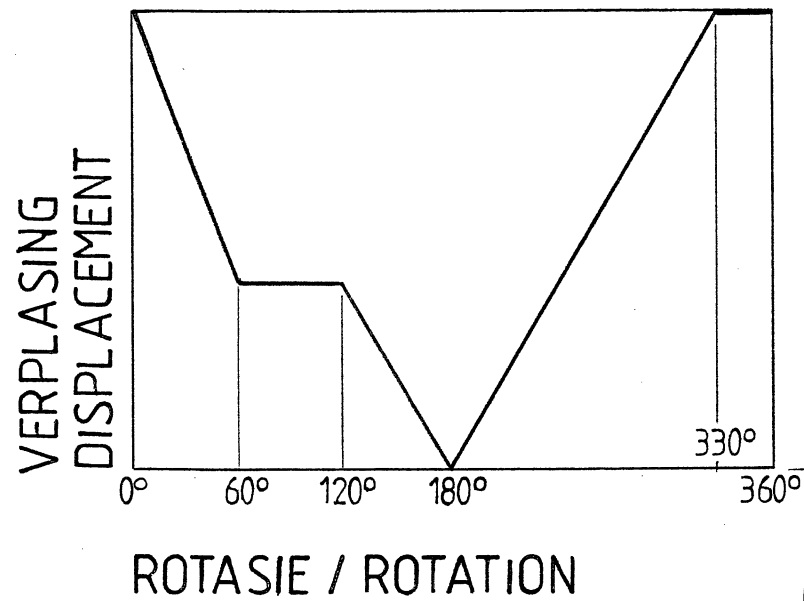


FIG . 2

Vraag 2

Figuur 2 toon die verplasingsdiagram asook die minimum nokradius en die nokas van 'n wigvormige nokvolger. Die nok roteer anti-kloksgewys.

Teken die nokprofiel.

Bepaal:

2.1 Die verplasing na 60° van rotasie

2.2 Die verplasing na 330° van rotasie

Lynwerk en netheid

Totaal

17

2

2

2

23

Question 2

Figure 2 shows the displacement diagram as well the minimum cam radius and camshaft of a wedge-shaped cam follower. The cam rotates anti-clockwise.

Draw the camprofile.

Determine:

2.1 The displacement after 60° of rotation

2.2 The displacement after 330° of rotation

Linework and neatness

Total

17

2

2

2

23

EKSAMENNOMMER

EXAMINATION NO. \_\_\_\_\_

ANTWOORDVEL

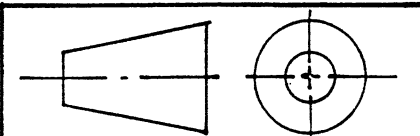
ANSWER SHEET

2

VRAAG

QUESTION

2



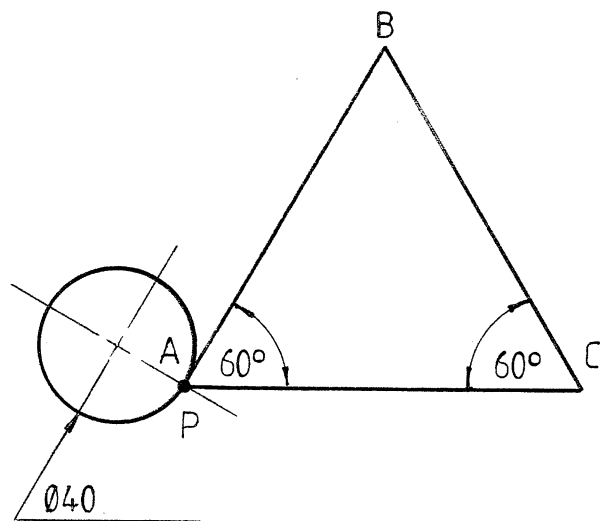


FIG. 3



Vraag 3

Figuur 3 toon 'n skyf asook die baan waarop dit rol.

- 3.1 Teken die gegewe figuur, volgens 'n skaal van 1:1. Begin by sy AC. 7
- 3.2 Konstrueer die lokus van punt P as die skyf vanaf A tot B vir 'n halwe omwenteling rol, en daarna tot by C vir 'n verdere halwe omwenteling. (Toon alle berekenings). 20

|                    |           |  |
|--------------------|-----------|--|
| Lynwerk en netheid | 3         |  |
| Totaal             | <b>30</b> |  |

Question 3

Figure 3 shows a disc as well as the contour on which it rolls.

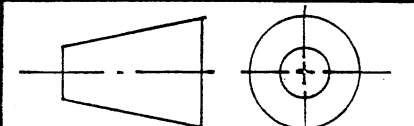
- 3.1 Redraw the given figure to a scale 1:1. Start at side AC. 7
- 3.2 Construct the locus of point P if the disc rolls from point A to B for half a revolution and then to point C for a further half a revolution. (Show all calculations). 20

|                       |           |  |
|-----------------------|-----------|--|
| Linework and neatness | 3         |  |
| Total                 | <b>30</b> |  |

EKSAMENNOMMER  
 EXAMINATION NO. \_\_\_\_\_

ANTWOORDVEL 3  
 ANSWER SHEET

VRAAG 3  
 QUESTION



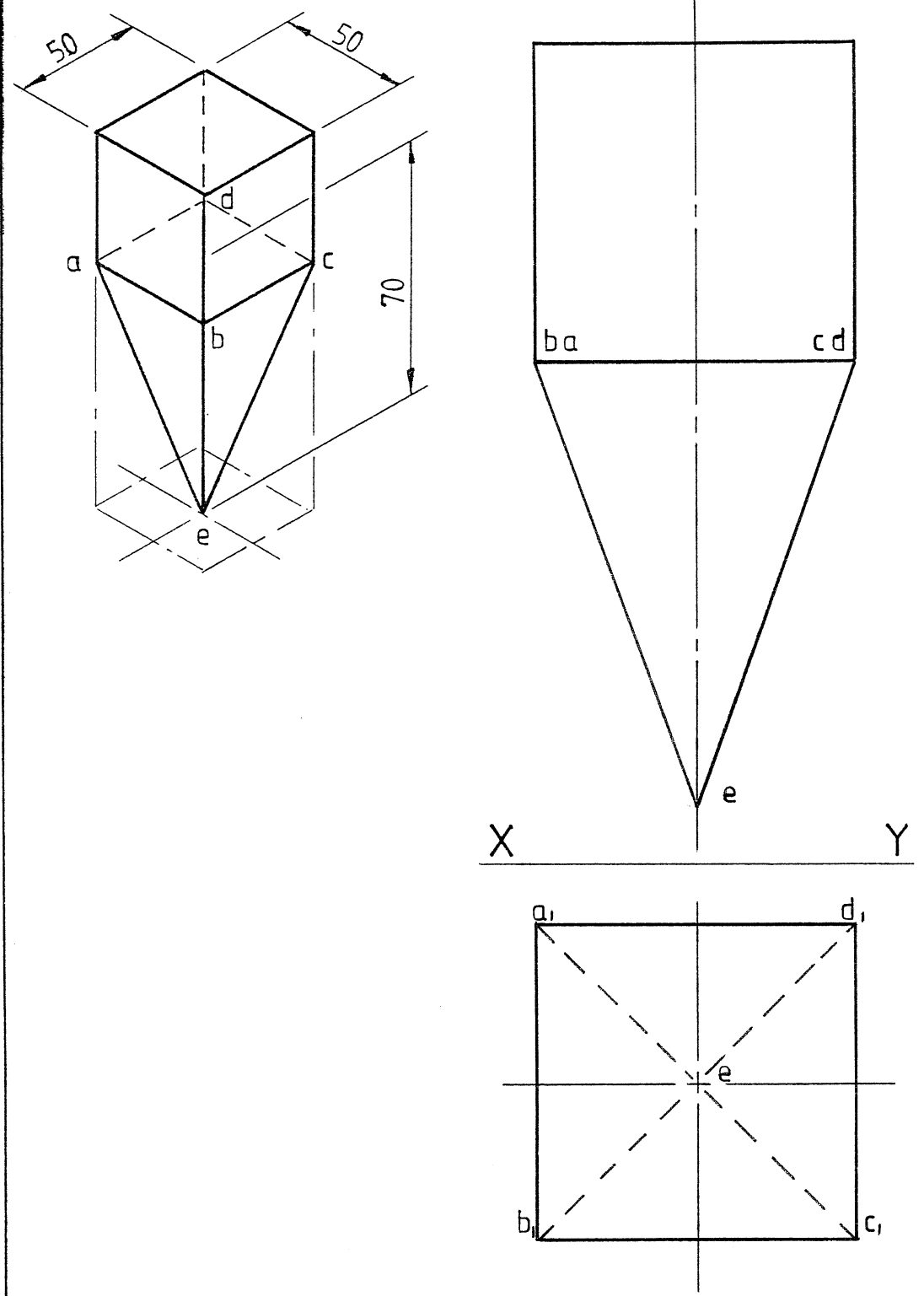


FIG. 4

Vraag 4

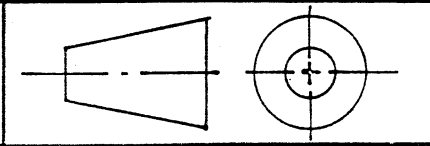
Figuur 4 toon die isometriese aansig van 'n heiningpaal asook die vooraansig en bo-aansig van die paal. Sýe AE, BE, CE en DE is ewe lank. Bepaal:

|                                      |           |  |
|--------------------------------------|-----------|--|
| 4.1 Die kantaansig van oppervlak BCE | 6         |  |
| 4.2 Die ware vorm van oppervlak BCE  | 6         |  |
| 4.3 Die ware lengte van BE           | 2         |  |
| Lynwerk en netheid                   | 1         |  |
| <b>Totaal</b>                        | <b>15</b> |  |

Question 4

Figure 4 shows an isometric view as well as the front and top views of a fence post. AE, BE, CE and DE are equal in length. Determine:

|                                   |           |  |
|-----------------------------------|-----------|--|
| 4.1 The edge view of surface BCE  | 6         |  |
| 4.2 The true shape of surface BCE | 6         |  |
| 4.3 The true length of BE         | 2         |  |
| Linework and neatness             | 1         |  |
| <b>Total</b>                      | <b>15</b> |  |



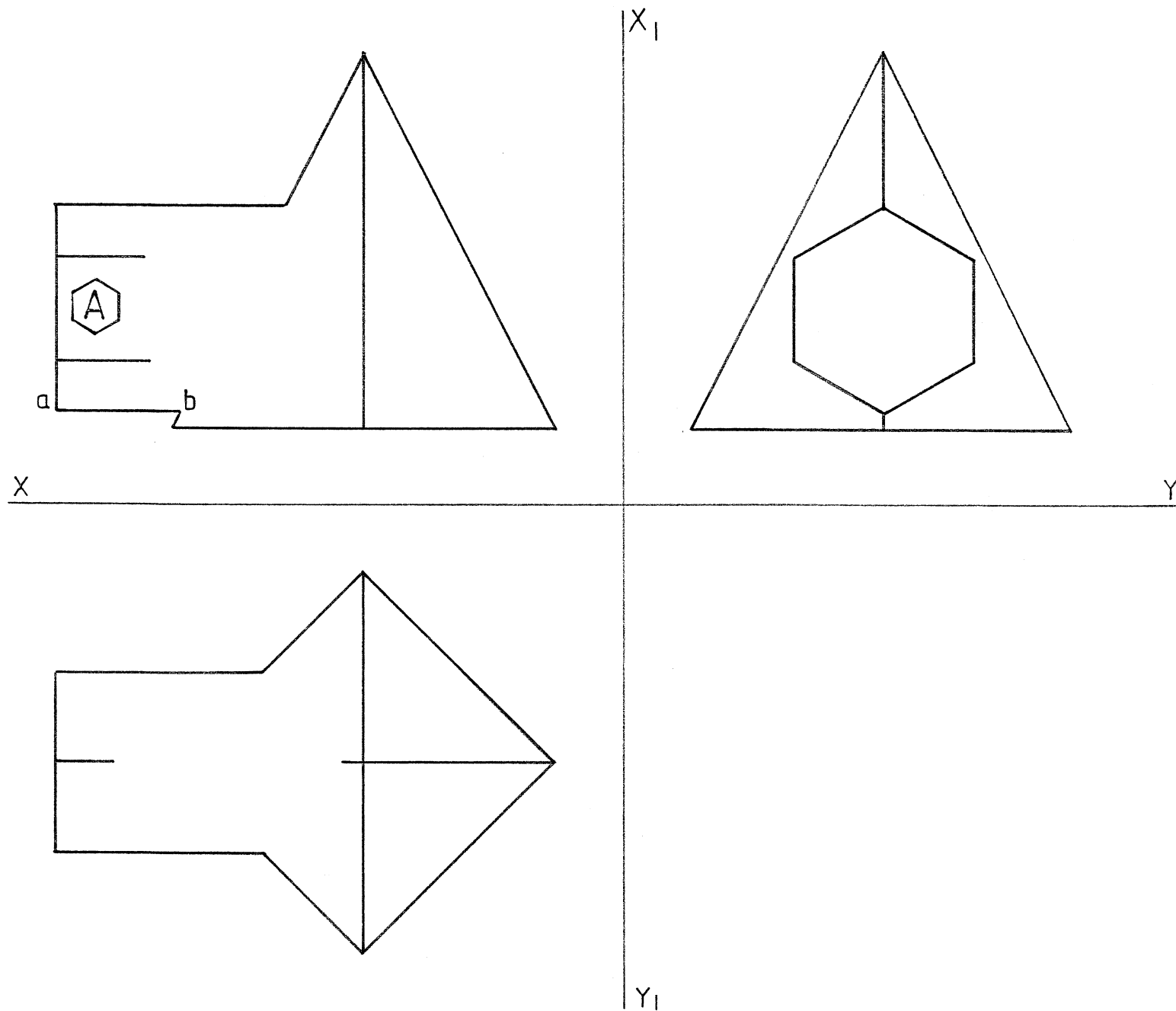
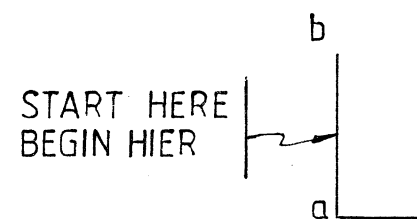


FIG. 5



Vraag 5

Figuur 5 toon die onvoltooide vooraansig en boaansig asook die linkeraansig van 'n seskantige prisma wat 'n vierkantige piramide deurdring.

Projekteer:

- 5.1 Die deurdringingskromme in die vooraansig
- 5.2 Die deurdringingskromme in die boaansig. (Toon alle verborge detail)
- 5.2 Die oppervlaksontwikkeling van die prisma A

|                    |    |  |
|--------------------|----|--|
| Lynwerk en netheid | 2  |  |
| Totaal             | 26 |  |

Question 5

Figure 5 shows the incompleeted front view and top view as well as the left view of a hexagonal prism penetrating a square pyramid.

Project:

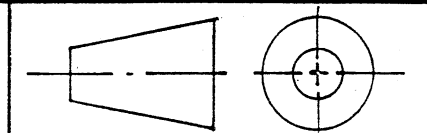
- 5.1 The curve of interpenetration in the front view
- 5.2 The curve of interpenetration in the top view. (Show all hidden detail.)
- 5.3 The surface development of the prism A

|                       |    |  |
|-----------------------|----|--|
| Linework and neatness | 2  |  |
| Total                 | 26 |  |

EKSAMENNUMMER  
 EXAMINATION NO. \_\_\_\_\_

ANTWOORDVEL  
 ANSWER SHEET 5

VRAAG  
 QUESTION 5



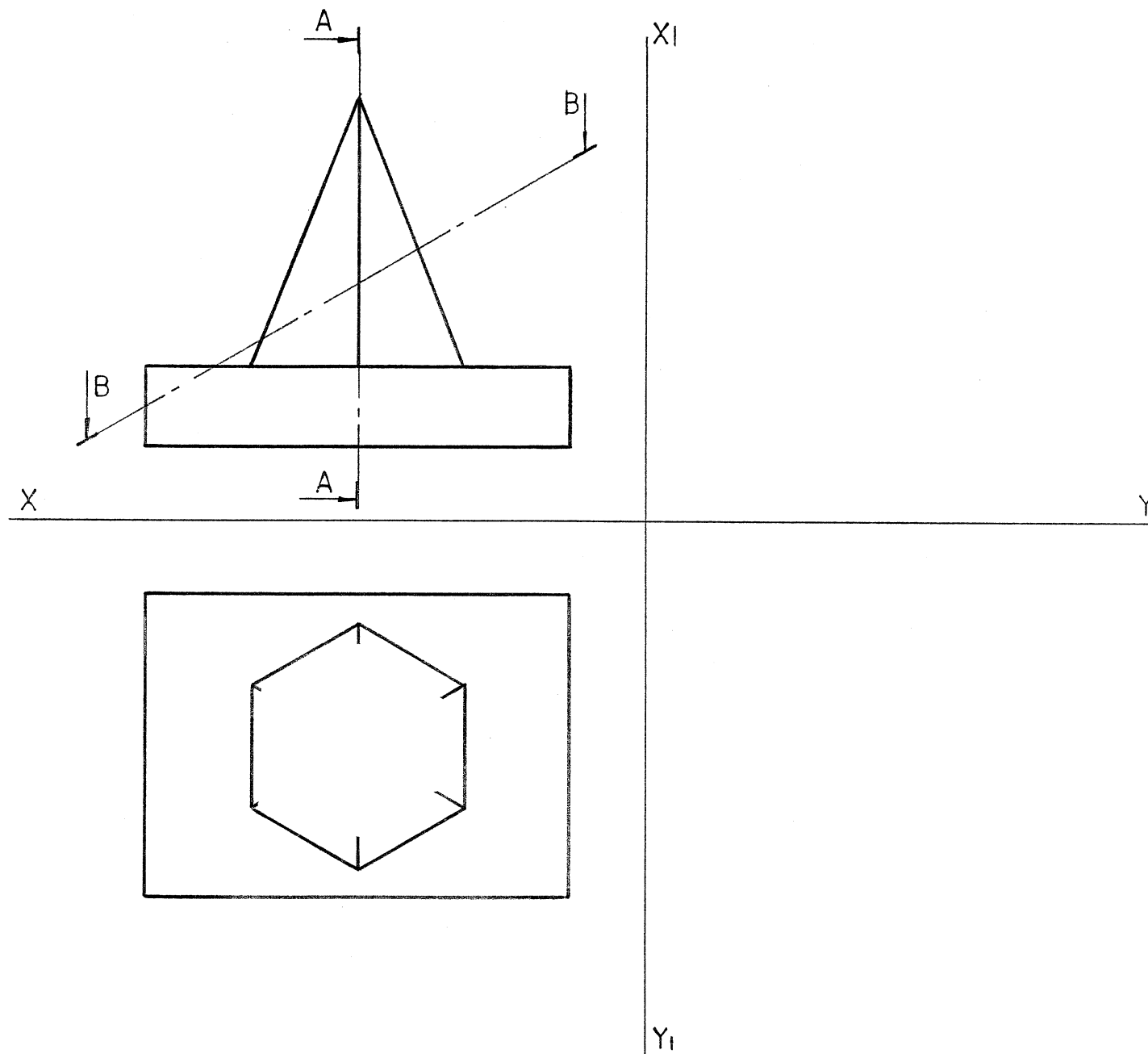


FIG. 6

Vraag 6

Figuur 6 toon die vooraansig en onvoltooide boansig van 'n papiergewig.

Projekteer:

6.1 Die deursnee linkeraansig op snyvlak A-A

12

6.2 Die deursnee boansig op snyvlak B-B

16

Lynwerk en netheid

2

Totaal

**30**

Question 6

Figure 6 shows the front view and incompletd top view of a paperweight

Project:

6.1 The sectional left view on cutting plane A-A

12

6.2 The sectional top view on cutting plan B-B

16

Linework and neatness

2

Total

**30**

EKSAMENNOMMER

EXAMINATION NO. \_\_\_\_\_

ANTWOORDVEL

ANSWER SHEET

6

VRAAG

QUESTION

6

