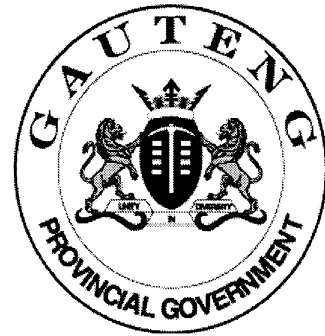


**SENIOR CERTIFICATE
EXAMINATION
*SENIORSERTIFIKAAT-EKSAMEN***



**OCTOBER / NOVEMBER
*OKTOBER / NOVEMBER***

2005

**TECHNICAL DRAWING
*TEGNIесе TEKENE***

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

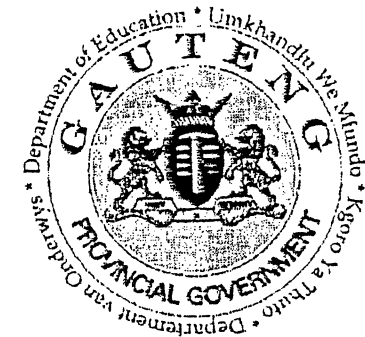
SG

711-2/1

**9 pages
9 bladsye**

TECHNICAL DRAWING/TEGNIесе TEKENE SG
Paper 1/Vraestel 1





GAUTENG DEPARTMENT OF
 EDUCATION
 SENIOR CERTIFICATE EXAMINATION

GAUTENGSE DEPARTEMENT VAN
 ONDERWYS
 SENIORSERTIFIKAAT-EKSAMEN

TECHNICAL DRAWING SG
 (First Paper: Descriptive Geometry and Locus)

TEGNIIESE TEKENE SG
 (Eerste Vraestel: Beskrywende Meetkunde en
 Lokus)

TIME: 3 hours
 MARKS: 150

TYD: 3 uur
 PUNTE: 150

INSTRUCTIONS:

- 1) Answer **ALL** questions on ANSWER SHEETS 711-2/1(K).
- 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.
- 9) All questions are compulsory.

INSTRUKSIES:

- 1) Beantwoord **ALLE** vrae op die ANTWOORDVELLE 711-2/1(K).
- 2) Drukskryf jou EKSAMENNOMMER in die titelblok onderaan elke antwoordvel.
- 3) Gebruik 'n skaal van 1:1 vir alle antwoorde.
- 4) Toon alle konstruksie- en projeksielyne.
- 5) Tabuleer jou antwoorde waar nodig.
- 6) Kram alle antwoordvelle vas in numeriese volgorde.
- 7) Netheid en 'n duidelike aanbieding sal in jou guns tel.
- 8) Die gebruik van gekleurde lood en penne is verbode.
- 9) Alie vrae is verpligtend.

EXAMINATION NO.
 EKSAMENNOMMER

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| Vraag / Question | Totaal/Total | | |
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| 1 | 21 | | |
| 2 | 13 | | |
| 3 | 20 | | |
| 4 | 19 | | |
| 5 | 22 | | |
| 6 | 14 | | |
| 7 | 11 | | |
| 8 | 30 | | |
| Totaal / Total | 150 | | |

QUESTION 1

Figure 1.1 shows the front view and top view of line segments **AB** and **CD**. Line segment **CD** is parallel to the vertical plane. Determine:

- 1.1.1 The shortest distance between the line segments. 6
- 1.1.2 The traces of line segment **CD**. 5

Figure 1.2 shows a point **B** which is part of line segment **AB**. The line segment forms an angle of 45° with the horizontal plane and the true angle with the vertical plane is 30° . The true length of line segment **AB** is 80 mm. Determine the front view and top view of line segment **AB**. 10

Total **21**

VRAAG 1

Figuur 1.1 toon die vooraansig en booaansig van lynstukke **AB** en **CD**. Lynstuk **CD** is parallel met die vertikale vlak. Bepaal:

- 1.1.1 Die kortste afstand tussen die lynstukke. 6
- 1.1.2 Die snyspore van lynstuk **CD**. 5

Figuur 1.2 toon 'n punt **B** wat deel is van lynstuk **AB**. Die lynstuk vorm 'n hoek van 45° met die horisontale vlak en die ware hoek met die vertikale vlak is 30° . Die ware lengte van lynstuk **AB** is 80 mm. Bepaal die vooraansig en booaansig van lynstuk **AB**. 10

Totaal **21**

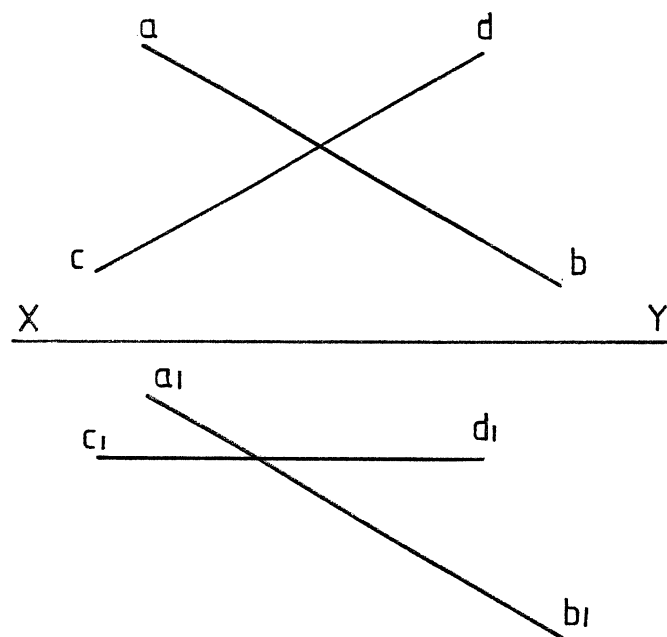


FIG.1.1

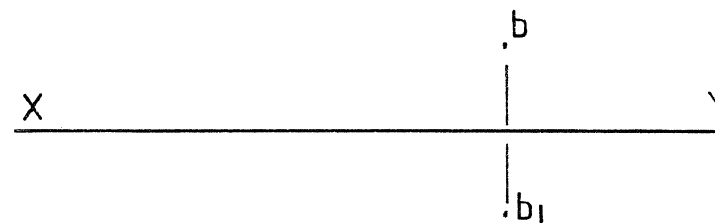


FIG.1.2

EXAMINATION NO.
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QUESTION 1
VRAAG 1

ANSWER SHEET 1
ANTWOORDVEL 1



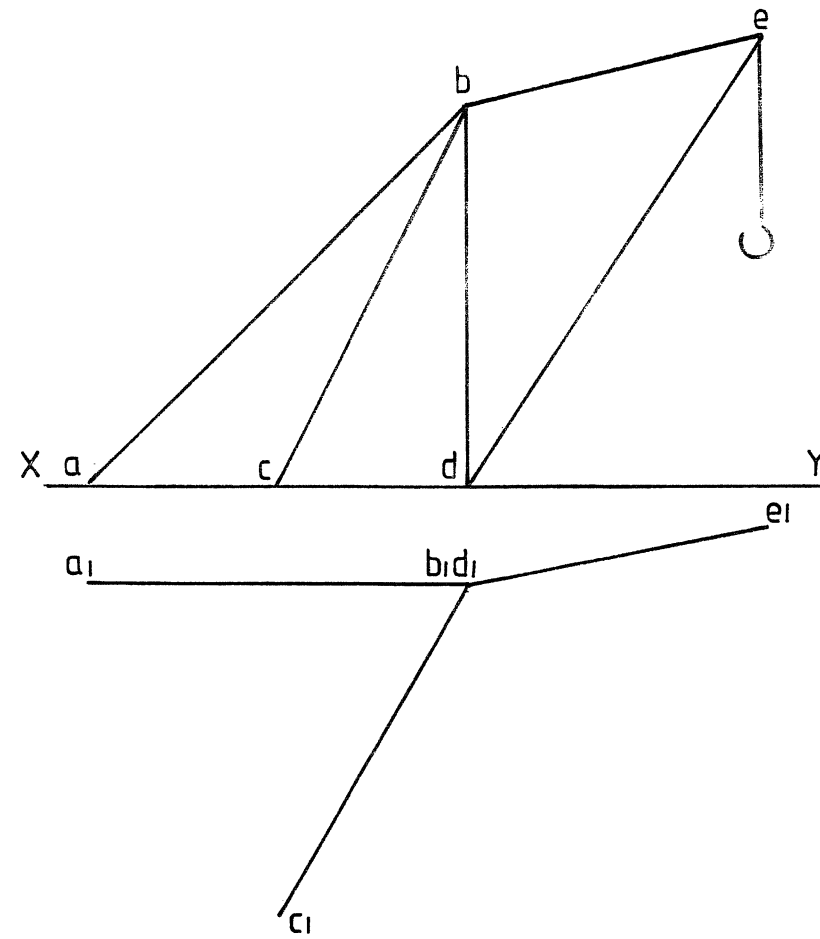


FIG. 2

QUESTION 2

Figure 2 shows the front view and top view of a crane frame. Guy wire AB is parallel to the vertical plane. Determine:

- 2.1 The true angle between guy wires AB and BC. 11
- 2.2 The true lengths of guy wires AB and BC. 2

Total 13

VRAAG 2

Figuur 2 toon die vooraansig en booaansig van 'n hyserraam. Ankerdraad AB is parallel met die vertikale vlak. Bepaal:

- 2.1 Die ware hoek tussen ankerdrade AB en BC. 11
- 2.2 Die ware lengte van ankerdrade AB en BC. 2

Totaal 13

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QUESTION 2
VRAAG 2

ANSWER SHEET 2
ANTWOORDVEL 2



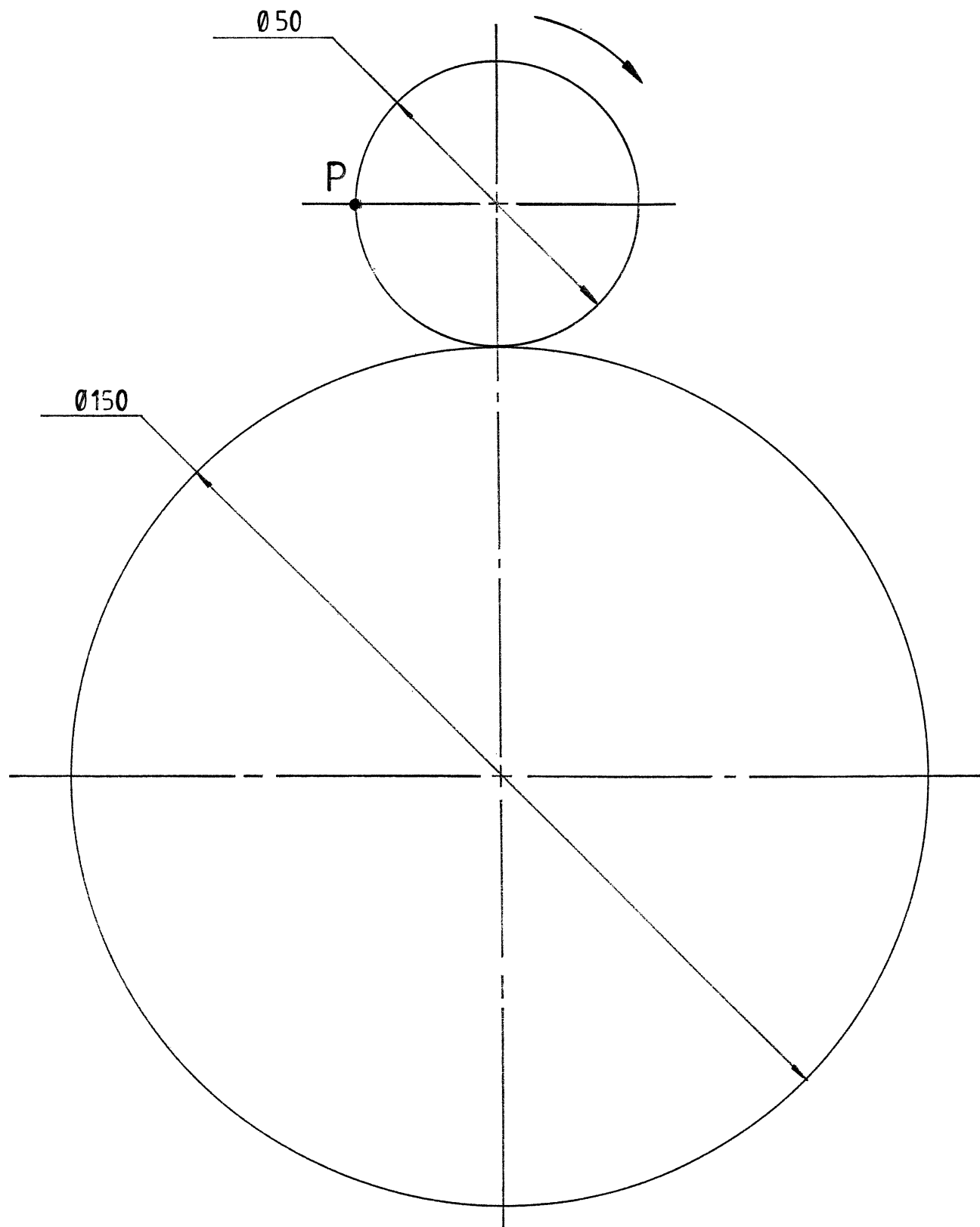


FIG. 3

QUESTION 3

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

- 3.1 Construct the locus of point P if the disc rolls for one revolution in the direction indicated by the arrow. (Show all calculations).
- 3.2 After how many revolutions will the disc return to its original position ?

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| Total | 18 | 2 |
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VRAAG 3

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

- 3.1 Konstrueer die lokus van punt P indien die skyf vir een omwenteling rol in die rigting aangedui met die pyltjie. (Toon alle berekenings)
- 3.2 Na hoeveel omwentelings sal die skyf na die oorspronklike posisie terugkeer?

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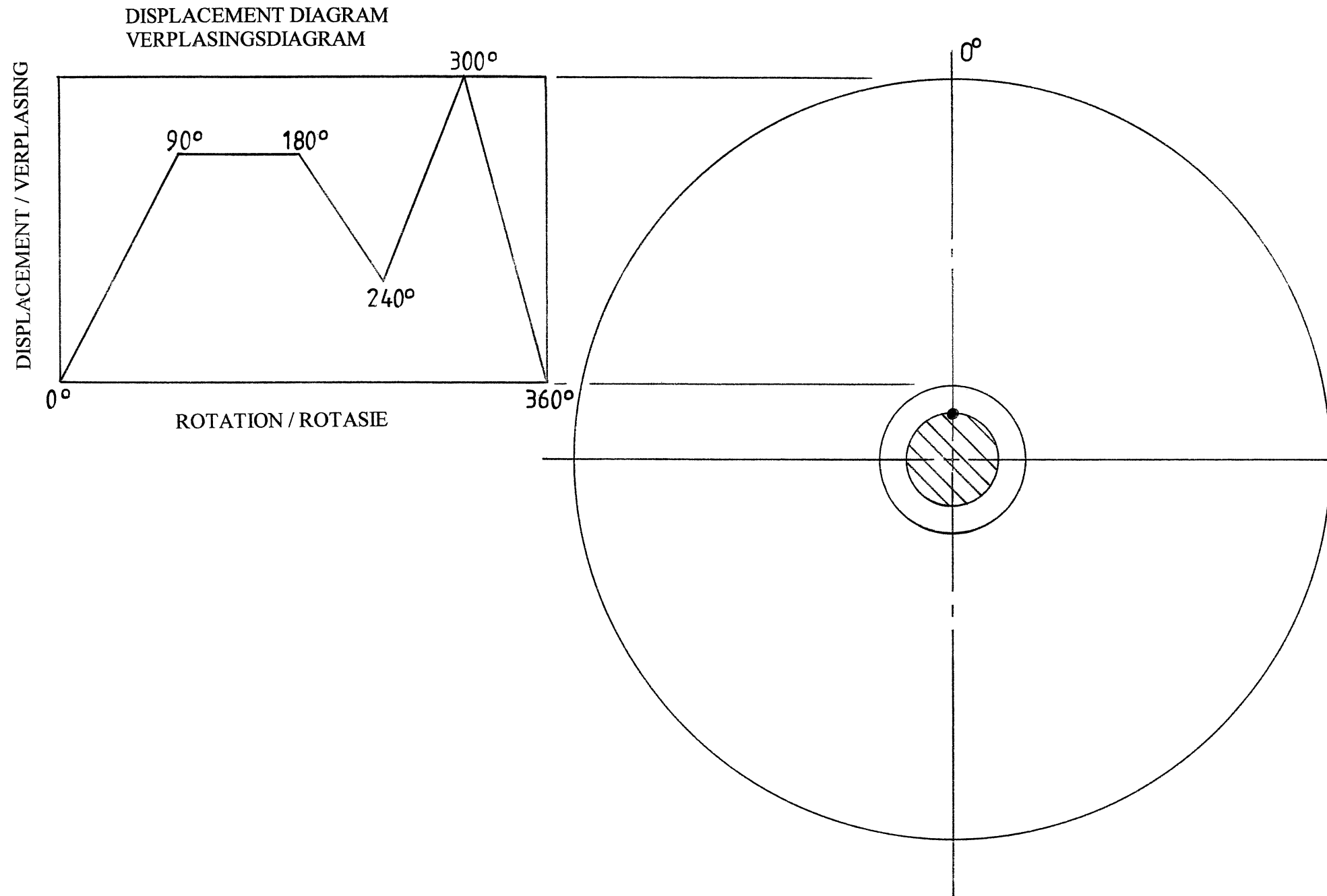
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QUESTION 3
VRAAG 3

ANSWER SHEET 3
ANTWOORDVEL 3





QUESTION 4

Figure 4 shows the displacement diagram as well as the minimum cam radius of a wedge shaped cam follower. Make use of the given information and construct the cam profile if the cam rotates clockwise.

19

Total

19

VRAAG 4

Figuur 4 toon die verplasingsdiagram asook die minimumnokradius van 'n wigvormige nokvolger. Maak gebruik van die gegewe inligting en konstrueer die nokprofiel indien die nok kloksgewys draai.

19

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QUESTION 4
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ANSWER SHEET 4
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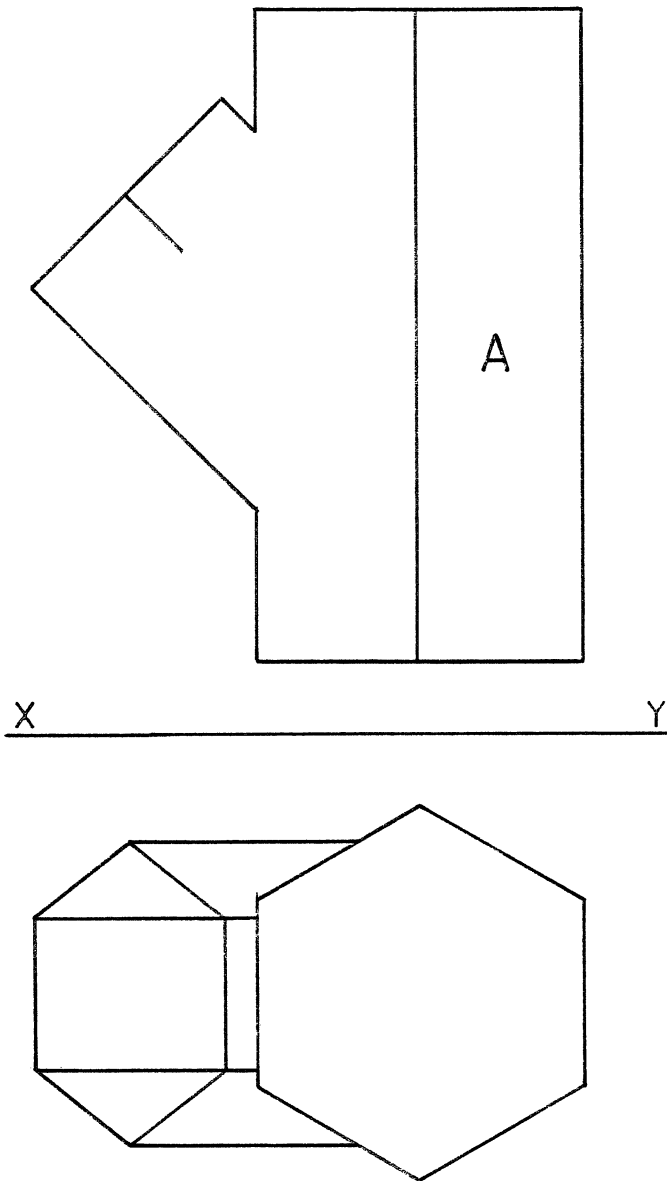


FIG. 5

QUESTION 5

Figure 5 shows the incompleted front view as well as a top view of a hexagonal branch pipe penetrating a hexagonal main pipe (A).

Project:

- 5.1 The curve of interpenetration in the front view. 8
- 5.2 The surface development of the main pipe (A). 14

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| Total | 22 | |
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VRAAG 5

Figuur 5 toon die onvoltooide vooraansig asook die boansig van 'n seskantige takpyp wat 'n seskantige hoofpyp (A) deurdring.

Projekteer:

- 5.1 Die deurdringingskromme in die vooraansig. 8
- 5.2 Die oppervlaksontwikkeling van die hoofpyp (A). 14

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QUESTION 5
VRAAG 5

ANSWER SHEET 5
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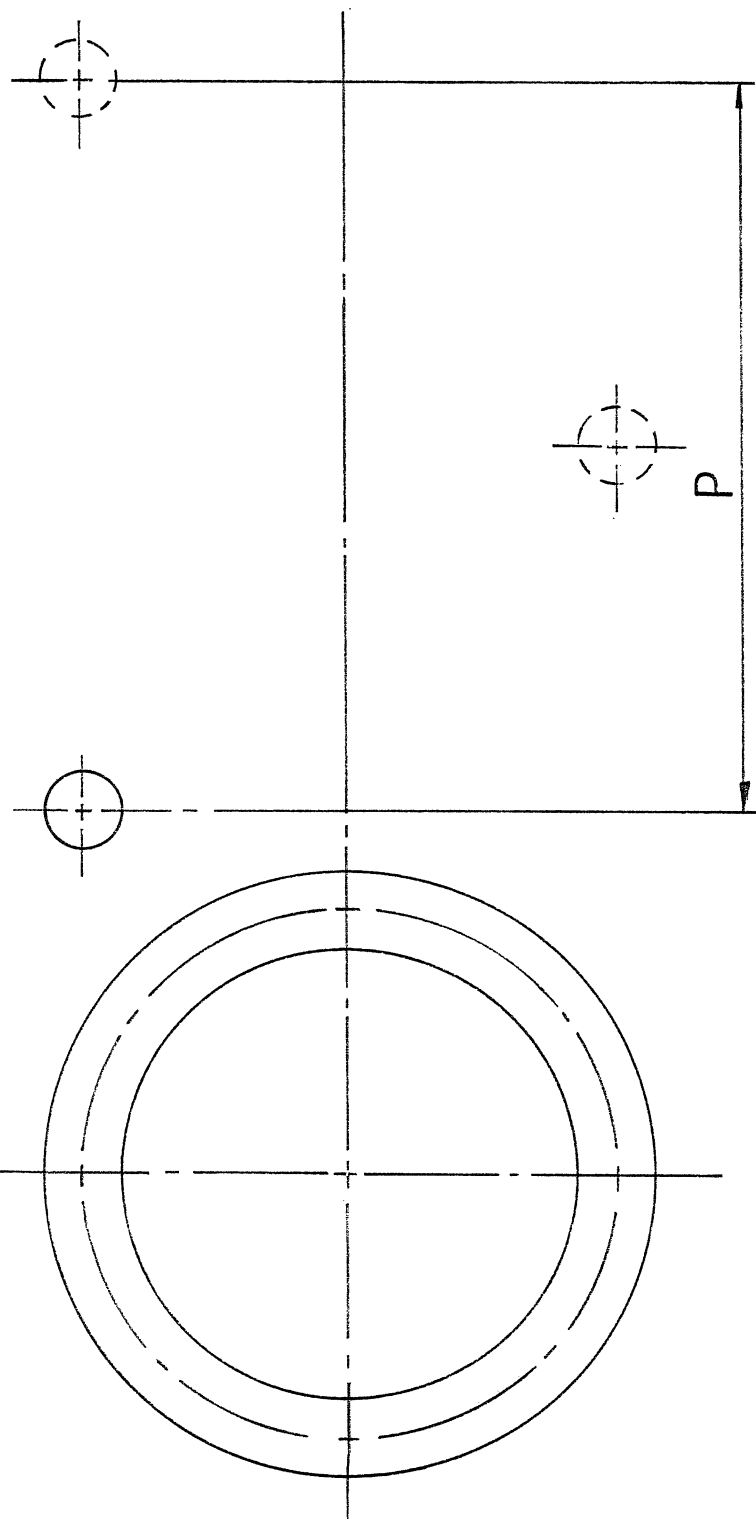


FIG.6

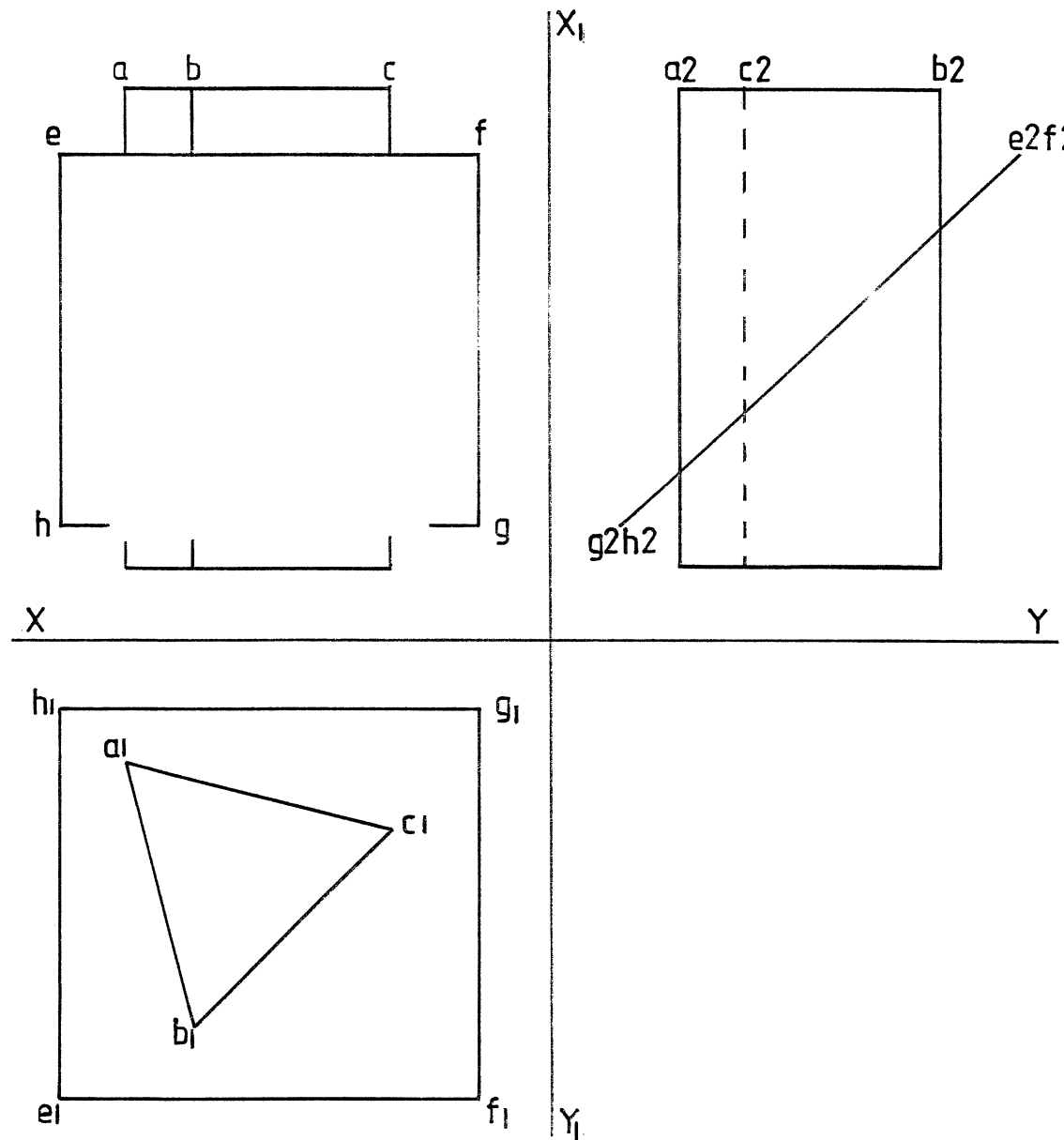


FIG.7

QUESTION 6

Make use of the constructions shown in **Figure 6** to draw a left-hand round helical spring.

14

Total

14

VRAAG 6

Deur gebruik te maak van die konstruksies getoon in **Figuur 6**, teken 'n linkerhandse ronde heliese veer.

14

Totaal

14

QUESTION 7

Figure 7 shows the incompleated front view as well as the top view and left view of a triangular prism penetrating a square plate. Make use of the given information and project the completed front view. Show all hidden detail.

11

Total

11

VRAAG 7

Figuur 7 toon die onvoltooide vooraansig asook die boaansig en linkeraansig van 'n driehoekige prisma wat 'n vierkantige plaat deurdring. Maak gebruik van die gegewe inligting en projekteer die voltooide vooraansig. Toon alle verborge detail.

11

Totaal

11

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QUESTION 6 and 7
VRAAG 6 en 7

ANSWER SHEET 6
ANTWOORDVEL 6



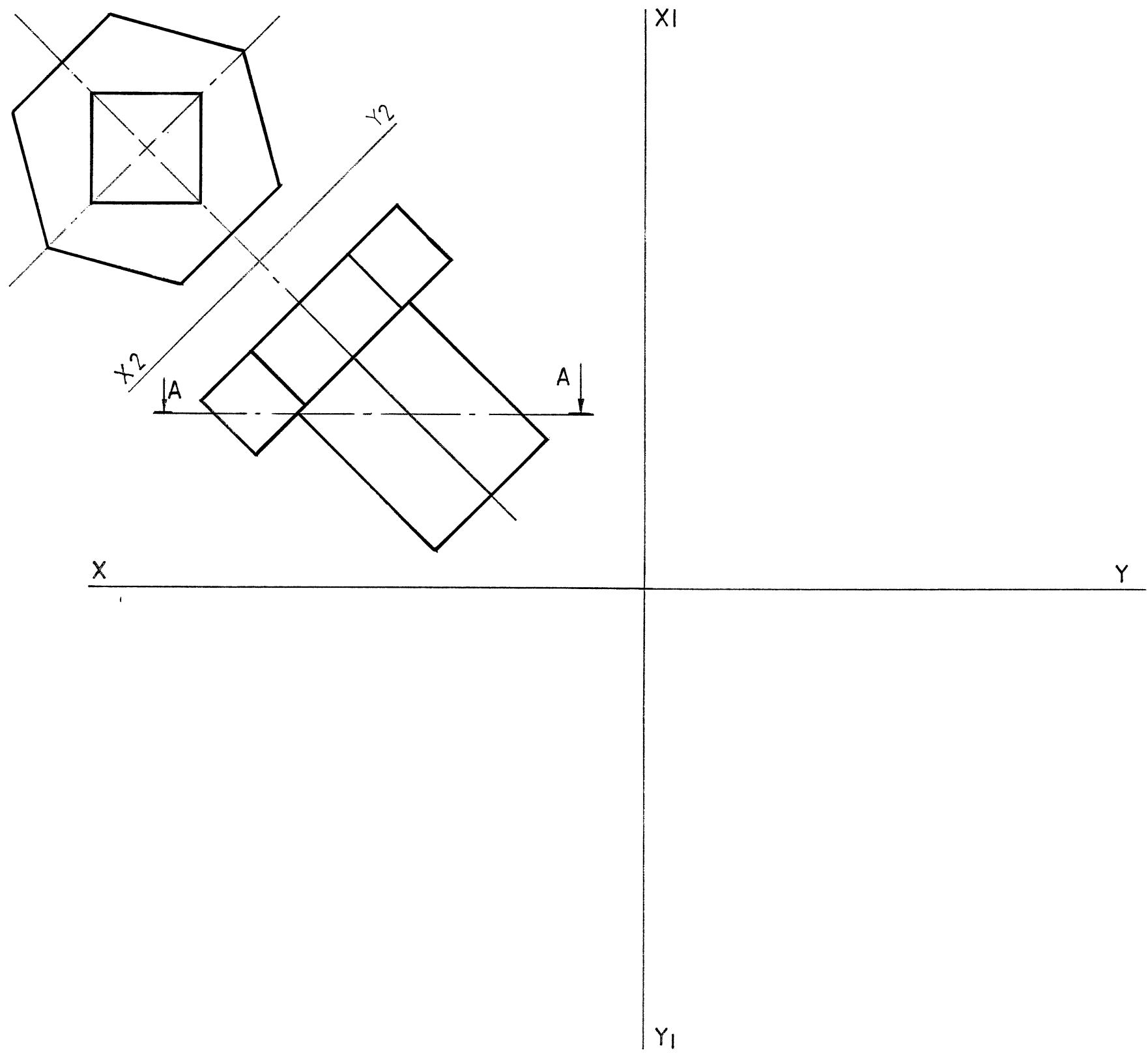


FIG.8

QUESTION 8

Figure 8 shows the front view and auxiliary view of a paper weight.

Project:

8.1 The sectional top view on cutting plane A-A.

8.2 The left view . (Show all hidden detail).

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| Total | 30 | |
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VRAAG 8

Figuur 8 toon die vooraansig en hulpaansig van 'n papiergewig.

Projekteer:

8.1 Die deursnee boansig op snyvlak A-A.

8.2 Die linkeraansig. (Toon alle verborge detail).

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QUESTION 8
VRAAG 8

ANSWER SHEET 7
ANTWOORDVEL 7

