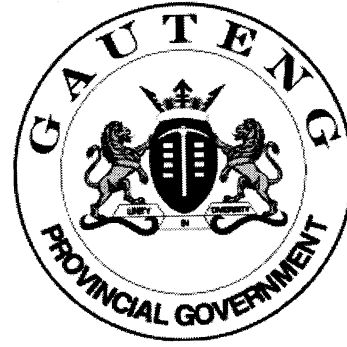


GAUTENG DEPARTMENT OF EDUCATION  
*GAUTENGSE DEPARTEMENT VAN ONDERWYS*



SENIOR CERTIFICATE EXAMINATION  
*SENIORSERTIFIKAAT-EKSAMEN*

OCTOBER / NOVEMBER  
*OKTOBER / NOVEMBER*

2006

TECHNICAL DRAWING  
*TEGNIESE TEKENE*

SG

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

711-2/1

Cover + 7 pages  
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GAUTENG DEPARTMENT OF  
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 SENIOR CERTIFICATE EXAMINATION

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

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

TIME: 3 hours  
 MARKS: 150

TYD: 3 uur  
 PUNTE: 150



**INSTRUCTIONS:**

**INSTRUKSIES:**

- 1) Answer **ALL** questions on ANSWER SHEETS 711-2/1(U).
- 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.

- 1) Beantwoord **ALLE** vrae op die ANTWOORDVELLE 711-2/1(U).
- 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) Alle vrae is verpligtend.

EXAMINATION NO.  
 EKSAMENNOMMER

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Vraag / Question	Totaal/Total		
1	25		
2	23		
3	31		
4	23		
5	22		
6	26		
Totaal / Total	150		

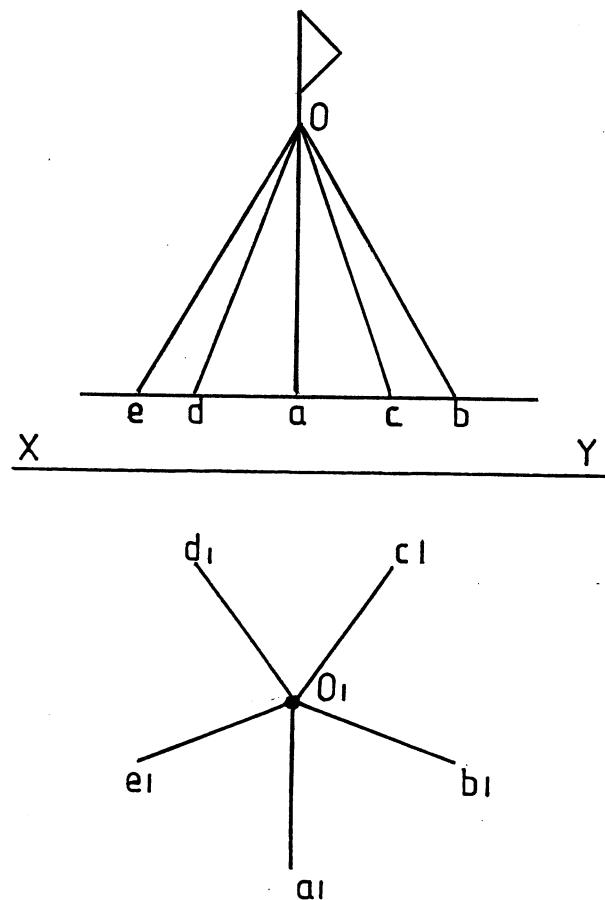


FIG.11

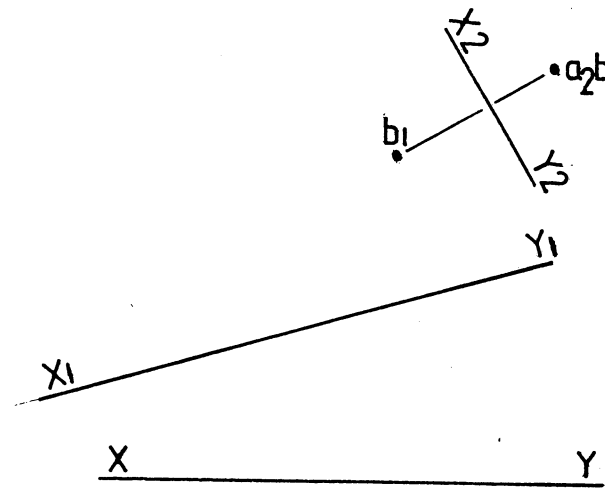


FIG.12

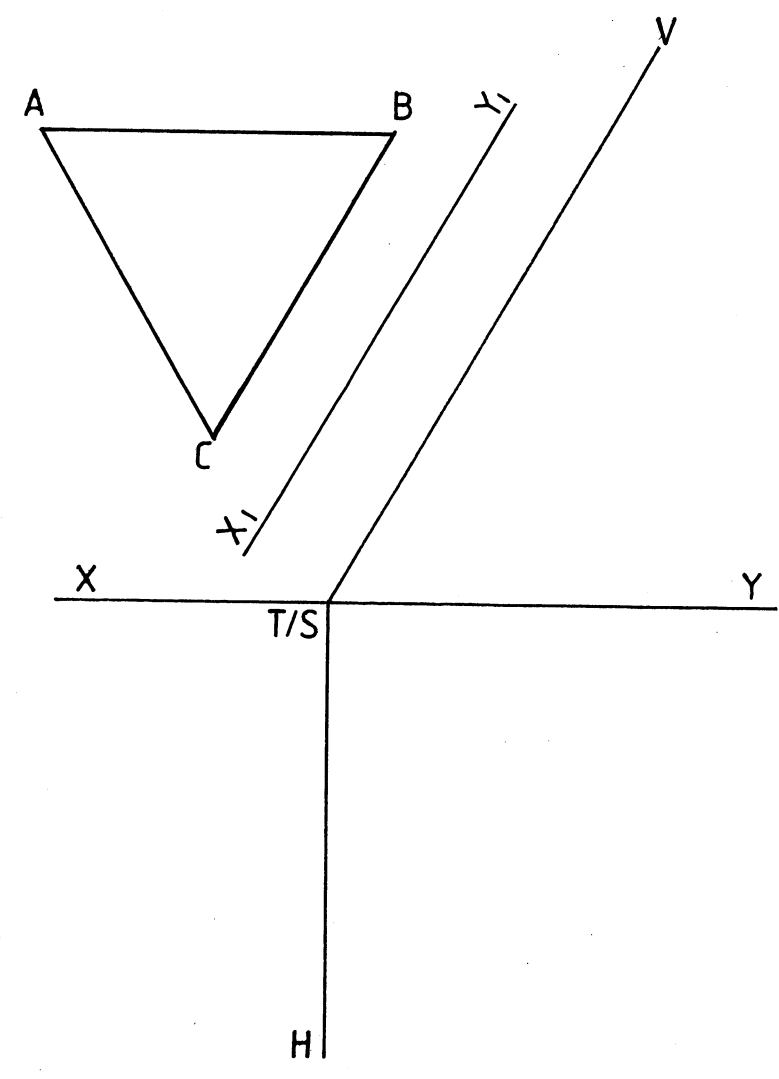


FIG.13

**QUESTION 1**

Figure 1.1 shows the front and top view of a flag pole as well as its supporting wires. Make use of the given information and determine the following:

1.1 The true length of support wires AO and DO.

10

Figure 1.2 shows a point view and a point B of the line segment AB. The groundlines X-Y and X2-Y2 are also shown. Determine:

1.2.1 The front view of line segment AB

5

1.2.2 The top view of line segment AB if the true length of the line segment AB is 40mm .

3

Figure 1.3 shows the traces VTH and true shape of plane figure ABC. The plane figure lies on the inclined plane. Determine:

1.3.1 The front view of the plane figure

4

1.3.2 The top view of the plane figure

3

Total

25

**VRAAG 1**

Figuur 1.1 toon die voor- en boaansig van 'n vlagpaal, asook die ankerdrade. Maak gebruik van die gegewe inligting en bepaal:

1.1 Die ware lengtes van ankerdrade AO en DO.

10

Figuur 1.2 toon 'n puntaansig asook punt B van lynstuk AB. Die grondlyne X-Y en X2-Y2 word ook getoon. Bepaal:

1.2.1 Die vooraansig van die lynstuk AB

5

1.2.2 Die boaansig van die lynstuk AB, indien die ware lengte van die lynstuk AB 40 mm is.

3

Figuur 1.3 toon die snyspore VSH en die ware vorm van vlakfiguur ABC. Die vlakfiguur lê op die hellende vlak. Bepaal:

1.3.1 Die vooraansig van die vlakfiguur

4

1.3.2 Die boaansig van die vlakfiguur

3

Totaal

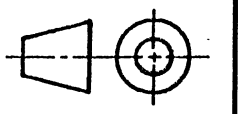
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EXAMINATION NO.  
EKSAMENNOMMER

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QUESTION 1  
VRAAG 1

ANSWER SHEET 1  
ANTWOORDVEL 1



**QUESTION 2**

**Figure 2.1** shows two penetrating plane figures. Determine:

- 2.1.1 The true shape of plane figure **EFG** 5
- 2.1.2 The completed top view clearly showing the trace. (Show all hidden details) 11

2.2 **Figure 2.2** shows a block . A piece of string is tied at point **A**. Determine the locus of the end of the string if it winds around the block in the direction as indicated by point **P**. Name the locus formed.

Total **23**

**VRAAG 2**

**Figuur 2.1** toon twee vlakfigure wat mekaar deurdring. Bepaal:

- 2.1.1 Die ware vorm van vlakfiguur **EFG** 5
- 2.1.2 Die voltooide boansig wat die snyspoor toon. ( Toon alle verborge detail) 11

2.2 **Figuur 2.2** toon 'n blokkie. 'n Stukkie tou is by punt **A** vasgemaak. Bepaal die lokus van die eindpunt van die tou, indien dit om die blokkie vasgedraai word in die rigting aangedui met pyltjie **P**. Benoem die lokus wat gevorm word.

Totaal **23**

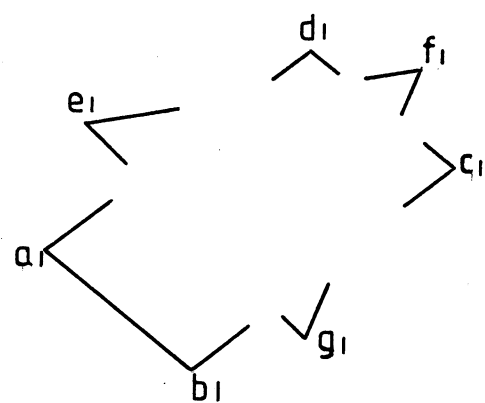
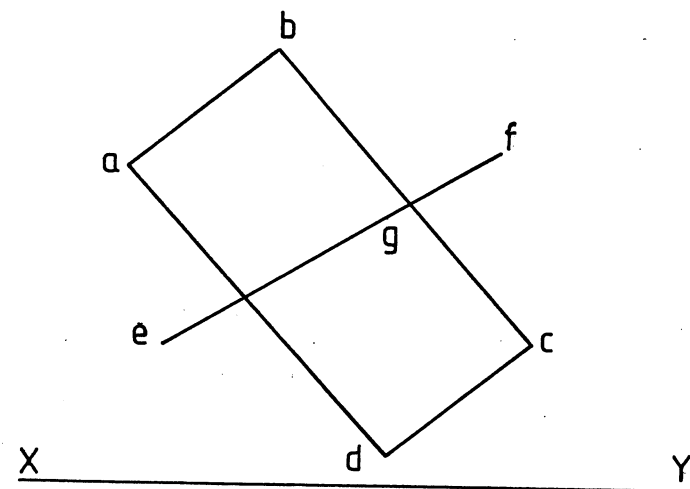


FIG. 2.1

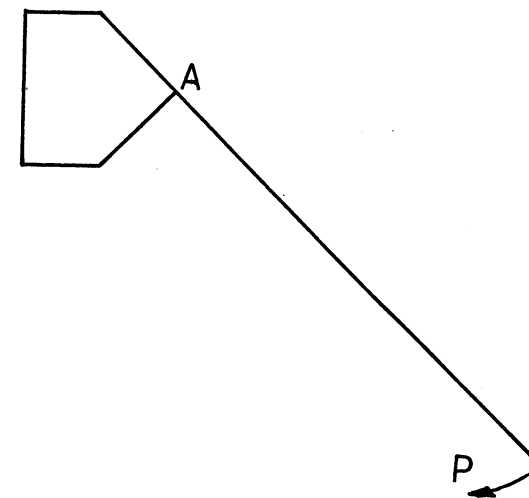


FIG. 2.2

EXAMINATION NO.  
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QUESTION 2  
VRAAG 2

ANSWER SHEET 2  
ANTWOORDVEL 2



**QUESTION 3**

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

- 3.1 The locus of point **P** if the disc rolls for one revolution from point **A** to point **C**. 20
- 3.2 The locus of point **P** if the disc rolls in the direction of **D** for half a revolution. (Show all calculations). 11

**Total** 31

**VRAAG 3**

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

- 3.1 Die lokus van punt **P** as die skyf vir een omwenteling rol vanaf punt **A** tot by punt **C**. 20
- 3.2 Die lokus van punt **P** as die skyf vir 'n halwe omwenteling in die rigting van **D** rol. (Toon alle berekenings). 11

**Totaal** 31

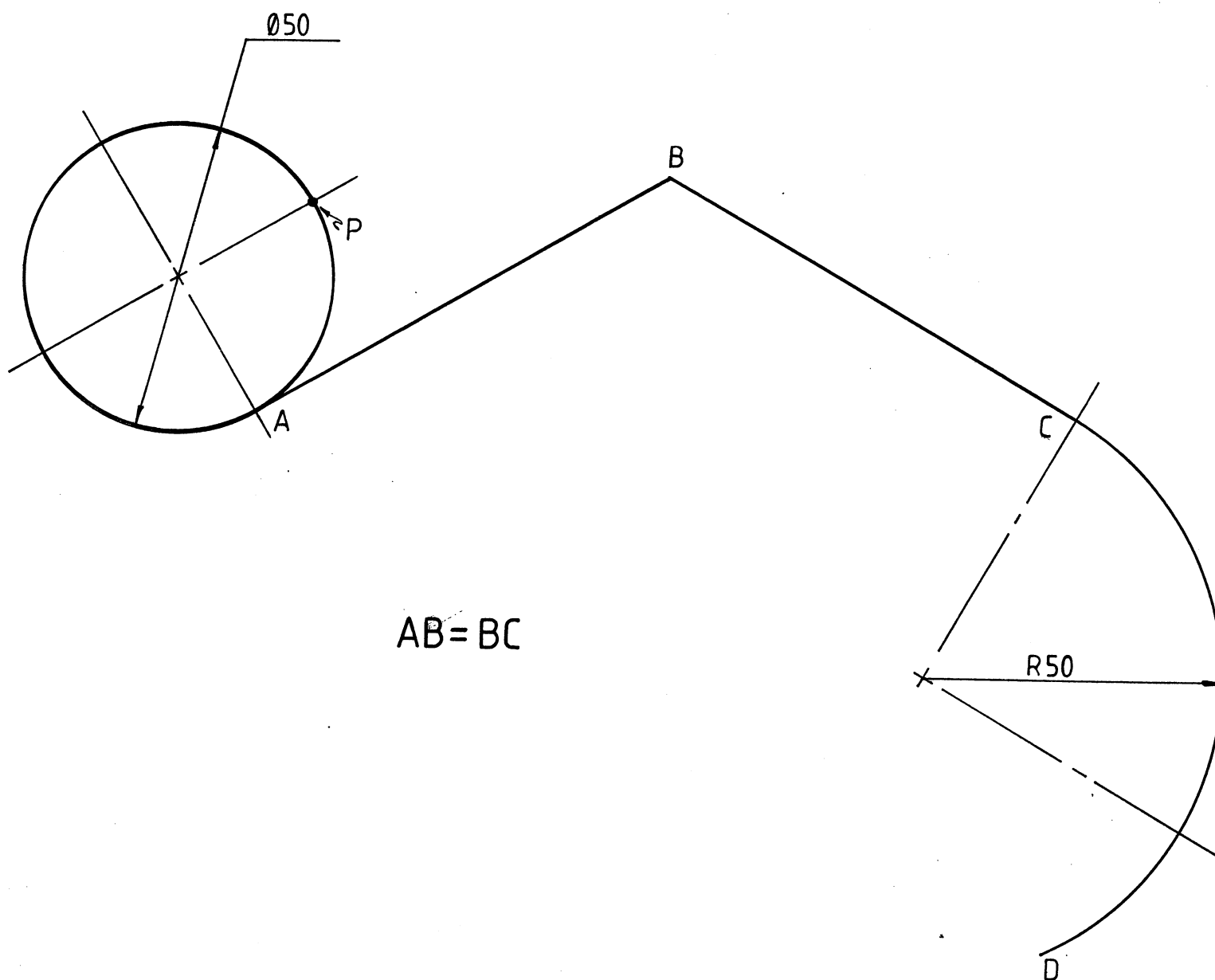


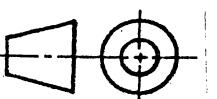
FIG.3

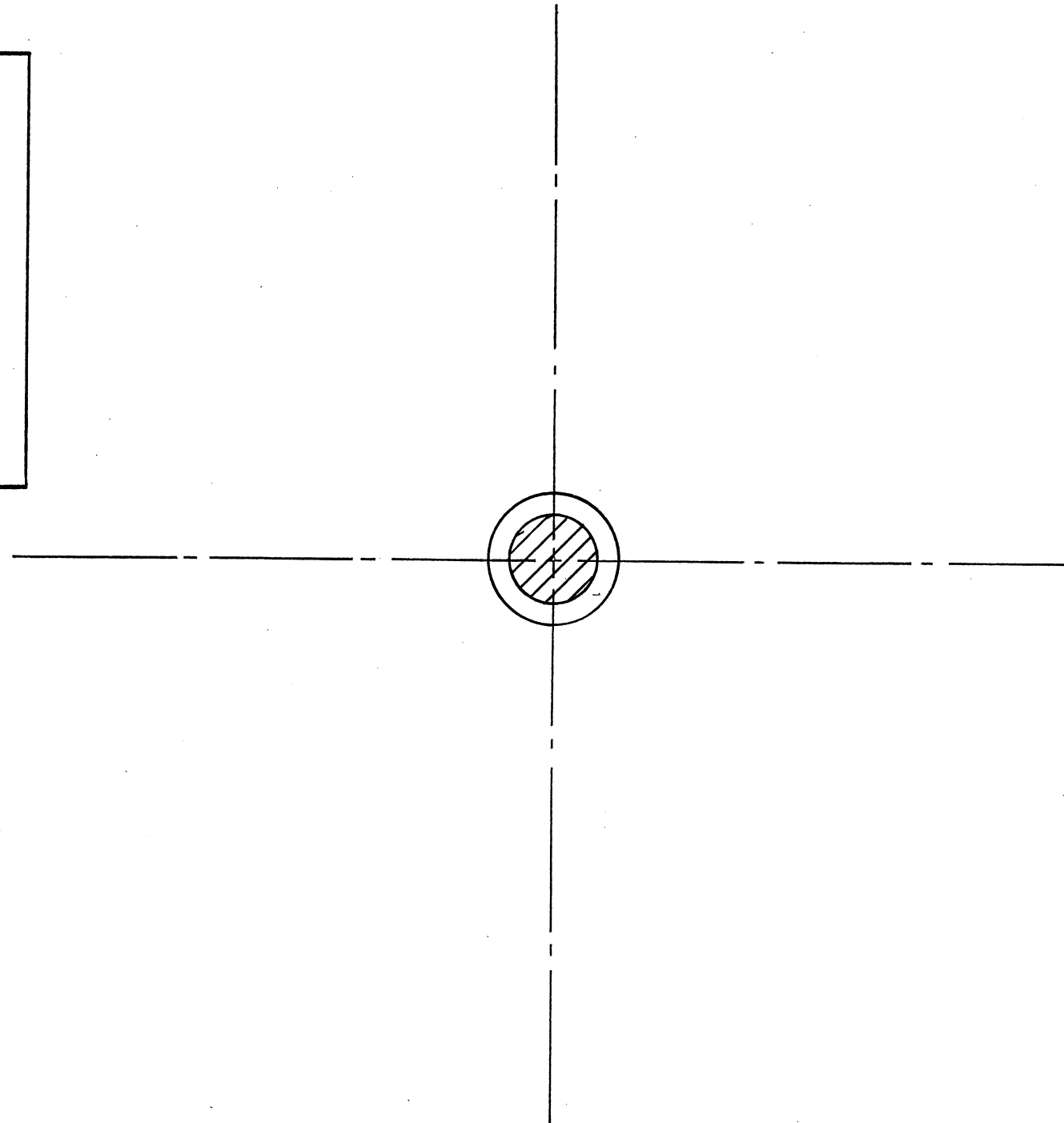
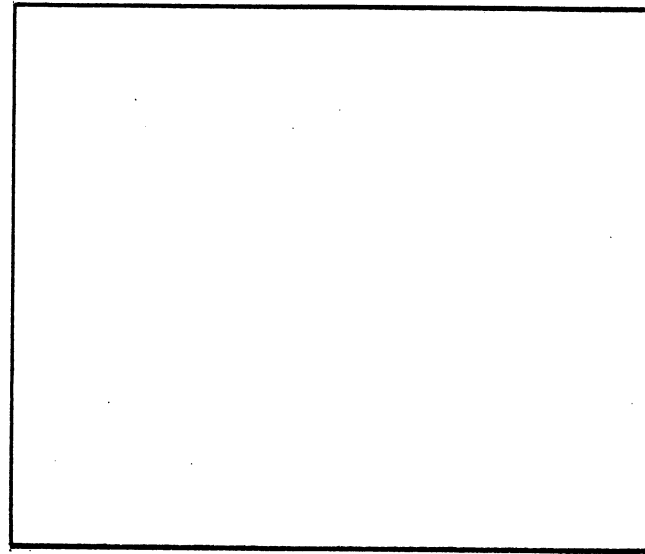
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QUESTION 3  
VRAAG 3

ANSWER SHEET 3  
ANTWOORDVEL 3





**QUESTION 4**

A disc cam imparts the following reciprocating motion at constant velocity to a knife-edged follower:

- 4.1 A rise of 72 mm during the first 75° of rotation
- 4.2 Dwell for the next 60°
- 4.3 A drop of 50 mm during the next 60° of cam rotation
- 4.4 A rise of 10 mm during the next 90° of cam rotation
- 4.5 A drop to minimum displacement during the remaining period of rotation

The cam rotates clockwise.

Make use of the information given in **Figure 4** and construct the cam profile. Indicate the direction of rotation by means of an arrow.

Total	<b>23</b>	
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**VRAAG 4**

'n Nokskyf dra die volgende wederkerige beweging teen 'n konstante snelheid oor aan 'n wigvormige nokvolger :

- 4.1 'n Styging van 72 mm gedurende die eerste 75° van nokrotasie,
- 4.2 Rus vir die volgende 60° van nokrotasie
- 4.3 'n Daling van 50 mm gedurende die volgende 60° van rotasie,
- 4.4 'n Styging van 10 mm gedurende die volgende 90° van rotasie
- 4.5 'n Daling na minimum verplasing gedurende die oorblywende periode van rotasie.

Die nok roteer kloksgewys.

Maak gebruik van die gegewe informasie in **Figuur 4** en konstrueer die nokprofiel. Dui die draairigting aan met behulp van 'n pyltjie.

Totaal	<b>23</b>	
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FIG. 4

EXAMINATION NO.  
EKSAMENNOMMER

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QUESTION 4  
VRAAG 4

ANSWER SHEET 4  
ANTWOORDVEL 4



**QUESTION 5**

**Figure 5** shows the incomplete front and top views as well as the auxiliary view of a square prism penetrating a hexagonal pyramid.

Project:

5.1 The curve of interpenetration in the front view.

5

5.2 The curve of interpenetration in the top view. (Show all hidden detail.)

17

**Total**

**22**

**VRAAG 5**

**Figuur 5** toon die onvoltooide vooraansig en booaansig asook die hulpaansig van 'n vierkantige prisma wat 'n seskantige piramide deurdring.

Projekteer:

5.1 Die deurdringingskromme in die vooraansig.

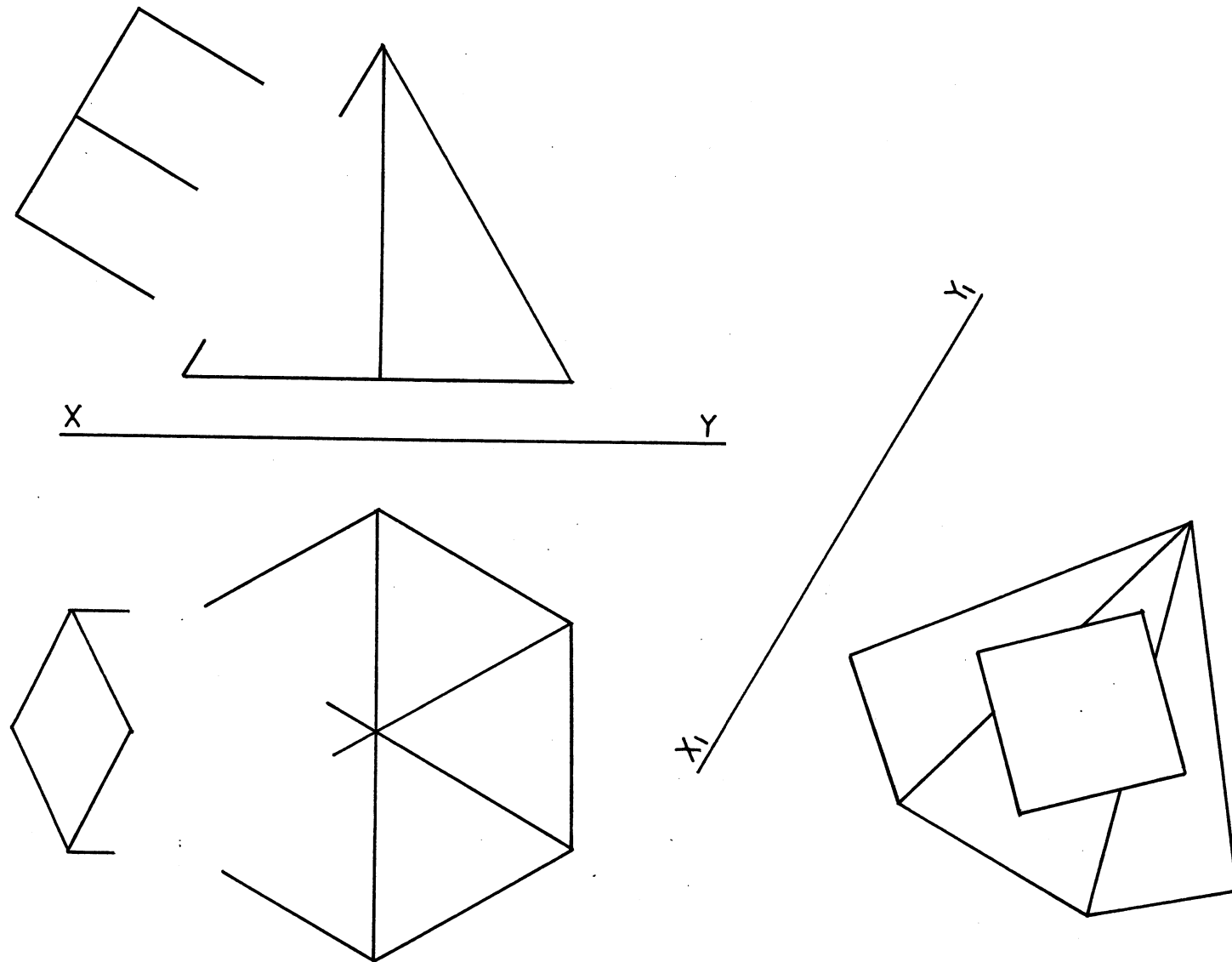
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5.2 Die deurdringingskromme in die booaansig. (Toon alle verborge detail).

17

**Totaal**

**22**



**FIG. 5**

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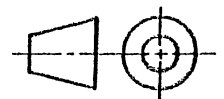
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QUESTION 5  
VRAAG 5

ANSWER SHEET 5  
ANTWOORDVEL 5



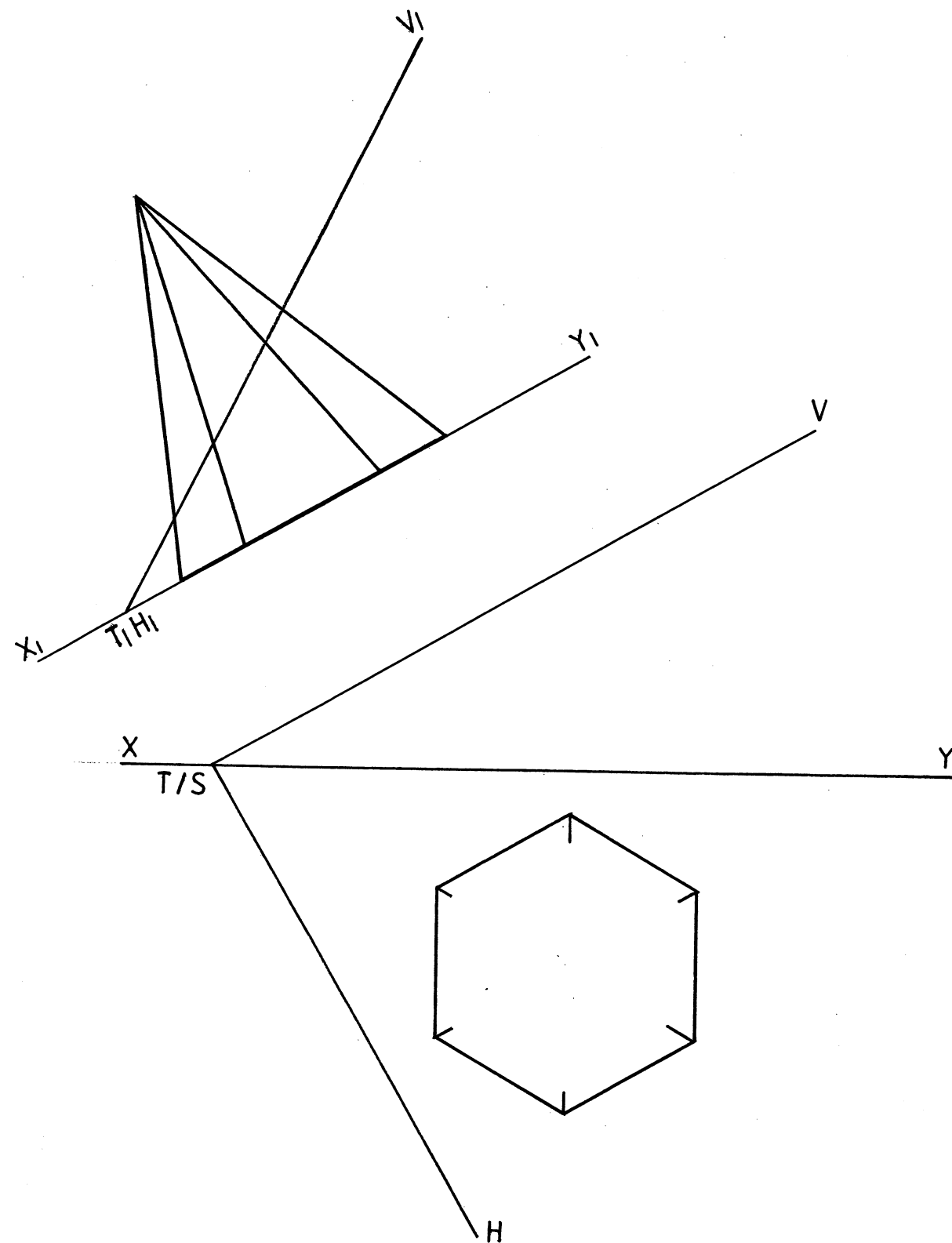


FIG. 6

**QUESTION 6**

**Figure 6** shows the traces **VTH** and incompleted top view of a hexagonal pyramid. The auxilliary view of the pyramid and inclined plane is also shown.

Project:

6.1 The sectional top view on cutting plane **VTH**.

8

6.2 The sectional front view on cutting plane **VTH**.

11

6.3 The true shape of the section on the cutting plane.

7

**Total**

**26**

**VRAAG 6**

**Figuur 6** toon die spore **VSH** en onvoltooide boansig van 'n seskantige piramide. Die hulpaansig en hellende vlak van die piramide word ook getoon.

Projekteer:

6.1 Die deursnee boansig op snyvlak **VSH**.

8

6.2 Die deursnee vooraansig op snyvlak **VSH**.

11

6.3 Die ware vorm van die snit op die snyvlak

7

**Totaal**

**26**

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EKSAMENNOMMER

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QUESTION 6  
VRAAG 6

ANSWER SHEET 6  
ANTWOORDVEL 6

