



**ISEBE LEMFUNDO LEMPUMA KOLONI
EASTERN CAPE EDUCATION DEPARTMENT
OOS-KAAP ONDERWYSDEPARTEMENT**

**NATIONAL
SENIOR CERTIFICATE**

GRADE 11

**ENGINEERING GRAPHICS AND DESIGN P1
NOVEMBER 2012**

MARKS: 100

TIME: 2 hours

This question paper consists of 6 pages.

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INSTRUCTIONS AND INFORMATION

1. The question paper consists of FOUR questions.
2. Answer ALL the questions.
3. All drawings must be drawn to scale 1:1, unless stated otherwise.
4. The questions must be answered on the answer sheets provided.
5. All the answer sheets must be re-stapled in numerical sequence and handed in irrespective of whether the question was answered or not.
6. Careful time management is essential in order to complete all the questions.
7. Print your name in the block provided on every answer sheet.
8. All answers must be drawn accurately and neatly.
9. Any details or dimensions not given must be assumed in good proportion.

FOR OFFICIAL USE ONLY				
				MODERATED MARK
1				
2				
3				
4				
TOTAL				
	1	0	0	

COMPLETE THE FOLLOWING:
NAME
NAME
EXAMINATION CENTRE
EXAMINATION CENTRE



QUESTION 1.1: ANALYTICAL (ELECTRICAL)

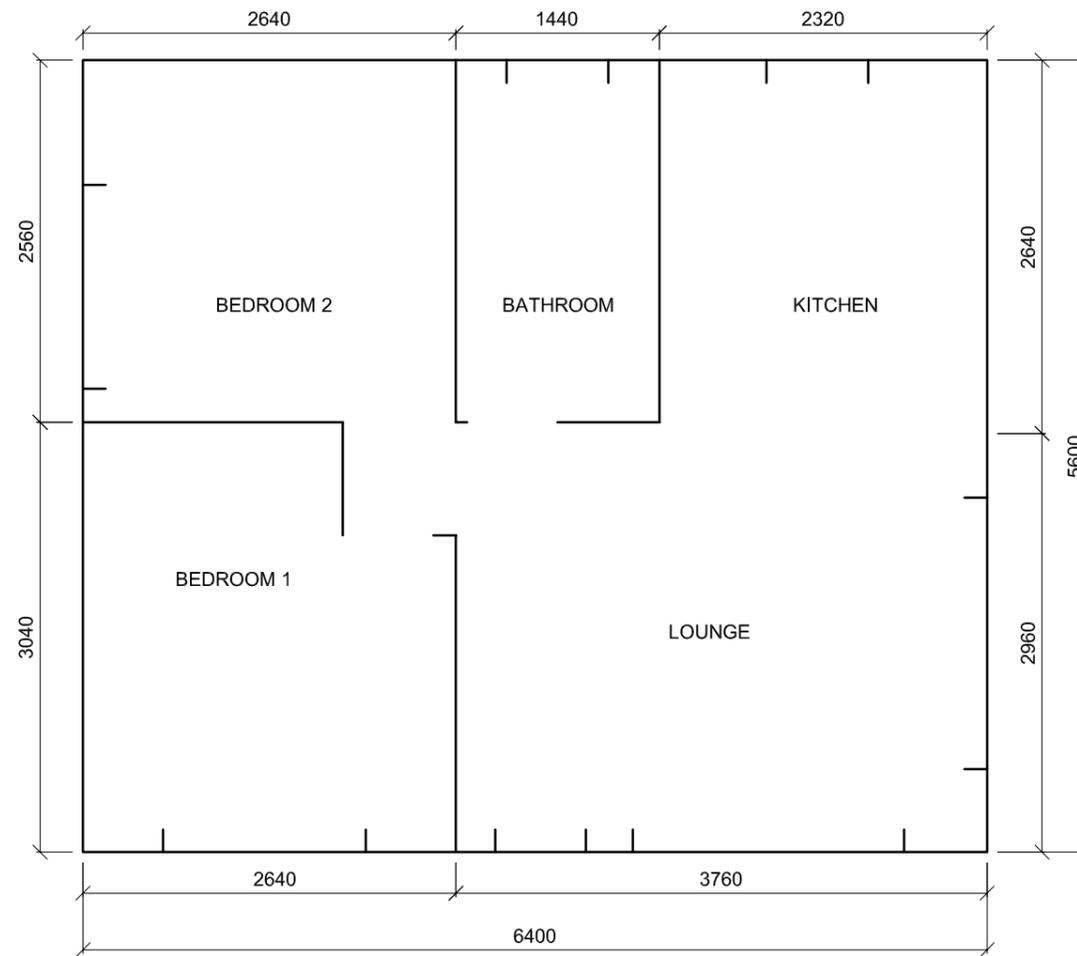
Given:
A table with names and illustrations of electrical components.
Instructions:
Complete the table by neatly drawing the symbols of these components in the space provided. [5]

Name	Component	Symbol
1) BULB		(1)
2) FUSE		(1)
3) SWITCH		(1)
4) MOTOR		(1)
5) CELL		(1)

QUESTION 1.2: ANALYTICAL (AREA AND PERIMETER)

Given:
• A schematic floor plan of a house showing the dimensions of the rooms.
• A table for your answers.
Instructions:
• Calculate the combined floor area of the kitchen and lounge in m².
• Calculate the perimeter of the house.

NB: Show all calculations [5]



ANSWERS	
AREA	
	(3)
PERIMETER	
	(2)

QUESTION 1.3: ANALYTICAL (CIVIL SECTIONS)

Given:
• A column with various types of sectioning used in civil drawings.
• A table with names of section types and spaces for inserting your answers.

Instructions:
Complete the table by placing only the correct letter of the section next to the description of the section type. [5]

SECTION TYPE		ANSWERS	
1	CONCRETE		1
2	FACE BRICK		1
3	COMPACTED HARDCORE		1
4	SCREED		1
5	UNDISTURBED EARTH		1

SECTIONAL VIEWS	
A	
B	
C	
D	
E	
F	
G	

1.1	5	
1.2	5	
1.3	5	
TOTAL	15	

NAME
NAME



QUESTION 2: INTERPENETRATION AND DEVELOPMENT

Given:

- The incomplete top view and front view of a regular hollow hexagonal prism intersecting a regular hollow square prism.
- An incomplete auxiliary view of the hexagonal prism.

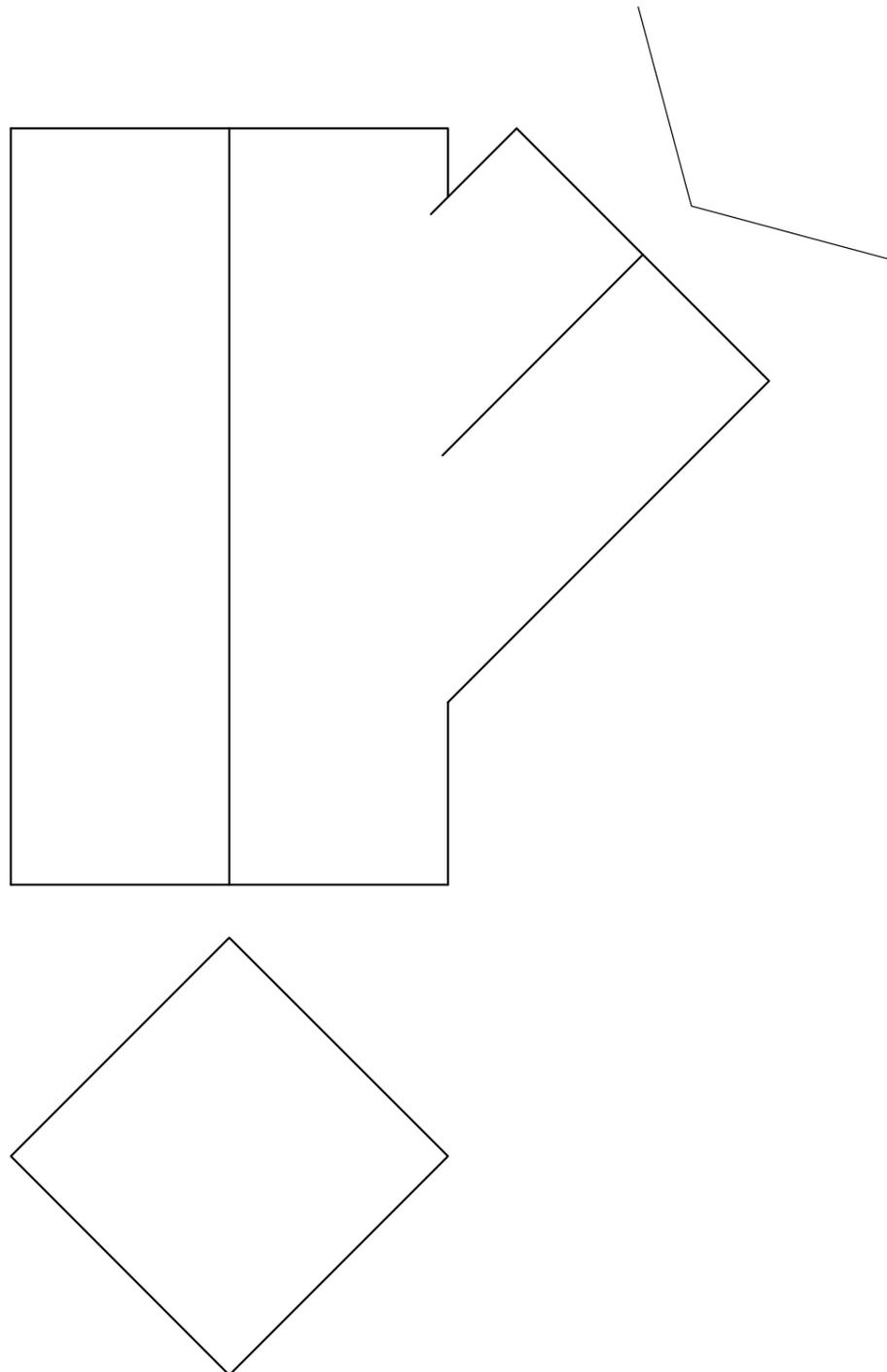
Instructions:

- Complete the auxiliary view of the hexagonal prism.
- Complete the top view.
- Complete the front view, clearly showing the curve of interpenetration formed between the two prisms.
- Develop only the sides of the square prism showing the true shape of the hole formed.

Note:

The axes of both prisms lie in the same vertical plane.
Show all constructions and projections.

[19]



ASSESSMENT CRITERIA		
Auxiliary view	2	
Completed top view	5	
Interpenetration curve	4	
Development	5	
Constructions	3	
TOTAL	19	

NAME
NAME

3



ASSESSMENT CRITERIA		
Vanishing points	2	
Constructions	3	
Roof	8	
Walls	5	
Door and window	8	
TOTAL	26	

QUESTION 3: PERSPECTIVE

Given:

A plan and elevation of a house, as well as the Picture Plane (PP), Horizon Line (HL), Ground Line (GL) and Station Point (SP).

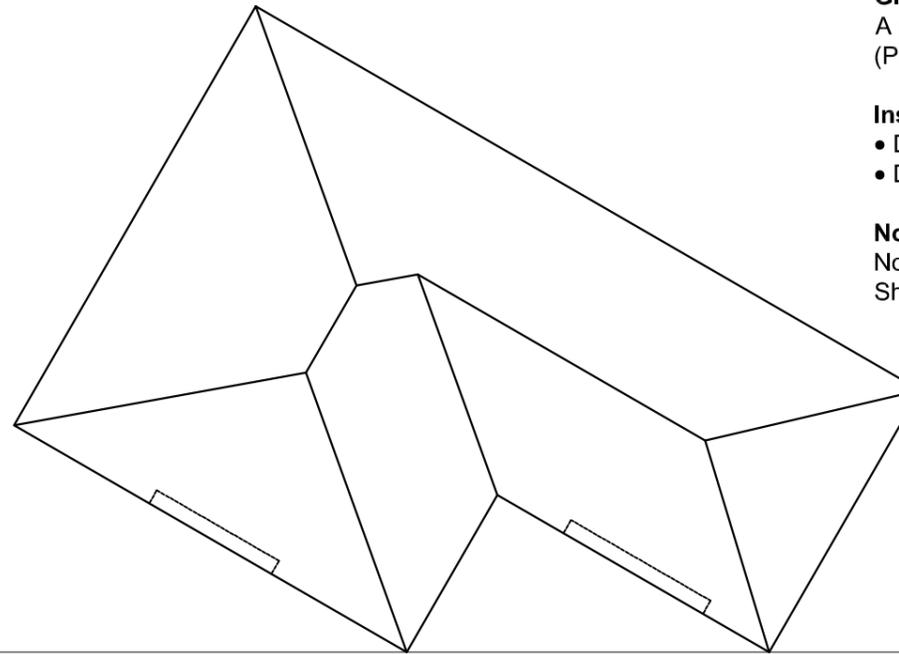
Instructions:

- Determine the vanishing points and label them.
- Draw the two point perspective view of the house.

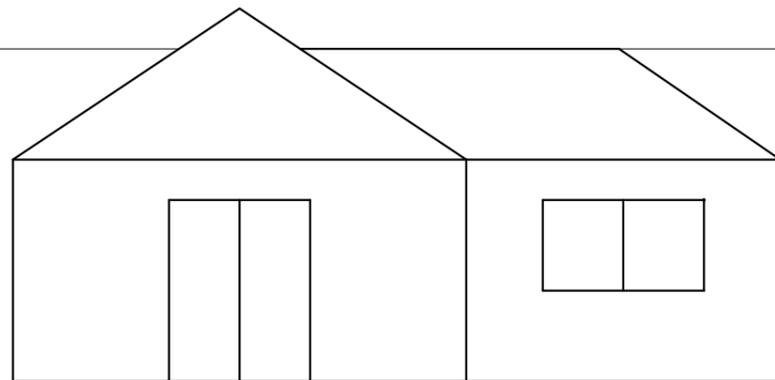
Note:

No hidden detail must be shown.
Show all construction lines.

[26]



PP



HL

GL

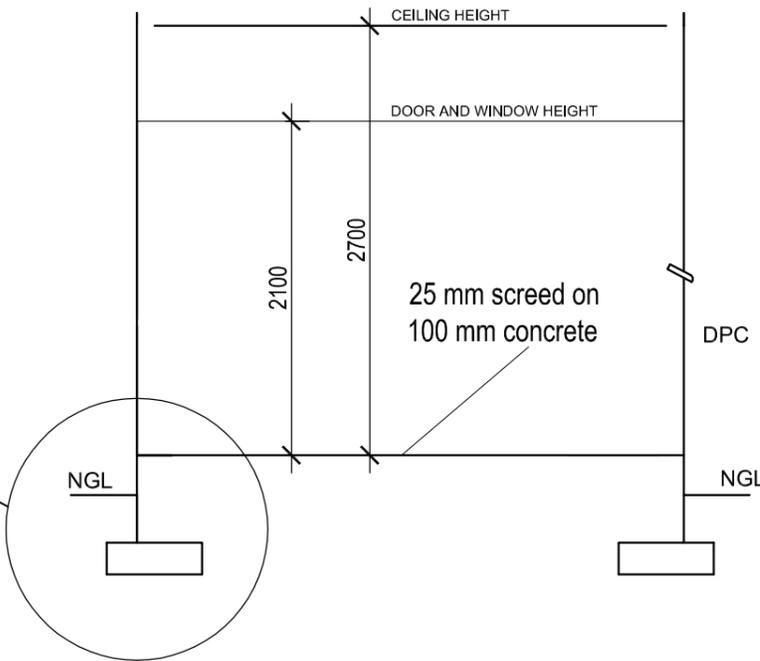
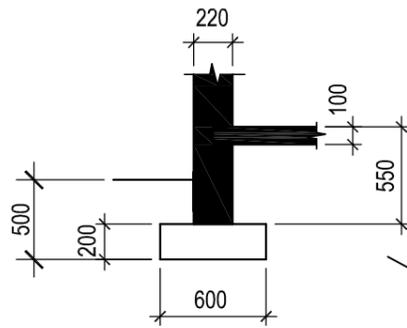


NAME
NAME

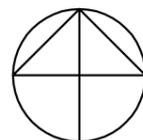
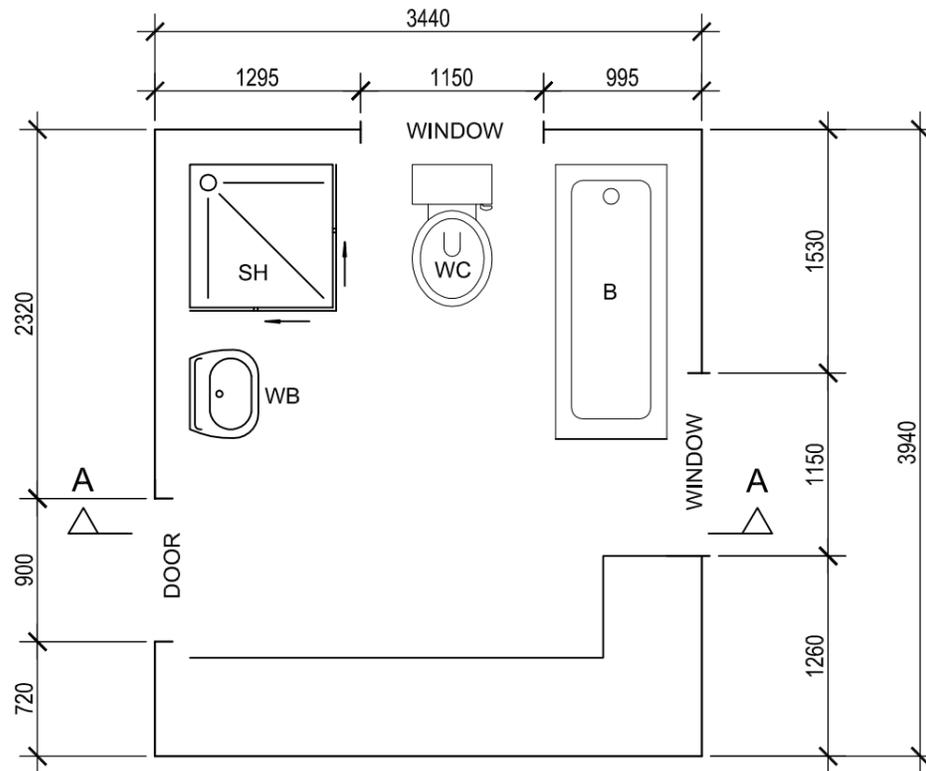




INCOMPLETE FOUNDATION
DETAIL FOR EXTERIOR WALLS



SCHMATIC SECTIONAL ELEVATION A-A



QUESTION 4: CIVIL DRAWING

Given:

- A schematic floor plan and a schematic sectional elevation of the outside lines of the perimeter of a **proposed new bathroom** attached to a house, and the position of all the fixtures in the bathroom as true representational drawings
- A door and window schedule
- A finishing schedule
- Incomplete sketches of the foundation detail.
- An answer sheet on page 6 showing an incomplete plan.

Instructions:

- Use answer sheet 4 and the information on page 5 to draw to a scale of **1:40**, the following views:
- The completed floor plan
 - The sectional elevation on cutting plane A-A, to the given specifications below:

SPECIFICATIONS:

THE FLOOR PLAN

Add the following features to the floor plan:

- The missing walls and hatching detail
- The missing door and windows with detail
- The cutting plane. Label the cutting plane A-A
- Label the bathroom and its floor finish

A SECTIONAL ELEVATION

Add the following features to the sectional elevation:

- The complete foundation, walls, screed and floor slab detail
- The lintels above the door and windows
- The door and complete window detail
- ALL necessary hatching
- All sanitary fixtures as **conventions**
- Label the sectional elevation: SECTIONAL ELEVATION A-A

NOTE:

- ALL substructure hatching may be done in freehand.
- ALL drawing must comply with the guidelines contained in the **SABS 0143**. **[40]**

TERMINOLOGY

Schematic diagram: a diagram that shows the main features or relationships but not the details.

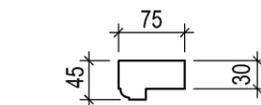
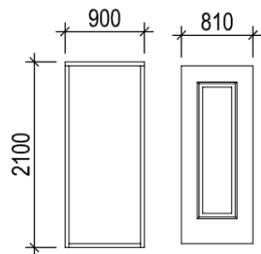
DOOR AND WINDOW SCHEDULE

DOOR FRAME

1 x STANDARD HARDWOOD FRAME

DOOR

1 x STANDARD HOLLOW CORE DOOR



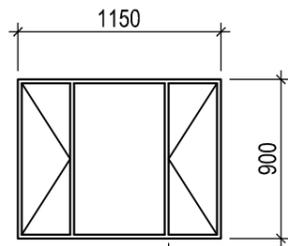
FRAME PROFILE

IRONMONGERY

1 PAIR of 75 mm BRASS HINGES and SCREWS
1 TWO-LEVER LOCKSET

WINDOW

2 STANDARD HARDWOOD



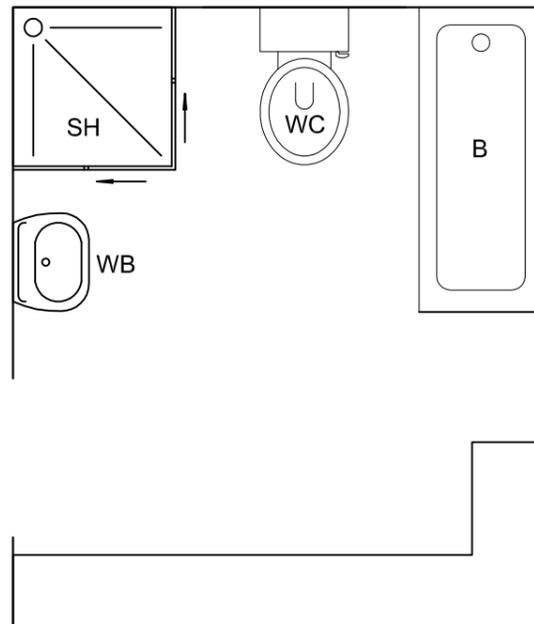
GLAZING
3 mm CLEAR GLASS

FINISHING SCHEDULE

FLOOR
BATHROOM - TILES
WALLS
PLASTER AND PAINT



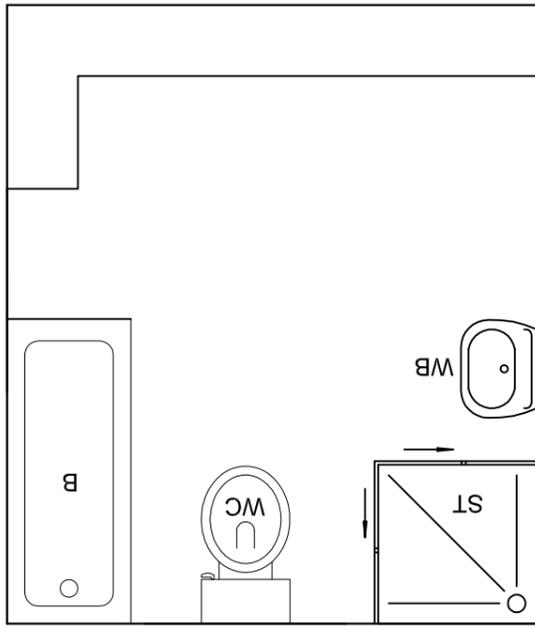
ANSWER SHEET 4



NAME
NAME

9

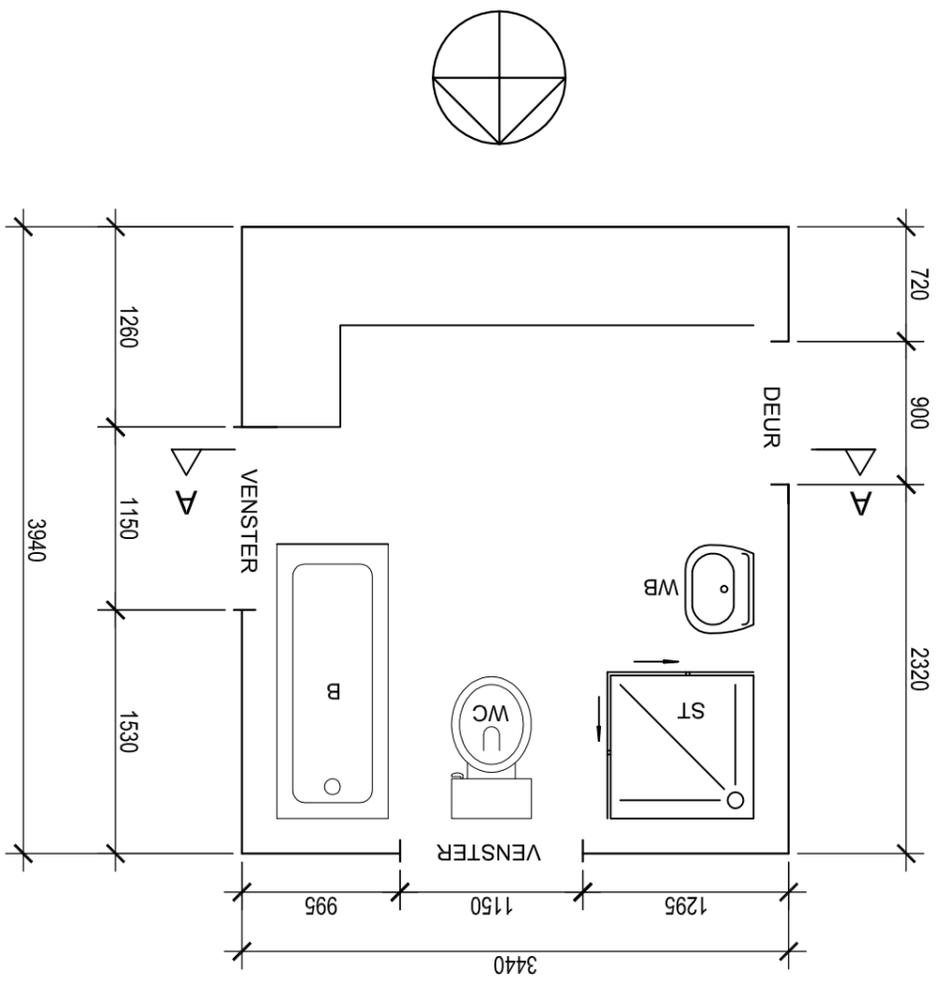
NAAM
NAAM



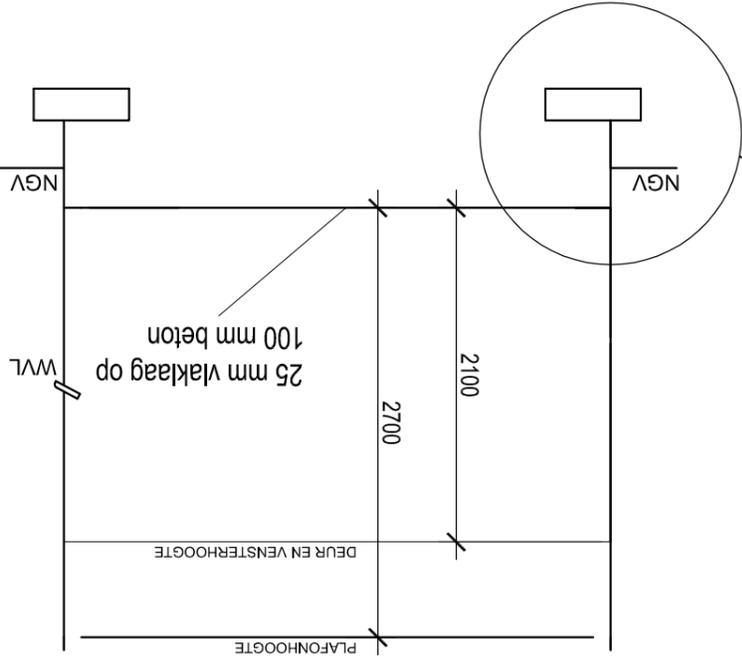
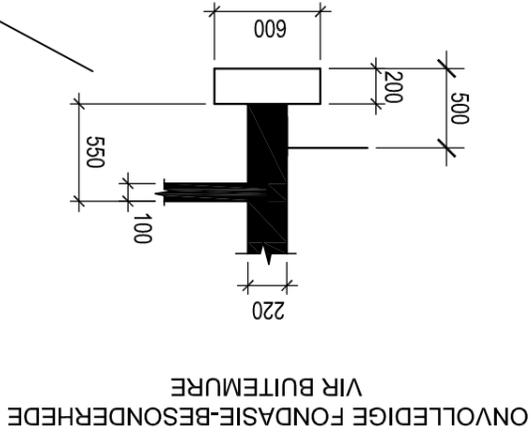
ANTWOORDBLAD 4



<p>DEUR- EN VENSTERSKEDULE</p> <p>DEURRAAM 1 x STANDAARD HARDEHOUT</p> <p>DEUR 1 x STANDAARD BINNE HOL</p> <p>RAAMPROFIEL</p> <p>YSTERWARE 1 PAAR 75 mm KOPER SKARNIERE en SKROEWE 1 TWEEKLAWERSLOT</p>	
<p>AFWERKINGSKEDULE</p> <p>GLAS 3 mm HELDER GLAS</p>	<p>VLOER BADKAMER - TEËLS MURE PLEISTER EN VERF</p>



SKEMATIESE SNITANSIG A-A



VRAAG 4: SIVIELE TEKENING

Gegee:

- 'n Skematiese vloerplan en 'n skematiese snitaansig van die buitelyste van die omtrek van 'n **voorgestelde nuwe badkamer** vas aan 'n huis, asook die posisie van al die toebehoere in die badkamer getoon as ware voorstellingsstekene
- 'n Deur- en vensterskedule
- 'n Afwerkingskedule
- 'n Ontvooide skets van die fondasie besonderhede.
- 'n Antwoordblad op bladsy 6 wat 'n onvooide plan toon.

Instruksie:

- Gebruik antwoordblad 4 en die inligting op bladsy 5 om volgens 'n skaal van **1:40** die volgende aansigte te teken:
- Die vooitooide vloerplan
- Die snitaansig op snyvlak A-A, volgens die gegewe spesifikasies hieronder:

SPESIFIKASIES:

DIE VLOERPLAN

Voeg die volgende kenmerke by die vloerplan:

- Die vermistste mure met arseringsbesonderhede
- Die vermistste deur- en venster besonderhede
- Die snyvlak. Benoem die snyvlak A-A
- Benoem die vloerplan en sluit die vloerwerking in.

'n SNITANSIG

Voeg die volgende kenmerke by die snitaansig:

- Die volledige fondasie-, muur-, vlaklag en vloerpladbeponderhede
- Die lateie bokant die deur en vensters
- Die deur- en volledige vensterbesonderhede
- **ALLE** nodige arsering
- **Alle** sanitêre toebehoere as **konvensies**
- Benoem die snitaansig:

LET WEL:

- **ALLE** substruktuurarsering mag in vryhand gedoen word.
- **ALLE** tekenwerk moet voldoen aan die riglyne vervat in SABS 0143.

TERMINOLOGIE

Skematiese diagram: 'n diagram wat die hooekenmerke of verhoudings sonder spesifieke besonderhede toon.



ASSESSINGKRITERIA		
Verdypunte	2	
Konstruksies	3	
Dak	8	
Mure	5	
Deur en venster	8	
TOTAAL	26	

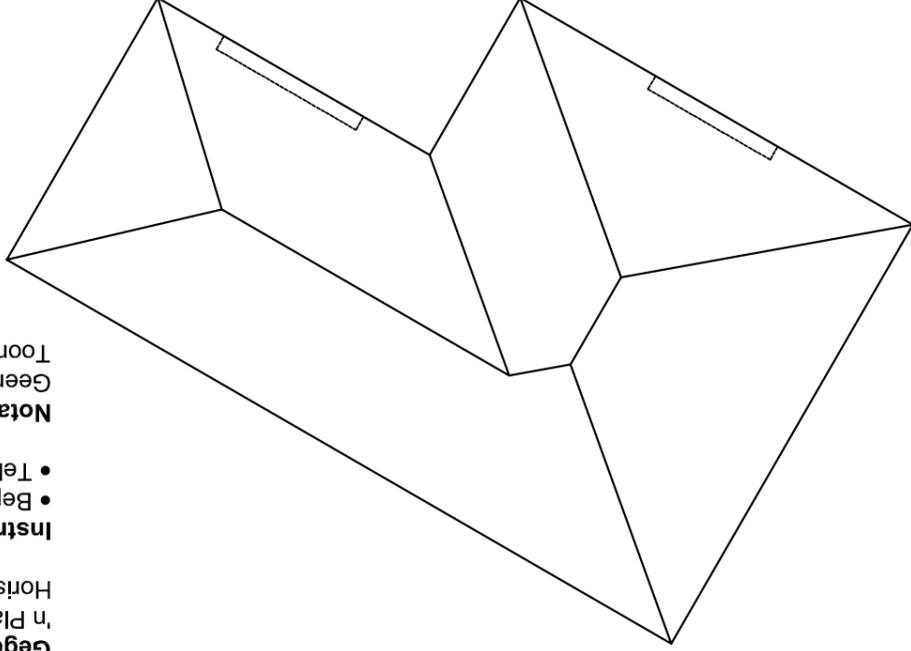
VRAAG 3: PERSPEKTIEF

Gegee:
'n Plan en aansig van 'n huis, sowel as die Puntvlak (PV), Horizontlyn (HL), Grondlyn (GL) en Staantpunt (SP)

- Instrukties:**
- Bepaal die verdypunte en benoem dit.
 - Teken die tweepuntperspektief-aansig van die huis.

Notas:
Geen verborgte besonderhede moet getoon word nie.
Toon alle konstruksielyne.

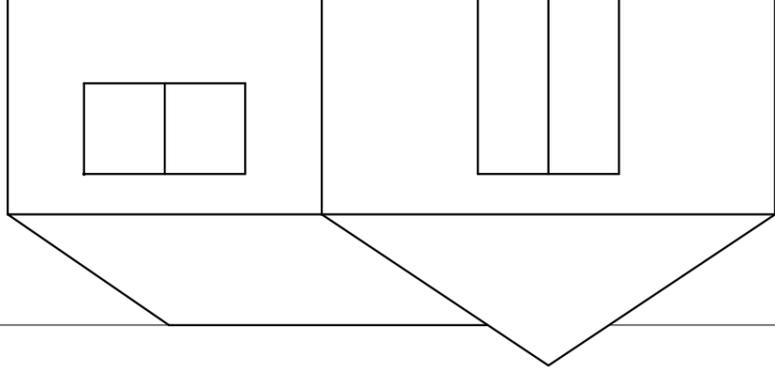
[26]



PV

HL

GL



SP
+

NAAM

NAAM

4



VRAAG 2: DEURDRINGING EN ONTWIKKELING

Gegee:

- Die onvoltooid boaansig en vooraansig van 'n hol reëlmatige seskanthige prisma wat 'n hol reëlmatige vierkanthige prisma indring.
- 'n Onvoltooid hulpaaansig van die seskanthige prisma.

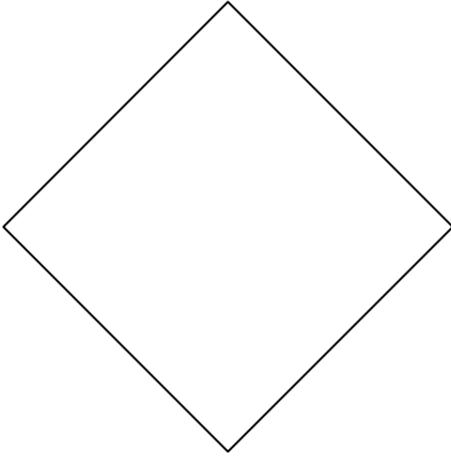
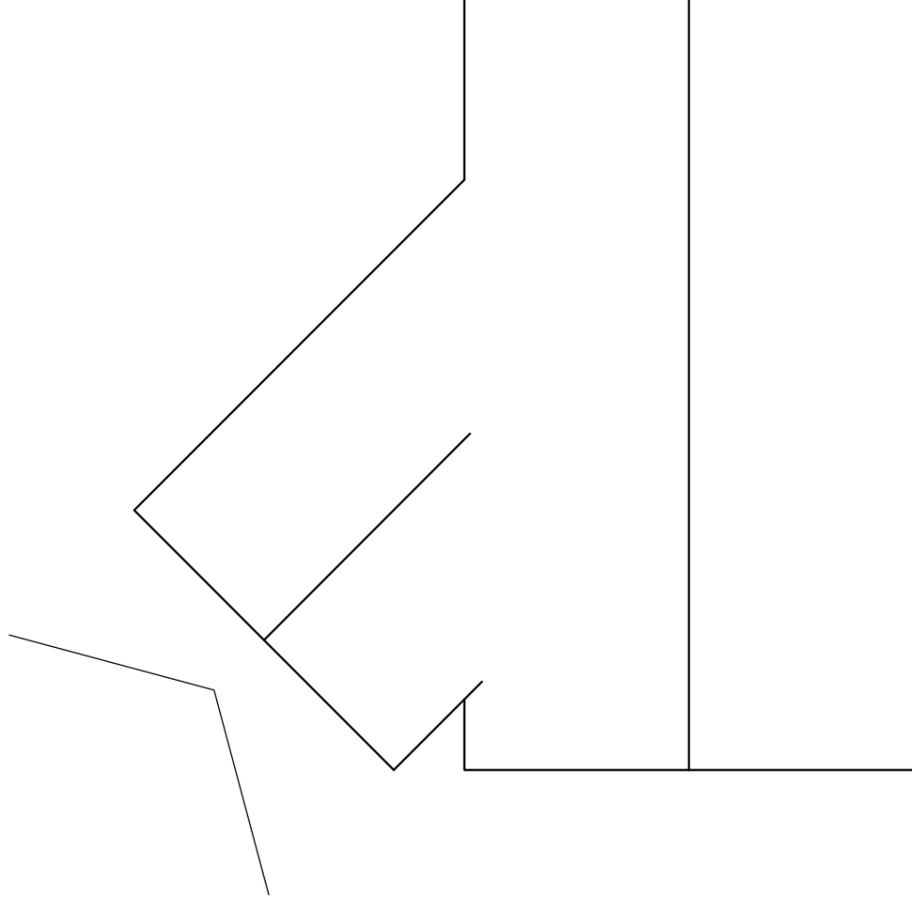
Instrukties:

- Voltooi die hulpaaansig van die seskanthige prisma.
- Voltooi die boaansig.
- Voltooi die vooraansig, waar die deurdringingskromme tussen die twee prisma's duidelik getoon word.
- Ontwikkel slegs die sye van die vierkanthige prisma wat die ware vorm van die gat wat gevorm is, toon.

Nota:

Die asse van die twee prisma's lê in dieselfde vertikale vlak. [19]

Toon alle konstruksies en projeksies.



ASSESSERINGSKRITERIA	
Hulpaansig	2
Voltooid boaansig	5
Deurdringingskromme	4
Ontwikkeling	5
Konstruksies	3
TOTAAL	19

NAAAM
NAAAM

3



VRAAG 1.1: ANALITIES (ELEKTRIES)

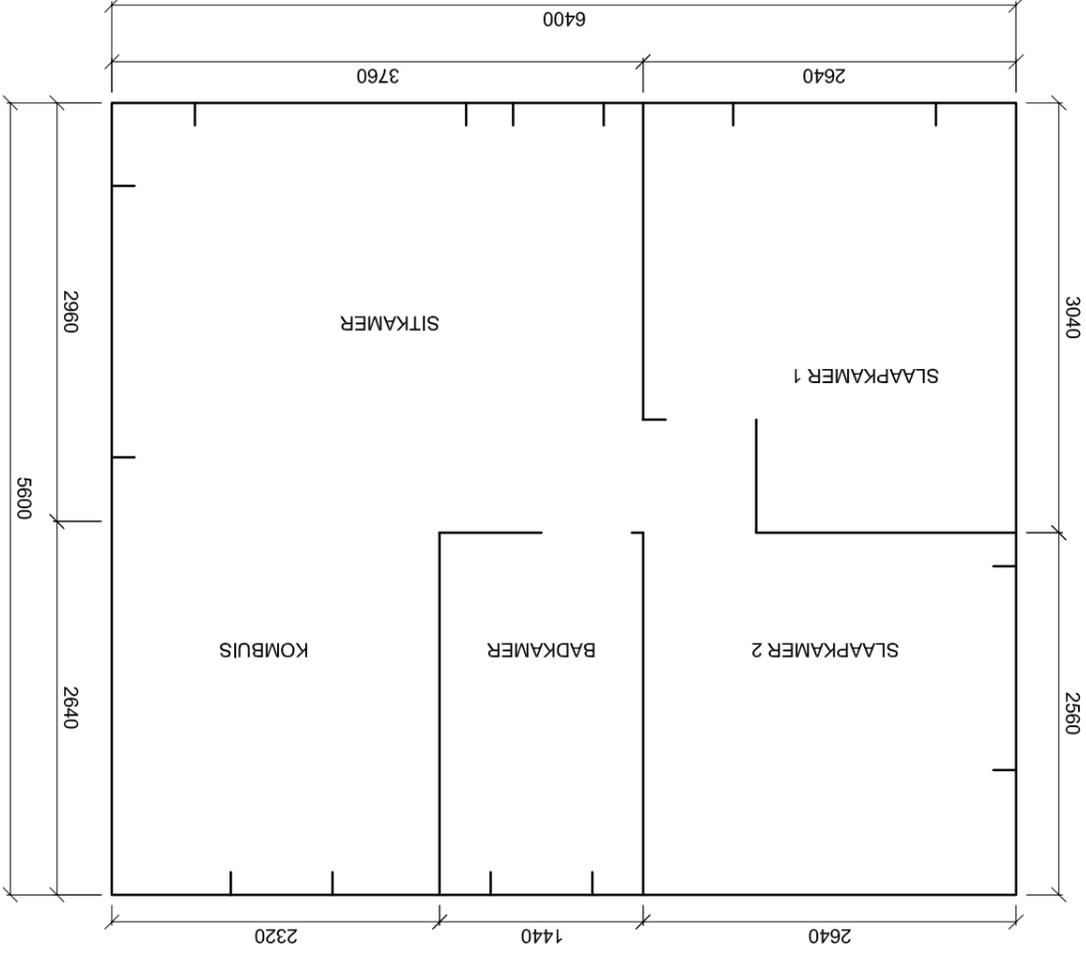
Gegee: 'n Tabel met name en illustrasies van elektriese komponente.
Instruksies: Voltooi die tabel deur netjies die simbole van hierdie komponente in die voorsende spasies te teken.

Naam	Komponent	Simbool
1) GLOEILAMP		(1)
2) SEKERING		(1)
3) SKAKELAAR		(1)
4) MOTOR		(1)
5) SEL		(1)

[5]

VRAAG 1.2: ANALITIES (AREA EN OMTREK)

Gegee: 'n Skematiese vloerplan van 'n huis wat die mate van die vertrekke aandui.
 • 'n Tabel vir jou antwoorde.
Instruksies:
 • Bepaal die gekombineerde vloerarea van die kombuis en voorkamer in m².
 • Bepaal die omtrek van die huis.



[5]

LW: Toon alle berekeninge

ANTWOORDE	AREA	OMTREK
		(2)
		(3)

VRAAG 1.3: ANALITIES (SIVIEL SNITTE)

Gegee: 'n Kolom met verskillende deursnee-aansigte wat in Siviële teken voorkom.
 • 'n Tabel met name van snittipes en spasies vir u antwoorde.
Instruksies: Voltooi die tabel deur slegs die korrekte letter van die snit langs die beskrywing van die snittipe te plaas.

DEURSNEE AANSIGTE	A	B	C	D	E	F	G
	1						
		1					
			1				
				1			
					1		
						1	

ANTWOORDE	SNIT TPE
	1 BETON
	2 SIERSTEEN
	3 HARDEPYN
	4 VLAKLAAG
	5 ONVESTOORDE GROND

ANTWOORDE	1.1	1.2	1.3	TOTAAL
NAAM	5	5	5	15
NAAM				

2



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**NASIONALE
SENIOR SERTIFIKAAT**

GRAAD 11

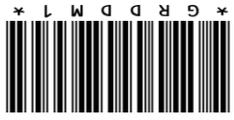
**INGENIEURSGRAFIKA EN -ONTWERP V1
NOVEMBER 2012**

PUNTE: 100

TYD: 2 uur

Die vraestel bestaan uit 6 bladsye.

Kopiereg voorbehou



INSTRUKSIES EN INLIGTING

1. Die vraestel bestaan uit VIER vrae.
2. Beantwoord ALLE vrae.
3. Alle tekene moet volgens skaal 1:1 geteken word, tensy anders vermeld.
4. Alle vrae moet op die gegewe antwoordvelle beantwoord word.
5. Alle antwoordvelle moet weer in nommervolgorde vasgeklam en ingelewer word, ongeag of die vraag beantwoord is of nie.
6. Sorgvuldige tydsbeplanning is nodig om alle vrae te beantwoord.
7. Drukskryf jou naam in die blokkie voorsien op elke antwoordvel.
8. Alle antwoorde moet akkuraat en netjies geteken word.
9. Besonderhede of afmetings wat uitgelaat is, moet in goeie verhouding beraam word.

SLEGS VIR AMPTELIKE GEBRUIK										
GEMODEREERDE PUNT										
1	2	3	4	TOTAAL			1	0	0	

VOLTOOI DIE VOLGENDE:
NAAM
NAAM
EKSAMENSENTRUM
EKSAMENSENTRUM