



Destinataskool
Destinaria School

JUNIE / JUNE 2018
EKSAMEN / EXAMINATION

EKSAMINATOR/ EXAMINER: F. MARX
MODERATOR: J. NAUDE

GR 12

INGENIEURSGRAFIKA EN -ONTWERP V1
ENGINEERING GRAPHICS AND DESIGN P1

Totaal/ Total: 200

Tyd/ Time: 3ure/ 3hrs

INSTRUKSIES EN INLIGTING

- Beantwoord ALLE vrae.
- Alle tekene moet volgens skaal 1:1 gemaak word, tensy anders vermeld.
- Alle vrae moet op die gegewe antwoordvulle beantwoord word.
- Alle antwoordvulle moet weer in nommervolgorde vasgekram en ingelewer word, ongeag of die vraag beantwoord is of nie.
- Sorgvuldige tydspanning is nodig om alle vrae te beantwoord.
- Drukskrif jou naam in die blokkie voorsien op elke antwoordvel.
- Alle antwoorde moet akkuraat en netjies gedoen word.
- Besonderhede of afmetings wat uitgelat is moet in goeie verhouding beraam word.

INSTRUCTIONS AND INFORMATION

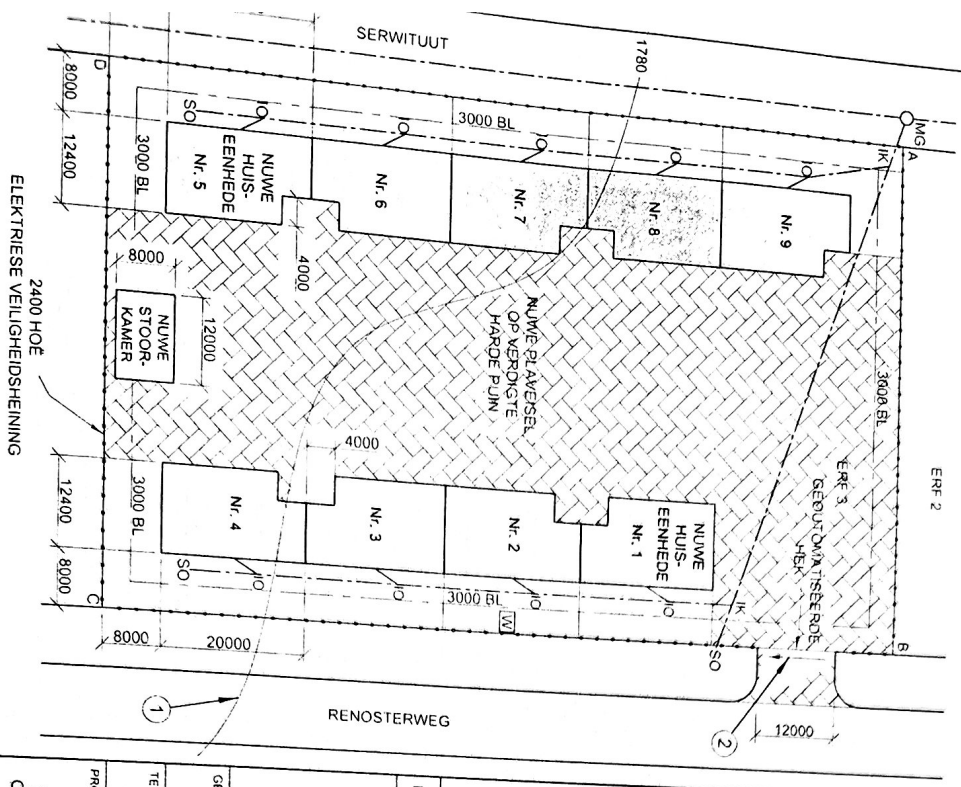
- Answer ALL the questions.
- All drawings must be drawn to scale 1:1, unless otherwise stated.
- The questions must be answered on the answer sheets provided.
- All the answer sheets must be re-stapled in numerical sequence and handed in irrespective of whether the question was attempted or not.
- Careful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

Punt/Mark	
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VOLTOOI / COMPLETE	
NAAM	
NAME	
DATUM	
DATE	

LANDMETSERTIFKAAT VAN DIE GRENSENGTES EN HOEKHOOGTES VIR ERF 3
OP 2015-05-06 OPGEMEET

GRENSENGTES IN MILLIMETER	HOEKHOOGTES IN METER
AB = 74569	A = 1780,6
BC = 116000	B = 1780,7
CD = 74569	C = 1779,7
DA = 116000	D = 1779,3



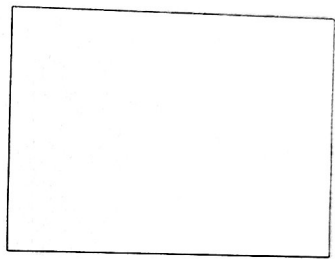
TERREINPLAN
SKAAL 1 : 800



NOTA:
• Kontrekteurs moet alle afmetings en hoekgates op die teken berekenig voor daar met die werk begin word. Agrekkie moet onmiddellik van die tekeningsreksie kennis gegee word.
• Al die huse is dieselfde grootte.

ARGITEK SE HANDTEKENING

KLIEN T SE HANDTEKENING



ANTWOORD 20
In die spasie hieronder, teken, in netjiese vryhand, die vooransig en boeaansig van die SANS 10143 grafiese simbool vir 'n BIDEIT.

HERSENSING	DATUM	BESKRIVING

ON-THE-DOT ARGITEKTE
POSBUS 2000
LUIPERDVALLEI
1012

GEORUK DEUR	DRUKDATUM
NAT DRUKKERS	2015/07/09

TEKENINGTTITEL
TERREINPLAN

PROJEK
VOORGESTELDE NUWE BEHUISINGS-EENHEDE IN 'N VEILIGHEIDSKOMPLEKS OP ERF 3, RENOSTERWEG, UITKYK-PARK

PROJEKNUMMER	TEKENINGNUMMER		
2015-RR-07	EP 3-01-2016		
DATUM	GETEKEN	NAGESIEN	SKAAL
2015/07/07	WILLIAM	VERNON	1 : 800
VERWYSINGSKODE			
QV1-2016			

VRAAG 1: ANALITIES (SIVEL)

Gagee:
Die terreinplan vir voorgestelde behuisingseenhede in 'n veiligheidskompleks, 'n titelpaneel en 'n tabel met vrae. Die tekening is nie volgens die getoonde skaal voorberei nie.

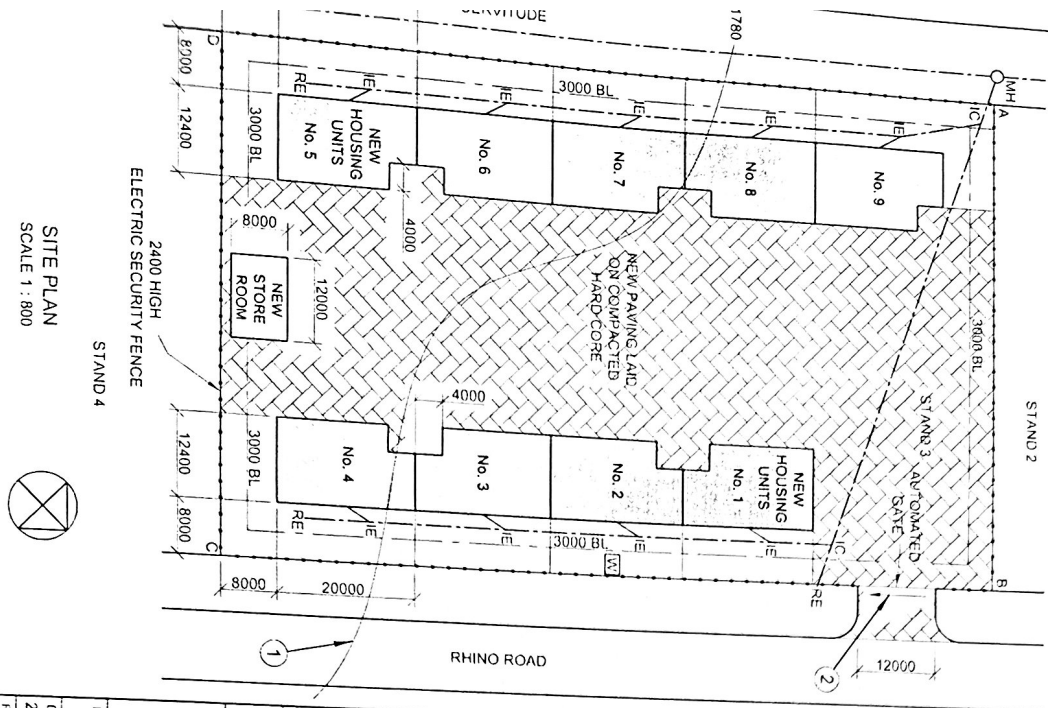
Instrukties:
Volhou die tabel hieronder deur die vrae, wat na die bygaande tekening en titelpaneel verwys, netjies te beantwoord.
[30]

VRAE	ANTWOORDE
1. Hoeveel handtekeninge word benodig?	1
2. Wie het die tekening voorberei?	1
3. Watter skaal word vir die tekening aangedui?	1
4. Wie het die tekening nagesien?	1
5. Wie was verantwoordelik vir die druk van die terreinplan?	1
6. Hoeveel keer is die tekening hersien?	1
7. Wanneer is die terrein opgemeet?	1
8. Hoeveel steekop word op die terreinplan getoon?	1
9. Waarvoor staan die afkorting JK?	1
10. In watter kleur behoort glas op 'n gedetailleerde tekening aangedui te word?	1
11. Noem die kenmerk by 1.	1
12. In watter eenheid is die afmetings op die terreinplan?	1
13. Waarop moet die nuwe plaatsappel getel word?	1
14. Watter tipe heining word vir die kompleks voorgestel?	2
15. Wat word deur die pyl by 2 aangedui?	1
16. Hoekom sou 'n residensiële ontwikkeling nie op die grond direk suidwes van ERF 3 toegelaat word nie?	2
17. Met verwysing na die bouregulasies, hoekom sou hierdie voorgestelde terreinplan nie goedgekeur word nie?	2
18. In die spasie hieronder (ANTWOORD 18), bepaal die lengte van die elektriese veiligheidsheining in meter.	3
19. In die spasie hieronder (ANTWOORD 19), bepaal die gekombineerde totale oppervlakte van AL die voorgestelde geboue in vierkante meter.	4
20. In die spasie in die titelpaneel (ANTWOORD 20), teken, in netjiese vryhand, die vooransig en boeaansig van die SANS 10143 grafiese simbool vir 'n BIDEIT.	3
TOTAAL	30

ANTWOORD 18
Toon ALLE berekeninge.

ANTWOORD 19
Toon ALLE berekeninge.

LAND SURVEYOR'S CERTIFICATE OF THE BOUNDARY LENGTHS AND CORNER HEIGHTS ON STAND 3, SURVEYED ON 2015-05-06			
BOUNDARY LENGTHS IN MILLIMETRES	CORNER HEIGHTS IN METRES		
AB = 74569	A = 1780.6		
BC = 116000	B = 1780.7		
CD = 74569	C = 1779.7		
DA = 116000	D = 1779.3		



SITE PLAN
SCALE 1 : 800



NOTE:

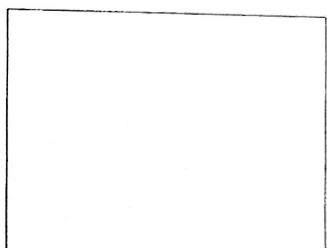
- Contractors must verify all dimensions and levels on site before commencing work.
- Architects to be notified immediately of any discrepancies.
- All the houses are the same size.

ARCHITECT'S SIGNATURE:

CLIENT'S SIGNATURE:

ANSWER 20

In the space below, draw, in neat freehand, the front view and top view of the SANS 10143 graphic symbol for a BIDET.



PROJECT NUMBER	2015-RR-07	DRAWING NUMBER	EP 3-01-2016
DATE	2015/07/07	CHECKED	WILLIAM VERNON
DRAWN	WILLIAM VERNON	SCALE	1 : 800
REFERENCE CODE	QV1-2016		

PROJECT: PROPOSED NEW HOUSING UNITS IN A SECURITY COMPLEX ON STAND 3, RHINO ROAD, OBSERVATION PARK

PRINTED BY: NAT PRINTERS DATE OF PRINT: 2015/07/09

DRAWING TITLE: SITE PLAN

ON-THE-DOT ARCHITECTS
PO BOX 2000
LEOPARD VALLEY
1012

REVISION	DATE	DESCRIPTION

QUESTION 1: ANALYTICAL (CIVIL)

Given:
The site plan for proposed housing units in a security complex, a title panel and a table of questions. The drawing has not been prepared to the indicated scale.

Instructions:
Complete the table below by neatly answering the questions, which refer to the accompanying drawing and title panel.

QUESTIONS	ANSWERS
1 How many signatures are required?	1
2 Who prepared the drawing?	1
3 What scale is indicated for the drawing?	1
4 Who checked the drawing?	1
5 Who was responsible for the printing of the site plan?	1
6 How many times have the drawing been revised?	1
7 When was the site surveyed?	1
8 How many rodding eyes are shown on the site plan?	1
9 What does the abbreviation /C stand for?	1
10 In what colour should glass be indicated on a detailed drawing?	1
11 Name the feature at 1.	1
12 In what unit are the dimensions on the site plan?	1
13 On what must the new paving be laid?	1
14 What type of fence is proposed for the complex?	2
15 What is indicated by the arrow at 2?	1
16 Why would a residential development not be allowed on the land immediately south-west of STAND 3?	2
17 Referring to the building regulations, why would this proposed site plan not be approved?	2
18 In the space below (ANSWER 18), determine the length of the electric security fence in metres.	3
19 In the space below (ANSWER 19), determine the combined total area of ALL the proposed buildings in square metres.	4
20 In the space in the title panel (ANSWER 20), draw, in neat freehand, the front view and top view of the SANS 10143 graphic symbol for a BIDET.	3
TOTAL	30

ANSWER 18
Show ALL calculations.

ANSWER 19
Show ALL calculations.

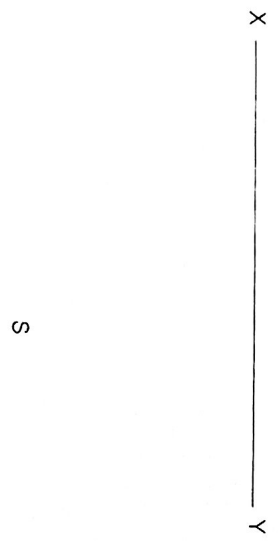
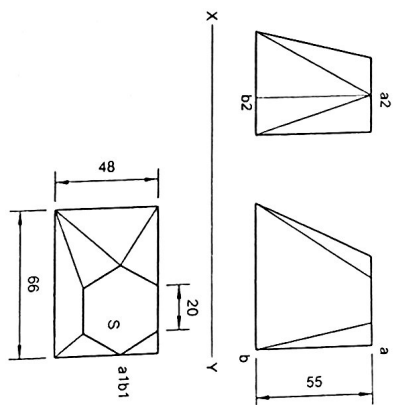
VRAAG 2: INTERPENETRASIE EN ONTWIKKELING

Gegee:
 Die voorraansig, regter- en die boaansig van 'n reghoekige na seskantige oorgangstuk.
 Die beginpunt S vir die boaansig van die seskant en grondlyn XY. Die regelhoek R wat die beginpunt vir die ontwikkeling aandui.

Instruksies:
 Teken, volgens skaal 1 : 1, die volgende aansigte van die twee pype wat mekaar indring:
 2.1 Die boaansig
 2.2 Die voorraansig
 2.3 Ontwikkel die oppervlak van die oorgangstuk en maak AB die soom.

Toon ALLE vollyne
 Toon ALLE konstruksies
 AB is die soom van die oorgangstuk.

[33]



ASSESSERINGSKRITERIA					
1	SESKANT KONSTRUKSIE + BOAANSIG	7			
2	VOORAANSIG	3			
3	WARE LENGTES	6			
4	ONTWIKKELING	17			
PENALISERING (-)					
TOTAAL		33			
NAAM					
NAAM					

QUESTION 2: TRANSITION PIECE

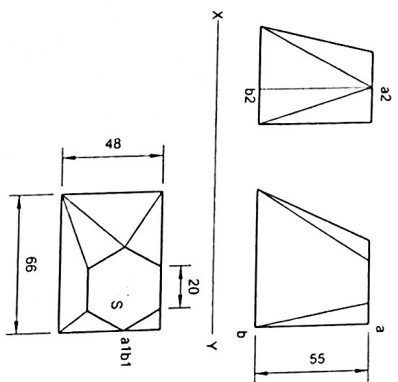
Given:

The front view, right view and the top view of a rectangular to hexagon transition piece.
 The starting point S for the top view of the hexagon and the ground line XY. The right angle labeled R as the start for the development.

Instructions:
 Draw, to scale 1 : 1, the following views of the transition piece:

- 2.1 The top view
- 2.2 The front view
- 2.3 Develop the surface of the transition piece and make AB the seam.

Show ALL fold lines.
 Show ALL constructions.
 AB is the seam of the transition piece. [33]



S

X

Y



ASSESSMENT CRITERIA

1	HEXAGON CONSTRUCTION + TOP VIEW	7		
2	FRONT VIEW	3		
3	TRUE LENGTHS	6		
4	DEVELOPMENT	17		
PENALTIES (-)				
TOTAL		33		

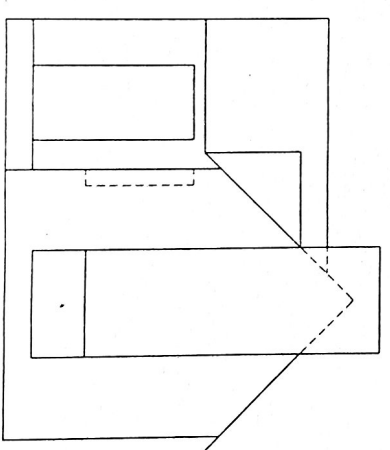
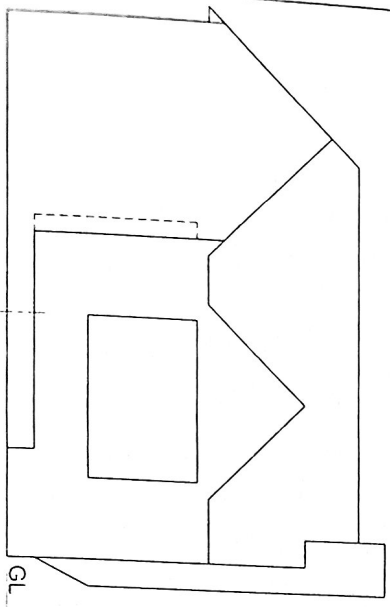
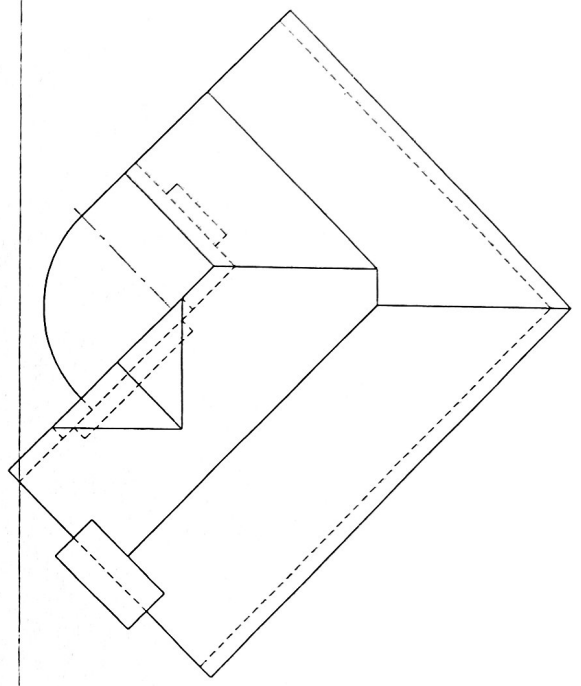
NAME _____
 NAME _____
 NAME _____

VRAAG 3: PERSPEKTIEF

Gegee:
 Drie aansigte van 'n woning en die inligting benodig om 'n tweepuntperspektieftekening te teken
 PV – Prentvlak
 HL – Horizontlyn
 GL – Grondlyn
 SP – Staandpunt

Instrukties:
 Voltooi die perspektieftekening.

- Rig die tekenvel volgens die grondlyn (GL).
 - Bepaal en benoem die verdwynpunte.
 - Toon ALLE konstruksies.
 - GEEN interne besonderhede word verlang nie.
 - GEEN verborge besonderhede word verlang nie.
- [40]



SP

ASSESSERINGSKRITERIA

1	KONSTRUKSIE	6					
2	MURE, VENSTER, DEUR	13					
3	SKOORSTEEN	6					
4	DAK	10					
5	BOOG	5					
PENALISERING (-)							
TOTAAL		40					

QUESTION 3: PERSPECTIVE

Given:

Three views of a house and the information needed to draw a two-point perspective drawing

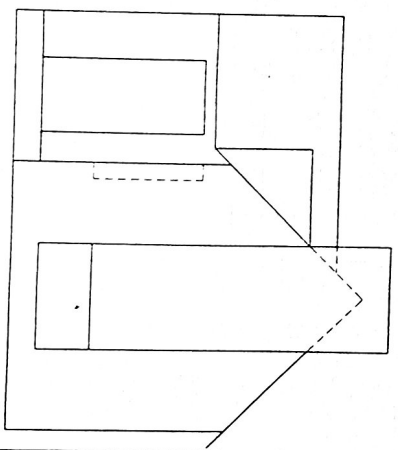
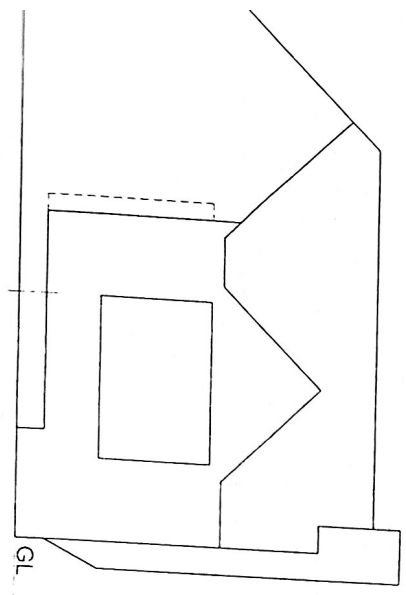
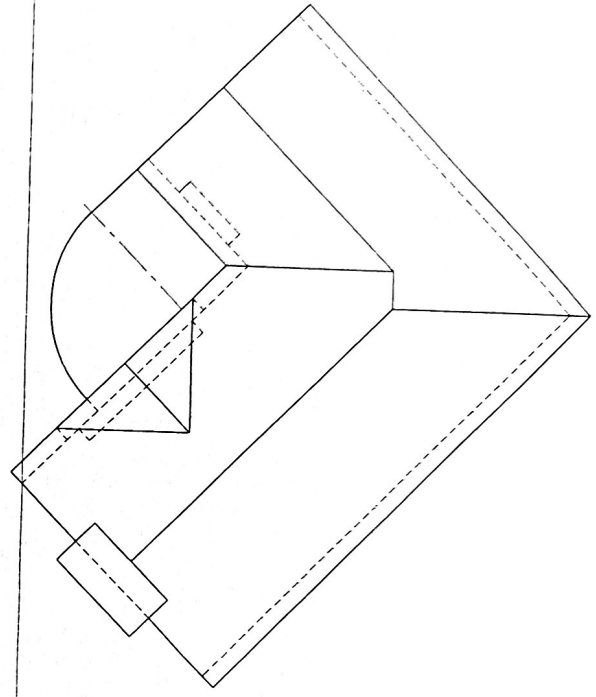
- PP – Picture plane
- HL – Horizon line
- GL – Ground line
- SP – Station point

Instructions:

Complete the perspective drawing.

- Align the drawing sheet with the ground line (GL).
- Determine and label the vanishing points.
- Show ALL construction.
- NO internal detail is required.
- NO hidden detail is required.

[40]



ASSESSMENT CRITERIA

1	CONSTRUCTION	6					
2	WALLS, WINDOW, DOOR	13					
3	CHIMNEY	6					
4	ROOF	10					
5	ARC	5					
PENALTIES (-)							
TOTAL		40					

SP

1. PUNTE-TOEKENING VIR SNIT VAN DAK		SLEGS VIR AMPTELIKE GEBRUIK	
A (1)		VERKEERDE SKAAL	
B (1)		VERKEERDE PLASING VAN AANSIGTE	
C (2)		GEROTEEERDE AANSIGTE	
D (3)		DRUKGESKRYFDE HOOFLETTERS	
E (1)			
F (1)			
G (1)			
H (1)			
I (3)			
TOTAAL		TOTAAL	

ASSESSERINGSKRITERIA

VLOERPLAN			
1	DEURE + VENSTERS	11	
2	ELEKTRIES	8 1/2	
3	TOEBEHORE	7 1/2	
4	ARSEERING	4	
5	BYSKRIFTE	4	
SUBTOTAL		35	

SUIDAANSIG

1	DAK	6 1/2	
2	MURE + RWAP + VVV + GEUT	7 1/2	
3	DEURE + VENSTERS	11 1/2	
4	BYSKRIFTE	1	
SUBTOTAL		26 1/2	

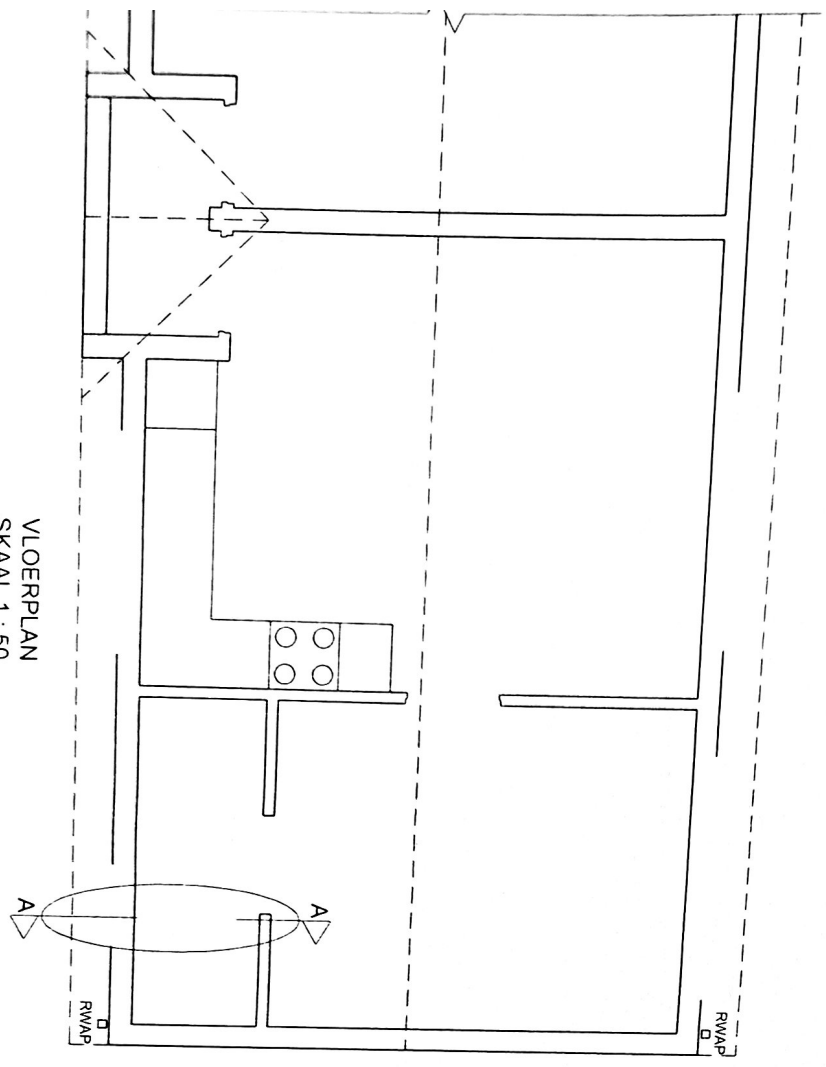
GEDETALLEERDE SNIT

1	DAK	14	
2	FONDASIES + MURE + BLAD	13 1/2	
3	VENSTER + LATIE	3 1/2	
4	TOEBEHORSEL	3	
5	BYSKRIFTE	1 1/2	
SUBTOTAL		35 1/2	
TOTAAL		97	

PEWALSERING (1)

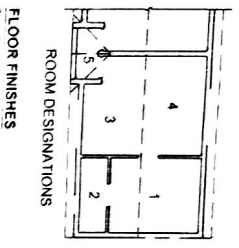
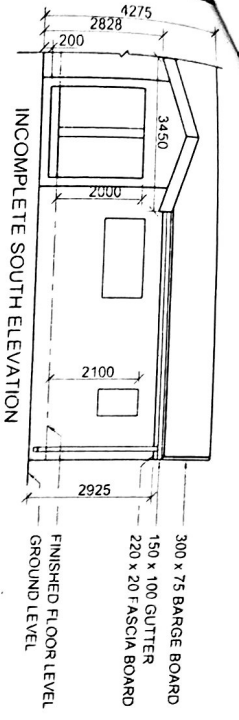
GROOTTOTAAL			

VLOERPLAN
SKAAL 1 : 50



SNIT A-A
SKAAL 1 : 20





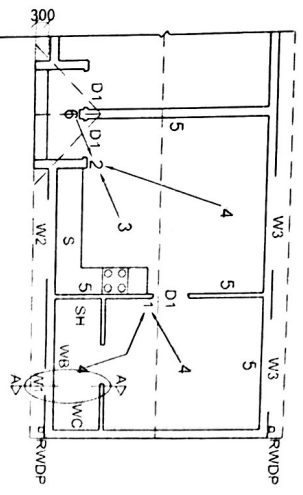
ELECTRICAL SYMBOLS	
	CARPET
	TILE
	FIBRE TILE
	ELECTRICAL PANEL
	WINDOW
	DOOR

QUESTION 4: CIVIL DRAWING

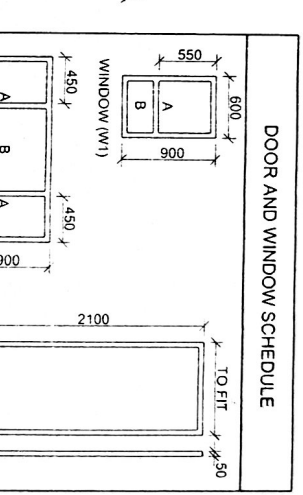
Given:

- The incomplete south elevation of the eastern unit and entrance of a new cluster house, showing the walls, the door and window openings, the roof and notes
- The incomplete floor plan showing the walls, positions of the doors, windows, fixtures and electrical layout
- Roof notes, a table of roof components and a schematic diagram of a roof truss
- Room designations and floor finishes
- The incomplete wall and foundation detail
- The rainwater down-pipe
- A table of electrical symbols
- A door and window schedule
- A table of fixtures

The incomplete floor plan of the eastern unit and entrance of the new cluster house, drawn to scale 1 : 50, and the incomplete external wall foundation and the break line of the detailed section, drawn to scale 1 : 20, on page 6



- FEATURES**
- D1 DOOR
 - W1 WINDOW
 - W2 WINDOW
 - W3 WINDOW
- FIXTURES**
- WC TOILET
 - WB WASH BASIN
 - SH SHOWER
 - S SINK
- ELECTRICAL FITTINGS**
- ONE-WAY SWITCH - DOUBLE-POLE
 - ONE-WAY SWITCH - THREE-POLE
 - FLOUORESCENT LIGHT 2 x 40 W
 - CEILING LIGHT
 - SWITCHED SOCKET OUTLET
 - WALL-MOUNTED LIGHT



Instructions:

Answer this question on page 6.

4.1 Using the given incomplete floor plan, draw, in first-angle orthographic projection and to scale 1 : 50, the following views of the given eastern unit and entrance of the new cluster house:

4.1.1 **THE COMPLETE FLOOR PLAN**

Add the following features to the drawing:

- ALL doors and windows
- ALL fixtures as indicated by the abbreviations
- ALL electrical fittings as indicated by the numbers
- ALL hatching detail

4.1.2 **THE COMPLETE SOUTH ELEVATION**

Show the following features on the drawing:

- The outside walls, windows and door detail
- The roof detail, including the fascia board, barge boards, gutter and rainwater down-pipe
- The finished floor level

115 x 38 mm ROOF TRUSSES ON 115 x 38 mm WALL PLATES

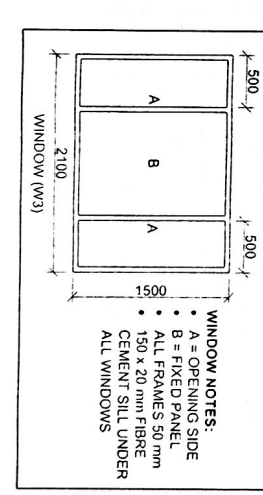
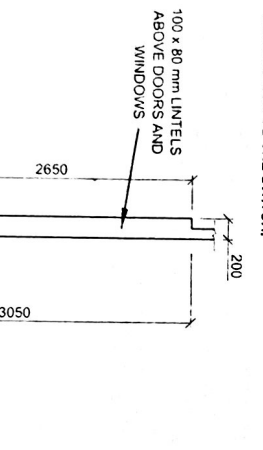
ROOF OVERHANG 350 mm TO END OF ROOF TRUSSES

ROOF COVER 15 mm FIBRE CEMENT SHEETING ON 75 x 50 mm PURLINS @ 1000 mm c/c

220 x 20 mm FASCIA BOARD ON ALL SIDES AND 300 x 75 mm BARGE BOARD ON GABLED ENDS

150 x 100 mm GUTTERS ON ALL SIDES

9 mm CEILING BOARD ON 38 x 38 mm BRANDERING STRIPS @ 450 mm c/c

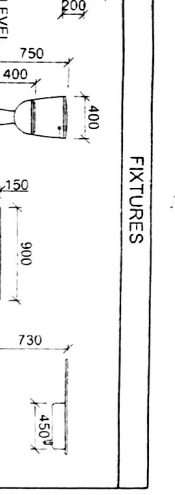
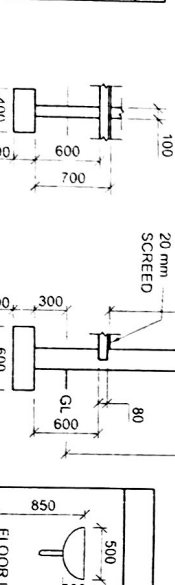


4.2 Using the incomplete foundation and break line on page 6, draw, to scale 1 : 20, a **DETAILED SECTION** on cutting plane A-A of the area in the ellipse shown on the incomplete floor plan.

Show the following features on the drawing:

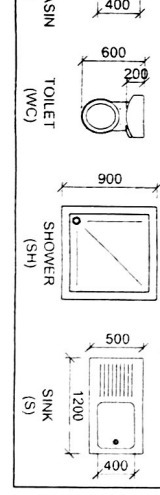
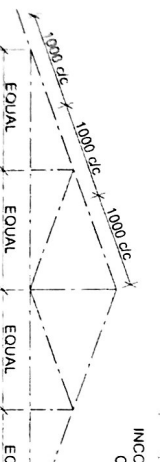
- The wall and foundation detail of the internal and external wall
- The window detail
- The roof detail, including the fascia board, gutter and rainwater down-pipe
- ALL features and fixtures to the right (east) of the ellipse
- ALL hatching detail. ONLY the substructure hatching may be drawn in neat freehand.

ROOF COMPONENTS	
	300 x 75 mm BARGE BOARD
	220 x 20 mm FASCIA BOARD



Label the following:

- The south elevation
- The room designations and floor finishes
- Ground level, finished floor level and damp-proof course (use the correct abbreviations and show it on ALL the relevant views)



NOTE:

ALL drawings must comply with the guidelines and graphical symbols contained in the SANS 10143.

1. MARK ALLOCATION FOR SECTION OF ROOF		FOR OFFICIAL USE ONLY	
A (1)		INCORRECT SCALE	
B (1)		INCORRECT POSITIONING OF VIEWS	
C (2)		ROTATED VIEWS	
D (3)		PRINTED CAPITAL LETTERS	
E (1)			
F (1)			
G (1)			
H (1)			
I (3)			
TOTAL		TOTAL	

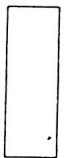
ASSESSMENT CRITERIA

FLOOR PLAN	
1 DOORS + WINDOWS	11
2 ELECTRICAL	8 1/2
3 FIXTURES	7 1/2
4 HATCHING	4
5 LABELS	4
SUBTOTAL	35

SOUTH ELEVATION	
1 ROOF	6 1/2
2 WALLS + RWDP + FFL + GUTTER	7 1/2
3 DOORS + WINDOWS	11 1/2
4 LABELS	1
SUBTOTAL	26 1/2

DETAILED SECTION	
1 ROOF	14
2 FOUNDATIONS + WALLS + SLAB	13 1/2
3 WINDOW + LINTELS	3 1/2
4 FIXTURE	3
5 LABELS	1 1/2
SUBTOTAL	35 1/2
TOTAL	97

SECTION A-A
SCALE 1 : 20



FLOOR PLAN
SCALE 1 : 50

