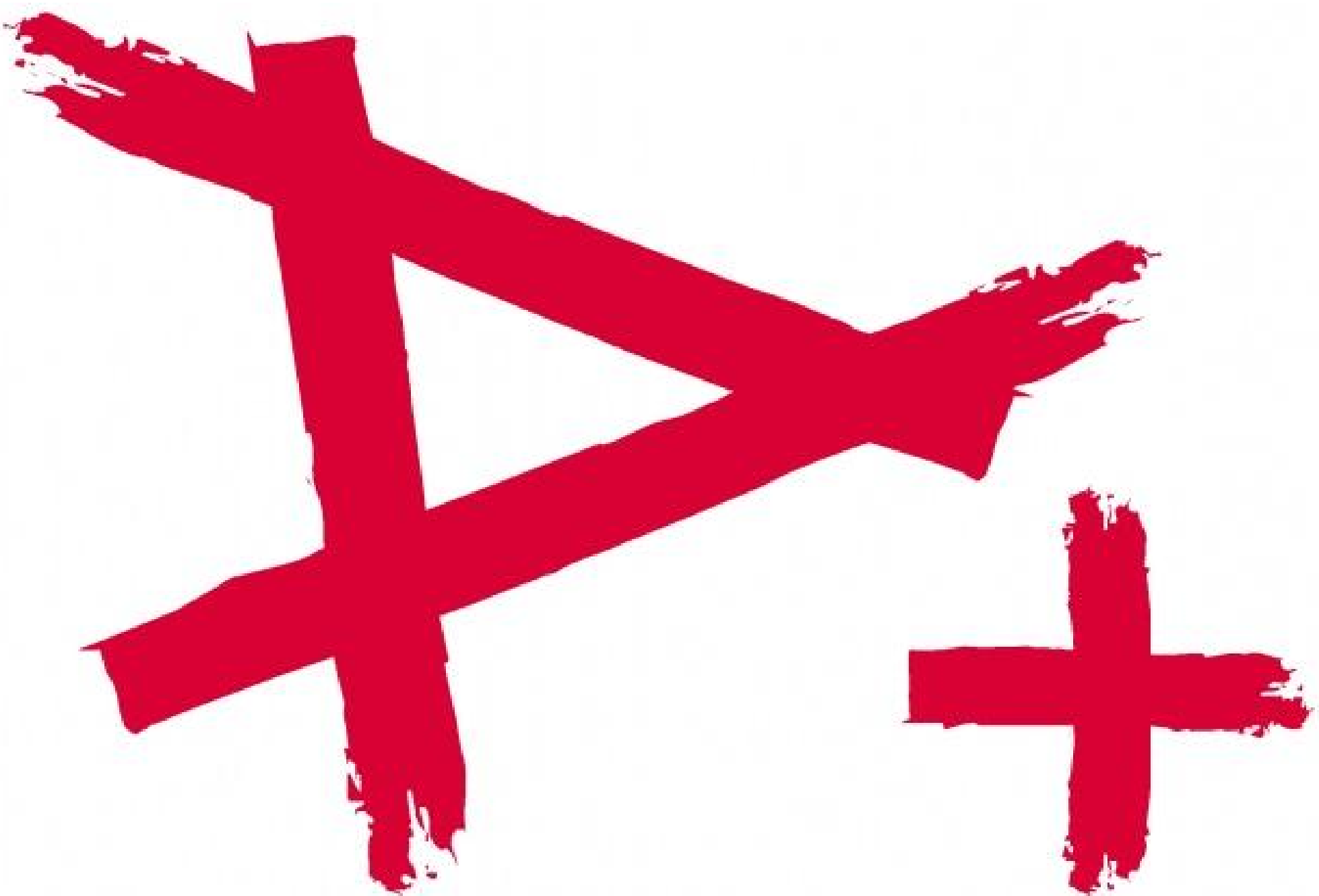




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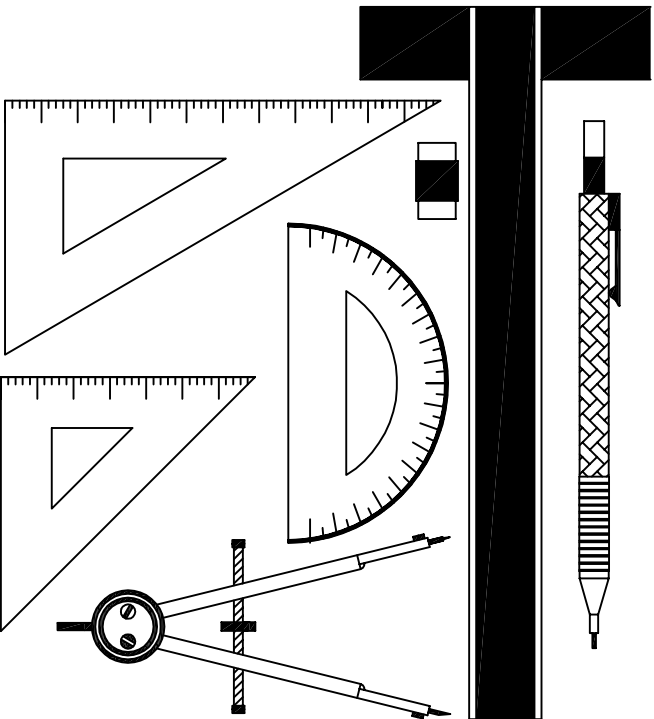
NATIONAL SENIOR CERTIFICATE EXAMINATION
2016

ENGINEERING GRAPHICS AND DESIGN
PAPER 1

MARKS: 200
TIME: 3 HOURS

PLEASE READ THE FOLLOWING INSTRUCTIONS CAREFULLY

1. This question paper consists of **6 pages** including the cover page and **4 questions**.
2. **All** questions must be answered.
3. Unless specified otherwise, all questions are in **First-angle Orthographic Projection**.
4. Unless specified otherwise, all questions are to be completed to a **scale of 1:1**.
5. **All** answer sheets must be re-stapled in numerical order, even questions that are not attempted/blank.
6. **All construction work** must be shown.
7. Print your **examination number** neatly on each page.
8. Use only the **answer sheets** provided.
9. Your drawings should reflect **neatness** and **accuracy**.
10. All dimensions or detail not given may be **assumed** in **good proportion**.
11. Your drawings should comply with SANS 10143.



FOR OFFICIAL USE ONLY									
QUESTION	SECTION	MARK	MODERATED	MAXIMUM	CODE				
1	CIVIL ANALYTICAL			20					
2	INTERPENETRATION & DEVELOPMENT			40					
3	TWO-POINT PERSPECTIVE			40					
4	CIVIL DRAWING			100					
SYMBOL	TOTAL			200					
				100					

FINAL CONVERTED MARK	CHECKED BY
100	

EXAMINATION NUMBER									

Floor plan details:

- DRESSER
- ND64
- GUEST SUITE carpet
- ND64
- 1500 x 4500 wooden deck
- 5

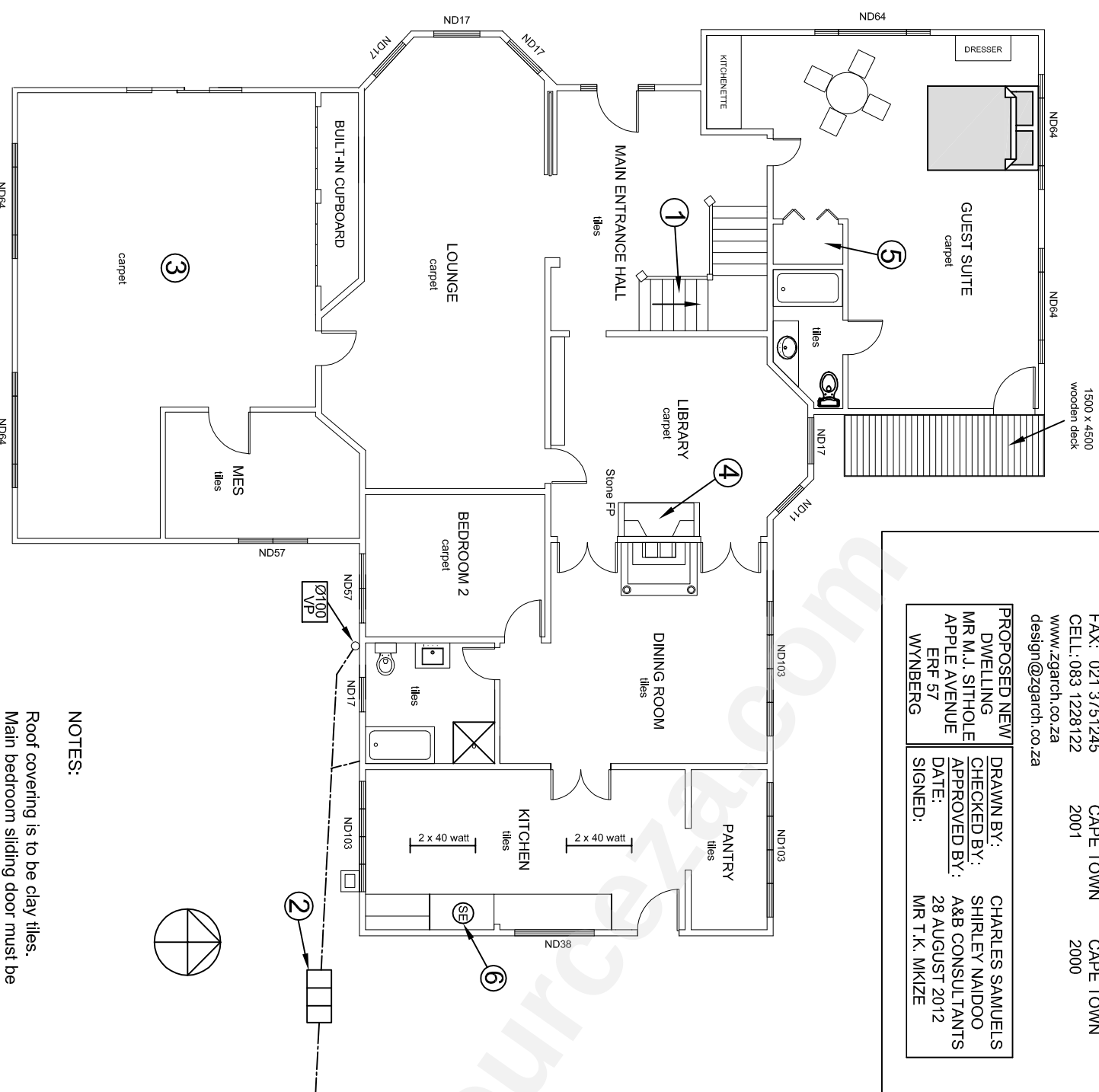
Z G Architects

"where the future is drawn"

Two architectural drawings of a house. The left drawing is a front elevation showing a house with a gabled roof, multiple windows, and a central entrance. The right drawing is a side elevation showing the same house from a different angle, highlighting the side wall and roofline.

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PROPOSED NEW DWELLING	
MR M.J. SITHOLE	
APPLE AVENUE	
ERF 57	
WYNBERG	
DRAWN BY:	CHARLES SAMUELS
CHECKED BY:	SHIRLEY NAIDOO
APPROVED BY:	A&B CONSULTANTS
DATE:	28 AUGUST 2012
SIGNED:	MRT.K. MKIZE



NOTES:

Roof covering is to be clay tiles.
Main bedroom sliding door must be aluminium.
Exterior walls to be face brick.
Interior walls to be standard clay brick.

STUDY THE ADJACENT DRAWING AND ANSWER THE QUESTIONS THAT FOLLOW:

- | | |
|---|--|
| 1.1 What type of civil drawing is shown? | |
| 1.2 How many bathrooms does this dwelling have? | |
| 1.3 What is the diameter of the ventilation pipe? | |
| 1.4 Who is the owner of the property ERF 57? | |
| 1.5 In which city is the architect's office found? | |
| 1.6 In which elevation would you see the main entrance door? | |
| 1.7 What is the feature at 1 called? | |
| 1.8 What is the feature at 2 called? | |
| 1.9 What is the room designation indicated by the number 3? | |
| 1.10 What does the abbreviation 'FP', as indicated at feature 4, stand for? | |
| 1.11 Suggest what the feature indicated by arrow 5 might be. | |
| 1.12 What is the feature at 6 called? | |
| 1.13 How many ND17 windows are shown on this drawing? | |
| 1.14 How many 40 watt fluorescent tubes are used in the kitchen? | |
| 1.15 How many rooms have a tile floor finish? | |
| 1.16 How many external doors are shown on this drawing? | |
| 1.17 What type of brick must be used for the exterior walls? | |
| 1.18 What is the area of the wooden deck in square metres? | |
| 1.19 In the space below, draw, in NEAT freehand, the PLAN VIEW and ELEVATION VIEW of the SABS convention for a wall-mounted urinal. | |

PLAN VIEW	ELEVATION VIEW

ANSWER SHEET 1

EXAMINATION NUMBER

20 MARKS

QUESTION

INTERPENETRATIK & DEVELOPMEN

The figure below shows the INCOMPLETE Front View at the INCOMPLETE Top View of a **CIRCULAR PIPE** penetrated by an **EQUILATERAL TRIANGULAR DUCT** drawn in First-angle Orthographic Projection. The auxiliary view of the triangular duct is also shown in the Top View.

Draw the following:

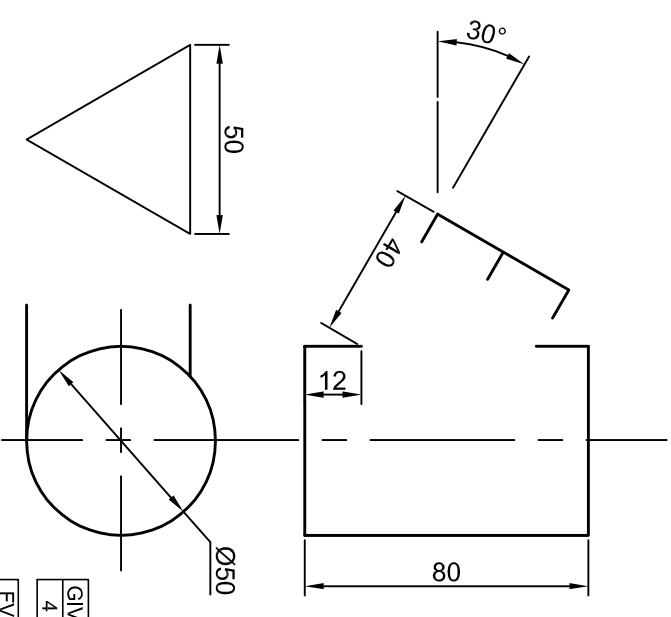
- 2.1 the complete FRONT view clearly showing the curve of interpenetration. Show all hidden detail.
- 2.2 the complete TOP view.
- 2.3 the development of the triangular duct.

Show all construction.

ASSESSMENT CRITERIA

You will be assessed on your ability to do the following:

- draw the given views
- complete the front view
- complete the top view
- show necessary construction
- develop and label the triangular duct



GIV	4				
FV	17				
TV	2				
CON	4				
DEV	13				

40 MARKS

EXAMINATION NUMBER

ANSWER SHEET 2

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PLEASE TURN O

QUESTION
TWO-POINT
PERSPECTIV

The figure shows the three views of an apartment dwelling.
Draw a neat two-point perspective view of the dwelling.

- PP - Picture Plane
- HL - Horizon Line
- GL - Ground Line
- SP - Station Point

Show the wall thickness where applicable.
Neatly label the vanishing points RVP and LVP.
NO HIDDEN DETAIL IS REQUIRED.

ASSESSMENT CRITERIA

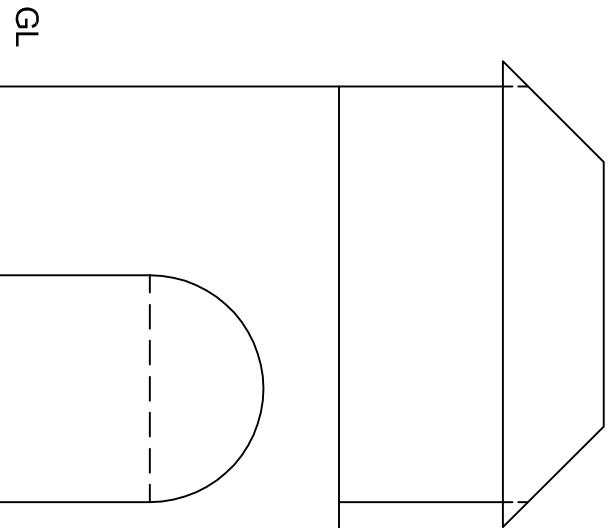
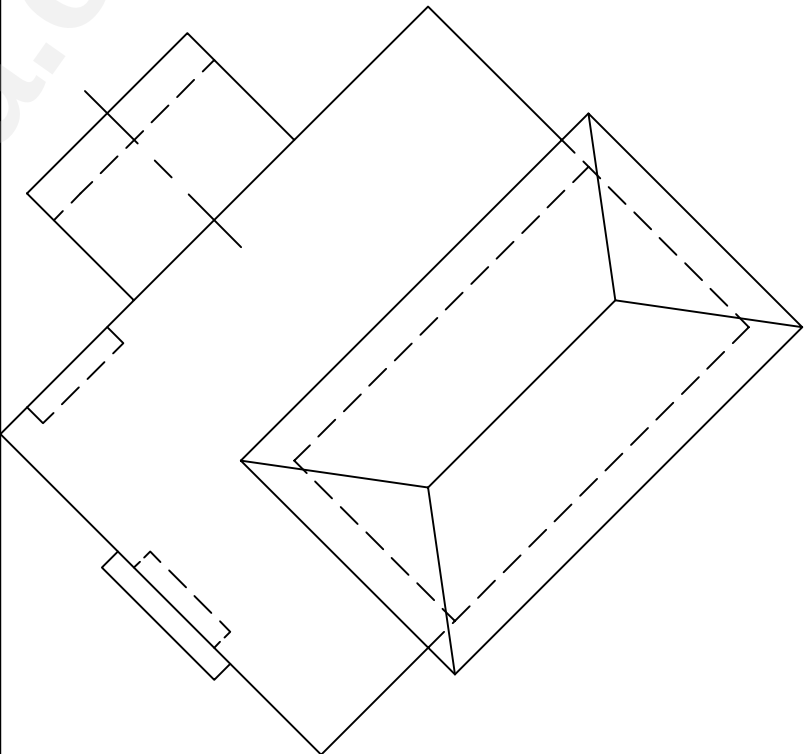
- You will be assessed on your ability to do the followin
- determine and label the vanishing points
 - determine the two-point perspective view

PP

F

HL

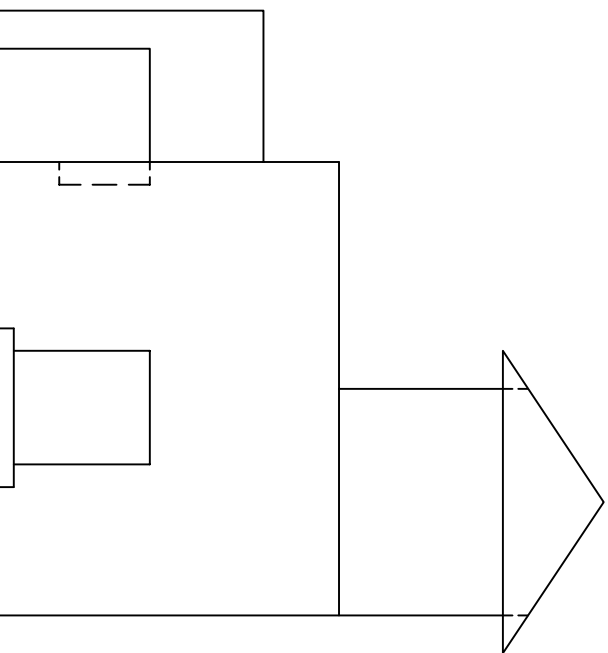
F



GL

PTS	23
PTS	6
Arc	9
VPS	2

SP

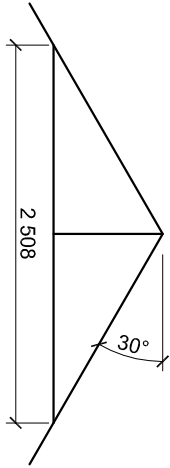


GL

40 MARKS

EXAMINATION NUMBER

ANSWER SHEET 3



NOTES:
All windows are casement wooden frame windows.

- Draw the following:**

- ## FLOOR PLAN INSTRUCTIONS

- ### SECTIONAL SOUTH ELEVATION INSTRUCTIONS

- Draw the complete south elevation showing the section as per the indicated cutting plane and the remaining outside elevation.
- Show the outside C22 window
- Show the external opening where the door frame would be positioned
- Show **some** detail for the corrugated asbestos roof sheeting
- Complete the foundation details
- Draw all floor slab details
 - ▶ use 10 mm screed and 150 mm compacted hardcore filling
- Label the ground level and damp-proof course
- Draw in the sectional C22 window
 - ▶ use ONE, 242 x 75 concrete lintel above the window
 - ▶ use 222 x 110 quarry tile window sill
 - ▶ show the window frame detail and label the damp proof course
- Roof details
 - ▶ draw the roof truss using 114 x 38 rafters and 100 x 75 plates
 - ▶ use FOUR, 76 x 50 purlins spaced at 2 000 centres
 - ▶ use TWO, 121 x 38 wall plates
 - ▶ use TWO, 38 x 38 battens spaced at 756 centres
 - ▶ use 228 x 38 fascia boards
 - ▶ use 9 mm gypsum ceiling boards
- Show all hatching detail and label the Sectional South Elevation

QUESTION
CIVIL
DRAWING

Assessment Criteria

Sectional South Elevator		
1	Ceiling Battens	2
2	Wall Plates	2
3	Ceiling Board	1
4	Truss Plates	4
5	Roof Truss	5
6	Purlins	4
7	Roof	1
8	Walls	4
9	Window	5
10	Floor & Foundation	6
11	DPC	2
12	Hatching	10
13	Fascia Board	3
14	Roof Detail	1
15	Walls - elevation	3
16	Labels	2
17	Outside window	4
18	External Door Position	2
Subtotal		61

Floor Plan		
19	External Plumbing	7
20	Walls	5
21	Hatching	4
22	Windows	4
23	Door	4
24	Internal Plumbing	3
25	Electrical	4
26	Labels	4
27	Cutting Plane	2
28	Cupboard	2

Subtotal	39
TOTAL	100

MH

ANSWER SHEET 4

EXAMINATION NUMBER									

100 MARKS