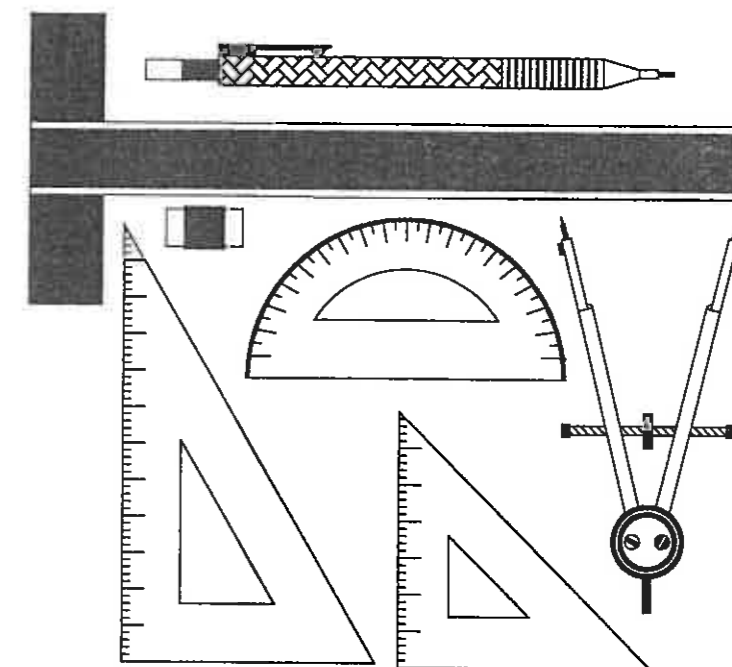




NATIONAL SENIOR CERTIFICATE EXAMINATION
2014

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 **drawing sheets** provided.
9. Your drawings should reflect **neatness** and **accuracy**.
10. All dimensions or detail not given may be **assumed** in **good proportion**.

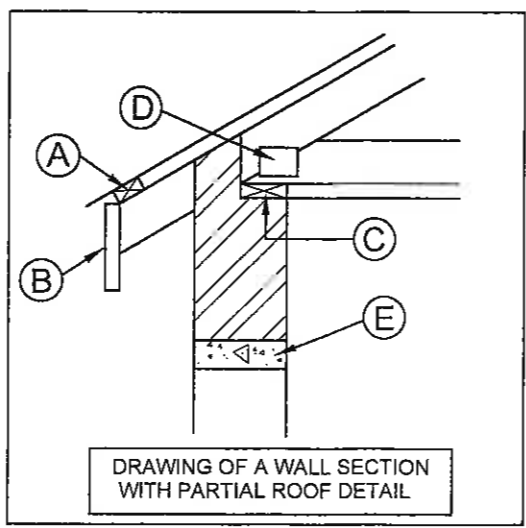
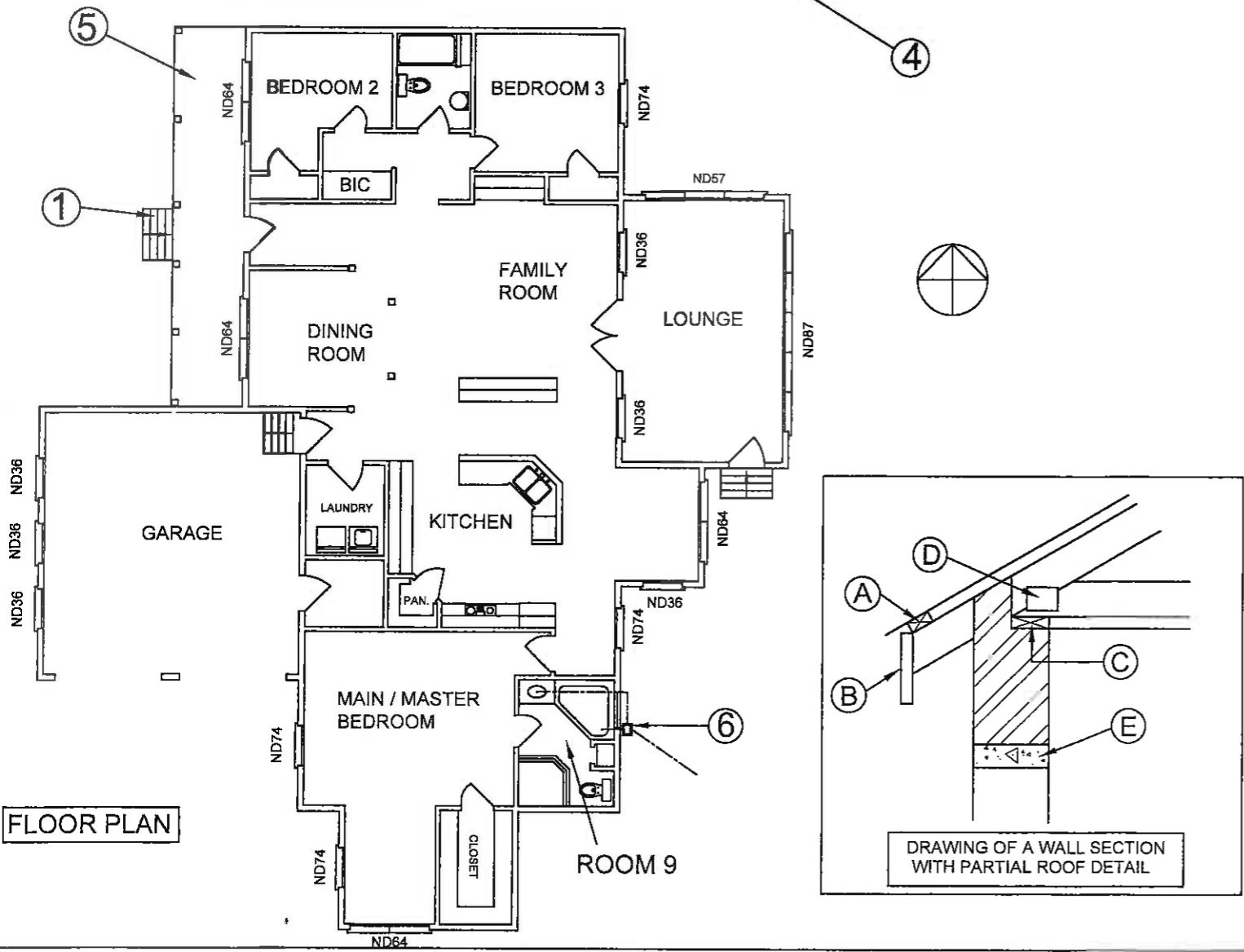
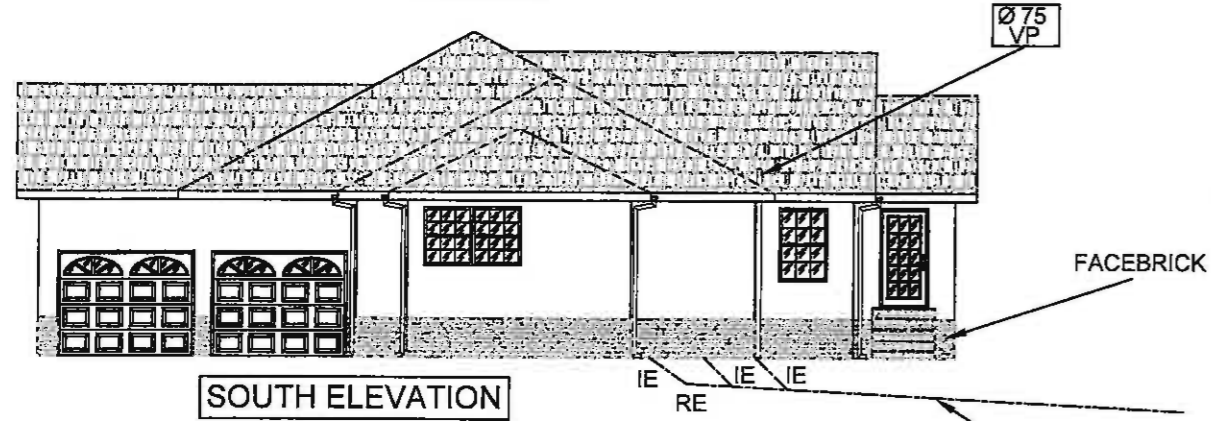
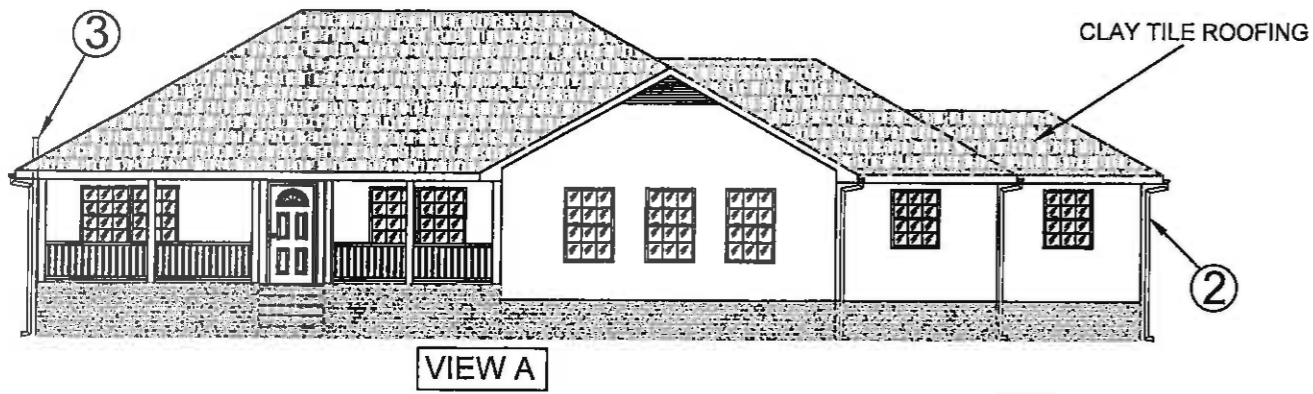
FOR OFFICIAL USE ONLY					
QUESTION	SECTION	MARK	MODERATED	MAXIMUM	CODE
1	CIVIL ANALYTICAL			20	
2	INTERPENETRATION			38	
3	TWO POINT PERSPECTIVE			42	
4	CIVIL DRAWING			100	
SYMBOL	TOTAL			200	
				100	

FINAL CONVERTED MARK	CHECKED BY
100	

EXAMINATION NUMBER

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QUESTION 1
CIVIL
ANALYTICAL



STUDY THE ADJACENT DRAWING AND ANSWER THE QUESTIONS THAT FOLLOW:

1.1 What elevation is VIEW A?		1
1.2 What would be the room designation of ROOM 9?		1
1.3 What type of tiles cover the roof?		1
1.4 What does the abbreviation 'IE' stand for?		1
1.5 What does the abbreviation 'BIC' stand for?		1
1.6 A car reverses straight out of the garage. In which direction is it moving?		1
1.7 What is the feature at 1 called?		1
1.8 What is the feature at 2 called? (No abbreviations)		1
1.9 What is the feature at 3 called? (No abbreviations)		1
1.10 What is the feature at 4 called?		1
1.11 What is the name of the area indicated by arrow 5?		1
1.12 What is the feature at 6 called?		1
1.13 How many panes of glass are needed for all the ND64 windows?		1
1.14 With reference to the drawing of the wall section with partial roof detail, indicate which feature is represented by the corresponding letter.	A	4
	B	
	C	
	D	
1.15 What material is the lintel (indicated by E) made from?		1

1.16 In the space below, draw, in NEAT freehand, the PLAN VIEW and ELEVATION VIEW of the SABS convention for a Water Closet (toilet).		2
PLAN VIEW	ELEVATION VIEW	

20 MARKS

ANSWER SHEET 1

EXAMINATION NUMBER

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QUESTION 2

INTERPENETRATION

The figure below shows the **INCOMPLETE** Front View and an **INCOMPLETE** Top View of a **SQUARE DUCT** penetrated by a **CIRCULAR PIPE** which is drawn in First angle Orthographic Projection. The axes of both the square duct and circular pipe lie in the same vertical plane.

Draw the following:

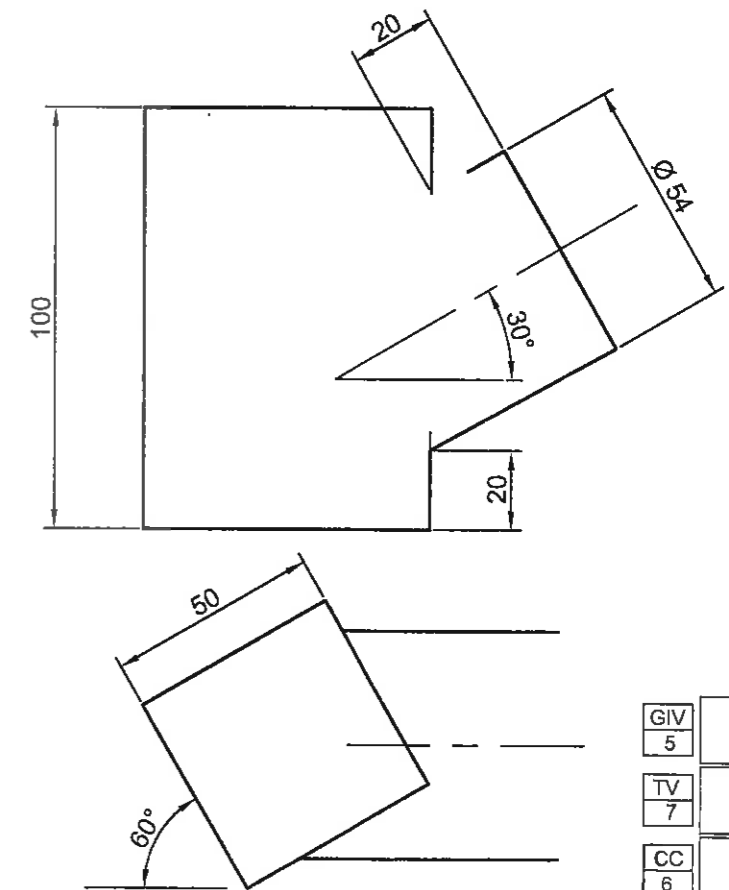
- 2.1 the complete **FRONT** view clearly showing the curve of the interpenetration. Show all hidden detail.
- 2.2 the complete **TOP** view.

Show all construction.

ASSESSMENT CRITERIA

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

- draw the complete front view 19
- draw the complete top view 13
- show necessary centre lines and construction 6



GIV	5	
TV	7	
CC	6	
FV	16	
HD	4	

38 MARKS

EXAMINATION NUMBER

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ANSWER SHEET 2

QUESTION 3
TWO POINT
PERSPECTIVE

The figure shows the three views of a dwelling with a semi-circular step. Draw a neat two-point perspective view of the dwelling and step.

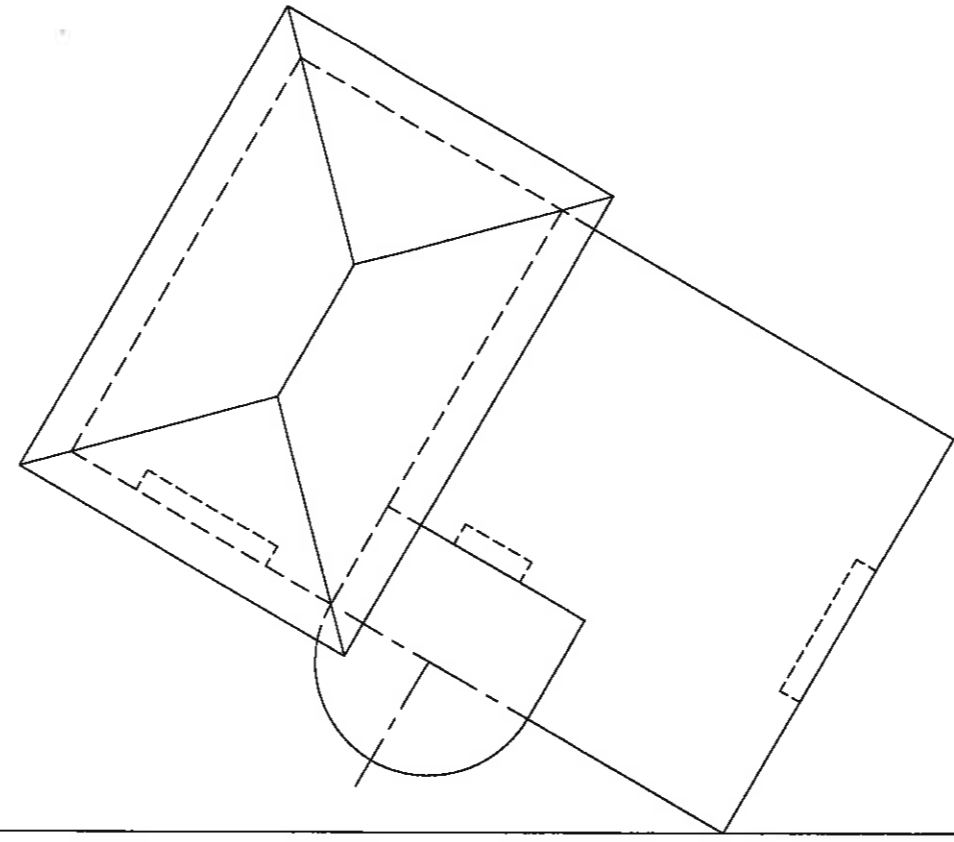
- PP - Picture Plane
- HL - Horizon Line
- GL - Ground Line
- SP - Station Point

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

ASSESSMENT CRITERIA

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

- determine and label the vanishing points 2
- determine the two point perspective view 40

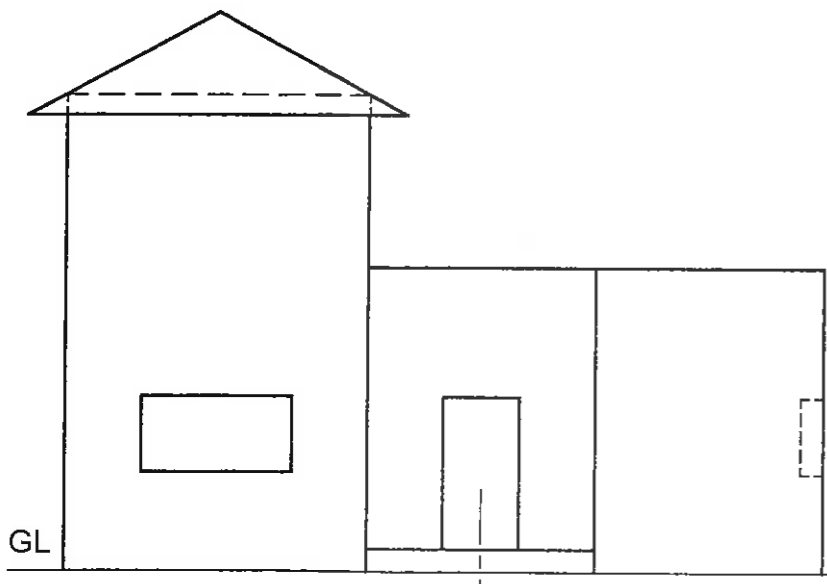


PP

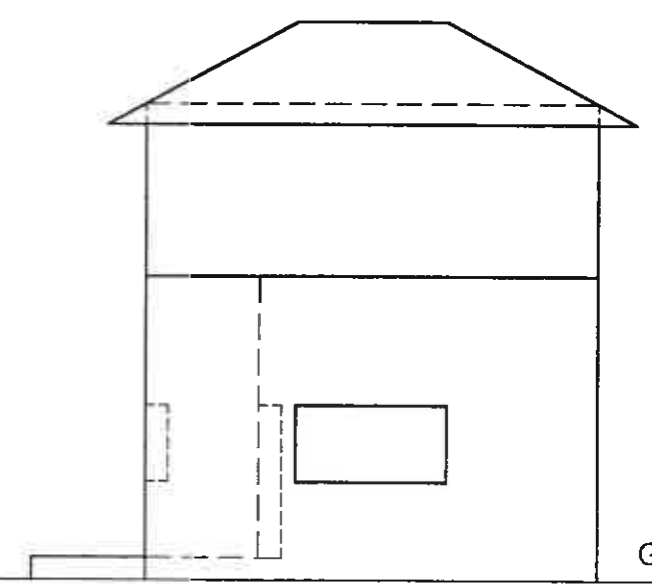
PP

HL

HL



GL



GL

SP

PTS	
21	
Step	
10	
W/D	
9	
VPS	
2	

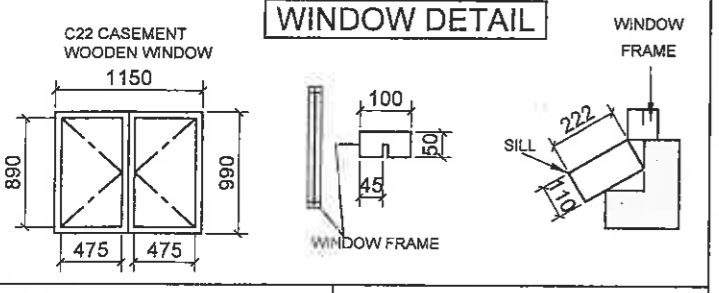
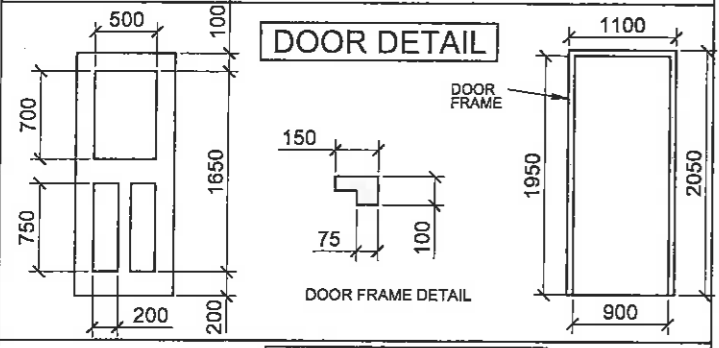
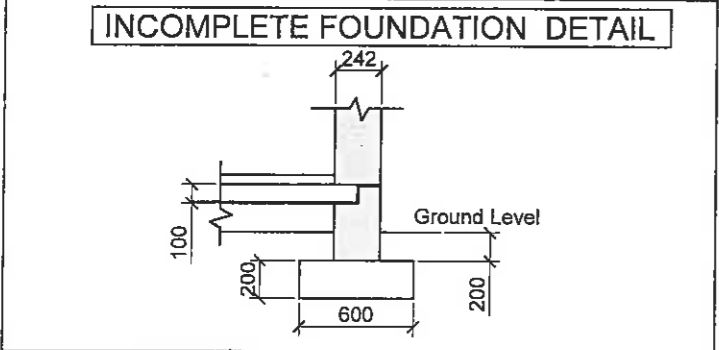
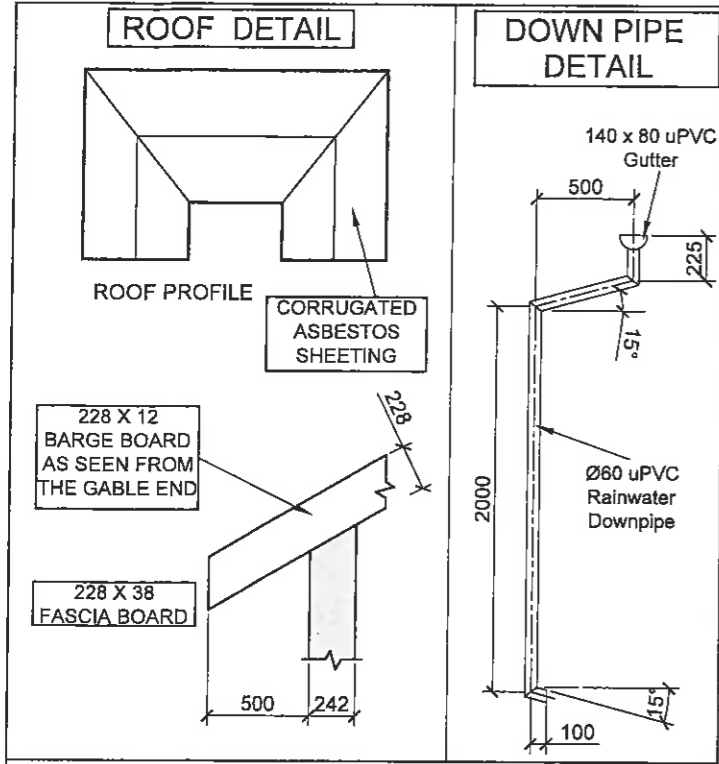
42 MARKS

EXAMINATION NUMBER

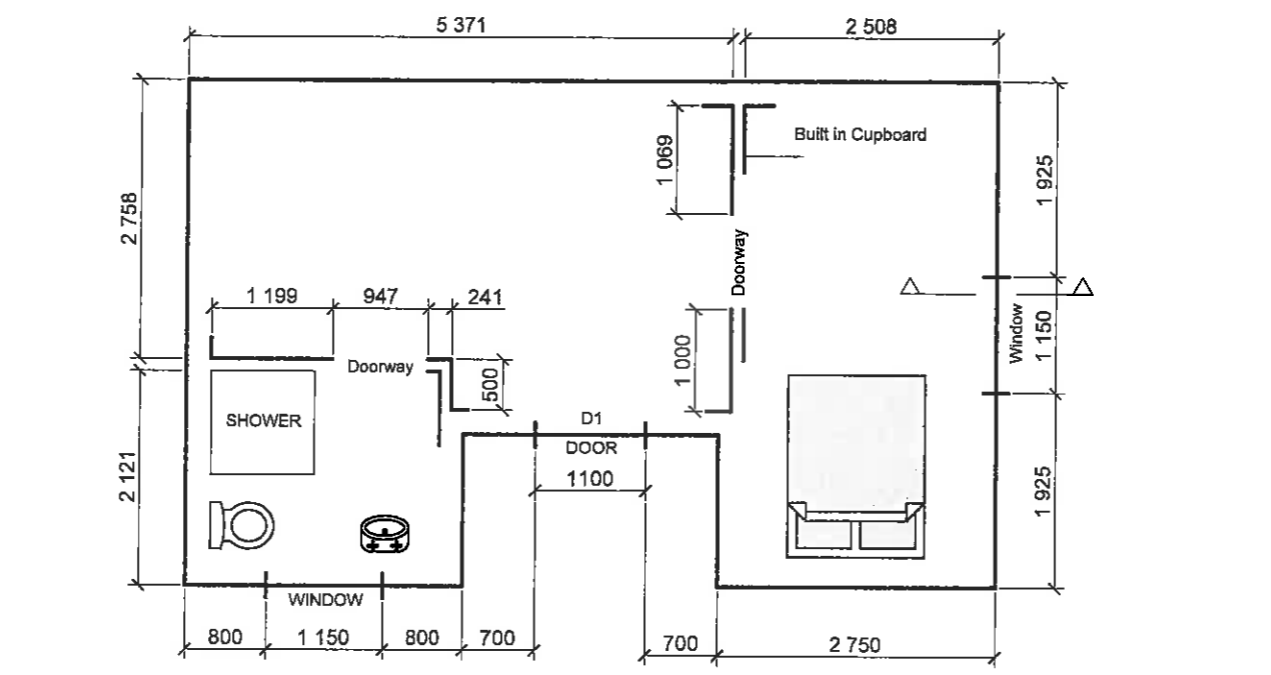
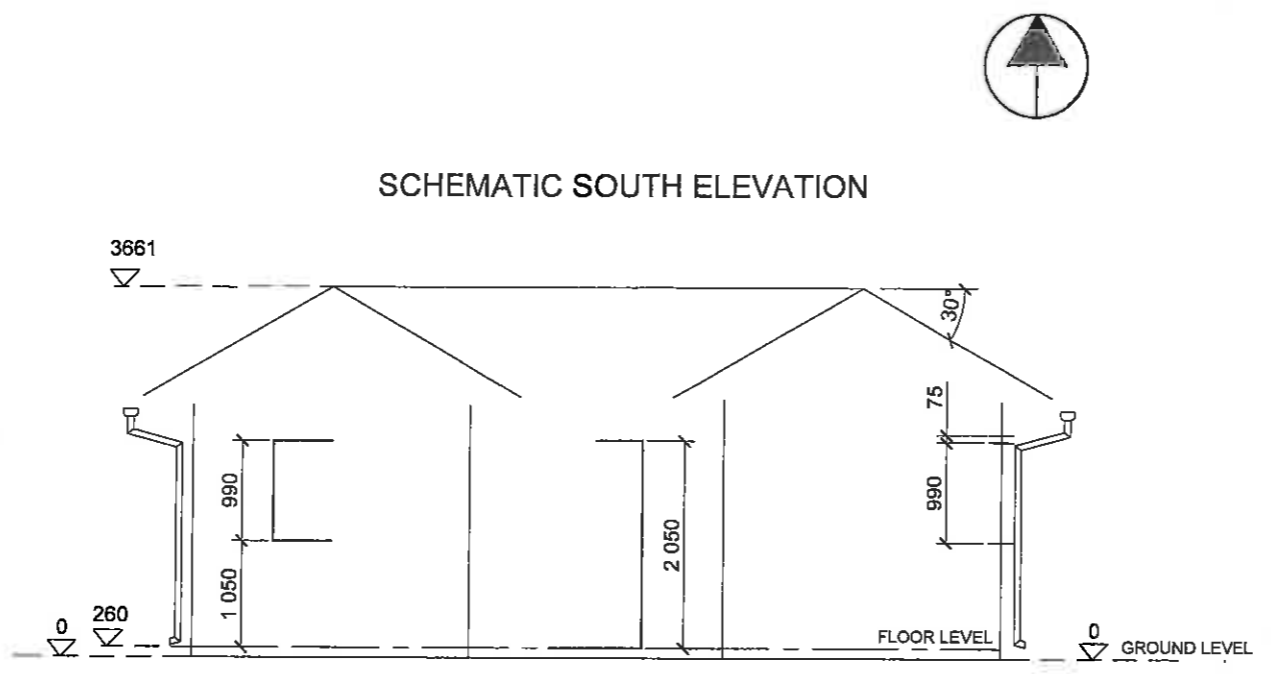
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ANSWER SHEET 3

QUESTION 4
CIVIL DRAWING



PLUMBING FIXTURES LEGEND		OTHER	
PLAN	FIXTURES		
	WASH BASIN		DOUBLE BED



Answer this question on **ANSWER SHEET 4**.
All drawings must comply with SABS 10143.

The following is given:

- An incomplete schematic floor plan of a **SINGLE BEDROOM HOUSE**
 - ▶ window and door positions
 - ▶ perimeter dimensions
- An incomplete schematic elevation
 - ▶ door and window positions, ground and floor levels
- Door and door frame detail
- Incomplete foundation detail
- Roof and down pipe detail
- Plumbing and other fixtures legend
- Window, window frame and window sill detail

Draw the following:

- The **complete** floor plan using a scale of 1:50
- The **SOUTH** elevation using a scale of 1:50
- The **sectional detail** of **only** the window and foundation as indicated on the right hand wall using a scale of 1:25

FLOOR PLAN INSTRUCTIONS (use scale 1:50)

- Draw and hatch all walls
- Insert all window details
- Insert the door detail of the external door only
- Draw a 1 000 × 1 000 shower and wash basin (position suitably)
- Insert a double bed in the bedroom in the position indicated
- Draw a 500 mm deep built in cupboard against the northern wall of the bedroom
- Insert the following electrical detail:
 - ▶ a TWO, 40 watt fluorescent tube light in the centre of the lounge
 - ▶ a single wall mounted light outside the **southern door**
 - ▶ one switch for both lights
 - ▶ one switched socket outlet on the **eastern** bedroom wall
- Label the floor plan and the scale

SOUTH ELEVATION INSTRUCTIONS (use scale 1:50)

- Draw the complete **outside** south elevation showing window and door details
- include a Rain Water Down Pipe on both the left and right of the dwelling – position the top of the pipe half way down the barge board
- Show **some** detail for the corrugated asbestos roof sheeting
- Label the South Elevation

SECTIONAL DETAIL INSTRUCTIONS (use scale 1:25)

In the space provided and indicated, draw the sectional detail of the window and foundation for the right hand, external wall at a scale of 1:25.

- Sectional window detail:**
 - ▶ use ONE, 242 × 75 concrete lintel above the window
 - ▶ use 222 × 110 quarry tile window sill
 - ▶ show the window frame detail
 - ▶ complete all hatching detail
- Sectional Right foundation detail**
 - ▶ insert all floor slab details
 - ▶ use 10 mm screed and 150 mm compacted hardcore filling
 - ▶ label the ground level and damp proof course
 - ▶ complete all hatching detail

EXAMINATION NUMBER

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QUESTION 4

CIVIL
DRAWING

SECTIONAL WINDOW DETAIL



SECTIONAL FOUNDATION DETAIL



Assessment Criteria

Sectional Detail

1	Lintel	1	
2	Window	4	
3	Window Sill	1	
4	Hatching	4	
5	Footing	1	
6	DPC	1	
7	Floor & Foundation	5	
8	Hatching	6	
9	Ground Line	1	
10	Labels	2	

Subtotal		26	
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South Elevation

11	Walls	7	
12	Roof Detail	1	
13	Windows	6	
14	Fascia/Barge Board	5	
15	Down Pipes	8	
16	Door	6	
17	Floor Finish Level	1	
18	Labels	2	

Subtotal		36	
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Floor Plan

19	Walls	9	
20	Hatching	7	
21	Cupboard	2	
22	Bed	1	
23	Windows	4	
24	Door	4	
25	Electrical	6	
26	Plumbing Fixtures	3	
27	Labels	2	

Subtotal		38	
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TOTAL		100	
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100 MARKS

EXAMINATION NUMBER

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ANSWER SHEET 4