



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

NATIONAL
SENIOR CERTIFICATE

GRADE 11



ENGINEERING GRAPHICS AND DESIGN P1

NOVEMBER 2016

MARKS: 200

TIME: 3 hours

This question paper consists of 6 pages.

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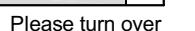
INSTRUCTIONS AND INFORMATION

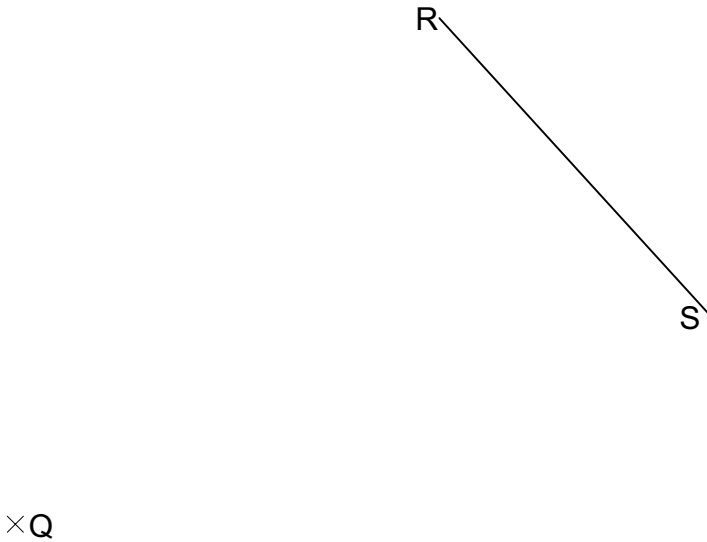
1. The paper consists of FOUR questions.
2. Answer ALL the questions.
3. All drawings must be drawn to scale 1 : 1, unless otherwise stated.
4. The questions must be answered on the answer sheets provided.
5. All the answers sheets must be re-stapled in numerical sequence and handed in irrespective of whether the question was attempted 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 estimated in good proportion.
10. ALL drawings are in first angle orthographic projection, unless stated otherwise.

FOR OFFICIAL USE ONLY									
								MODERATED MARK	
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COMPLETE THE FOLLOWING:	
NAME	
NAME	
EXAMINATION CENTRE	
EXAMINATION CENTRE	

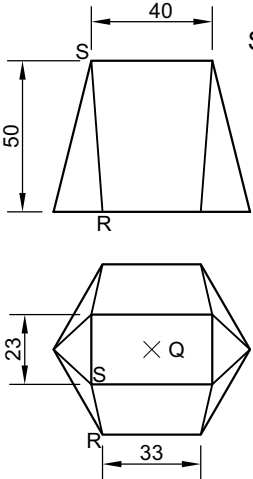




QUESTION 2A: TRANSITION PIECE

Given:
The front view and the top view of a hexagon to rectangle transition piece.
Starting point Q on the answer sheet.
Seam RS as starting point for the development.

Instructions:
Draw, to scale 1 : 1, the following views of the transition piece:
2.1 The complete front view,
2.2 The complete top view,
2.3 The development of the surface.



Show ALL constructions and fold lines.

[26]

ASSESSMENT CRITERIA					
1	TOP VIEW	9			
2	FRONT VIEW	3			
3	CONSTRUCTION	5			
4	DEVELOPMENT	9			
PENALTIES (-)					
SUBTOTAL		26			

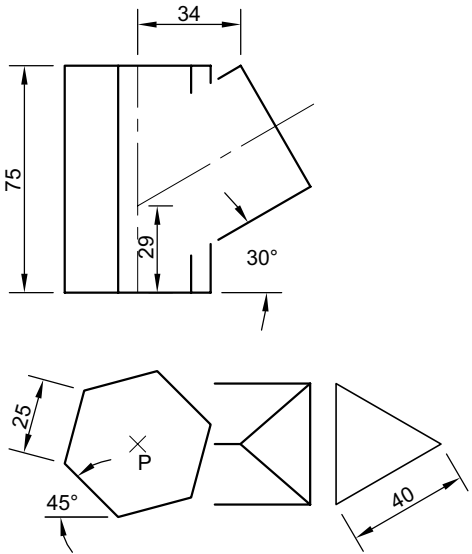
QUESTION 2B: INTERPENETRATION

Given:
The incomplete front view and the incomplete top view of a triangular pipe penetrating a hexagonal pipe.
An auxiliary view of the triangular piipe.
Origin P and centre lines on the answer sheet.

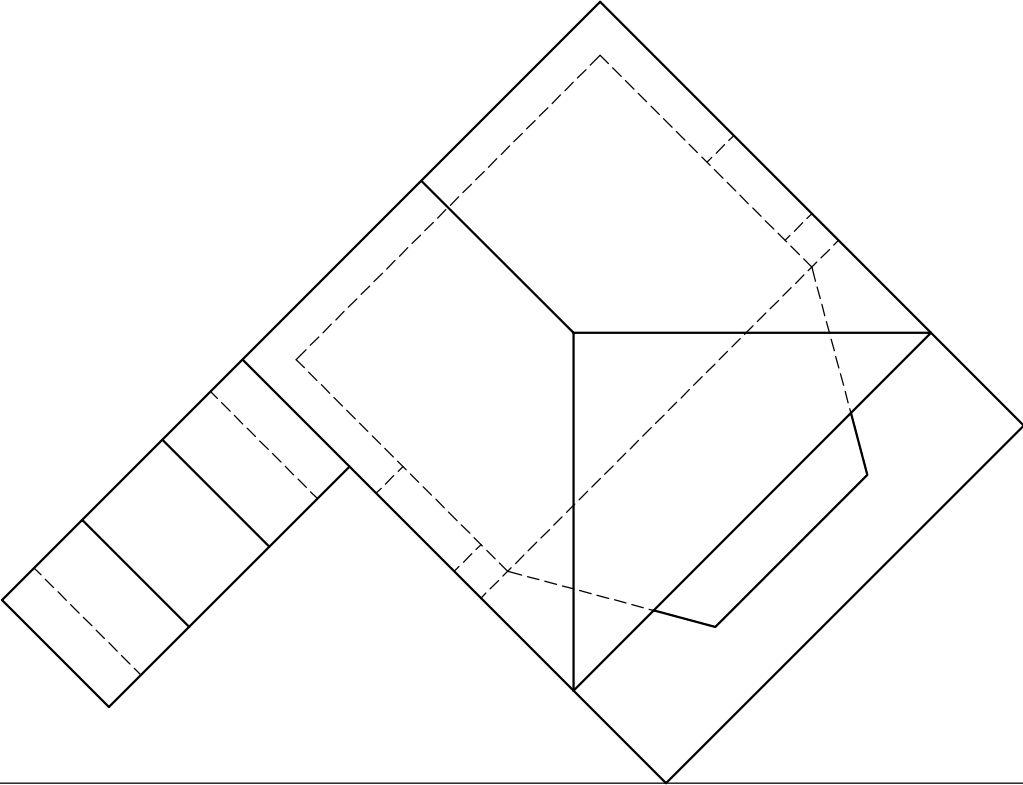
Instructions:
Draw, to scale 1 : 1, the following views of the transition piece:
2.1 The complete top view,
2.2 The complete front view showing the lines of interpenetration.

Show ALL constructions and hidden detail.

[19]



ASSESSMENT CRITERIA					
1	FRONT VIEW	7			
2	TOP VIEW	6			
3	AUX VIEW	2			
4	INTERPENETRATION	4			
PENALTIES (-)					
SUBTOTAL 2A		26			
SUBTOTAL 2B		19			
TOTAL		45			
NAME					
NAME					3



PP

HL

GL

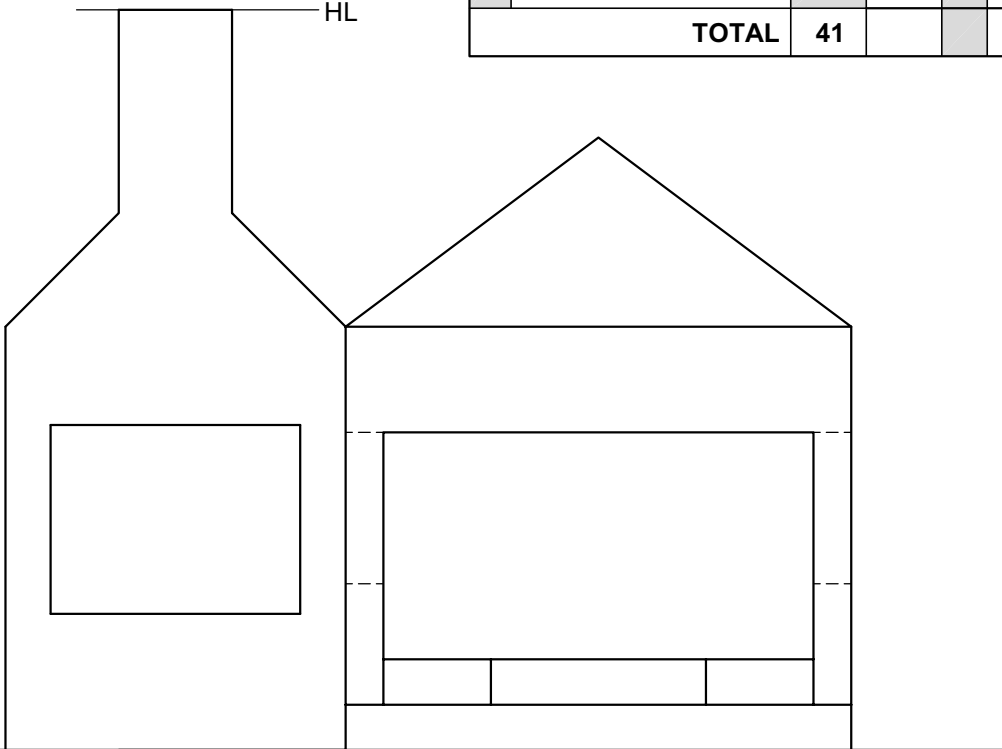
SP

QUESTION 3: PERSPECTIVE

Given:
Two views of an outdoor entertainment area
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 necessary construction.
 - NO hidden detail is required.
- [41]

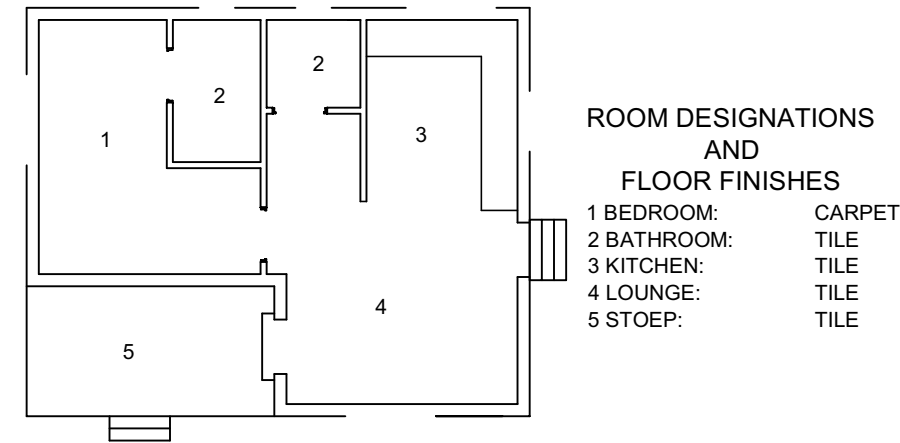
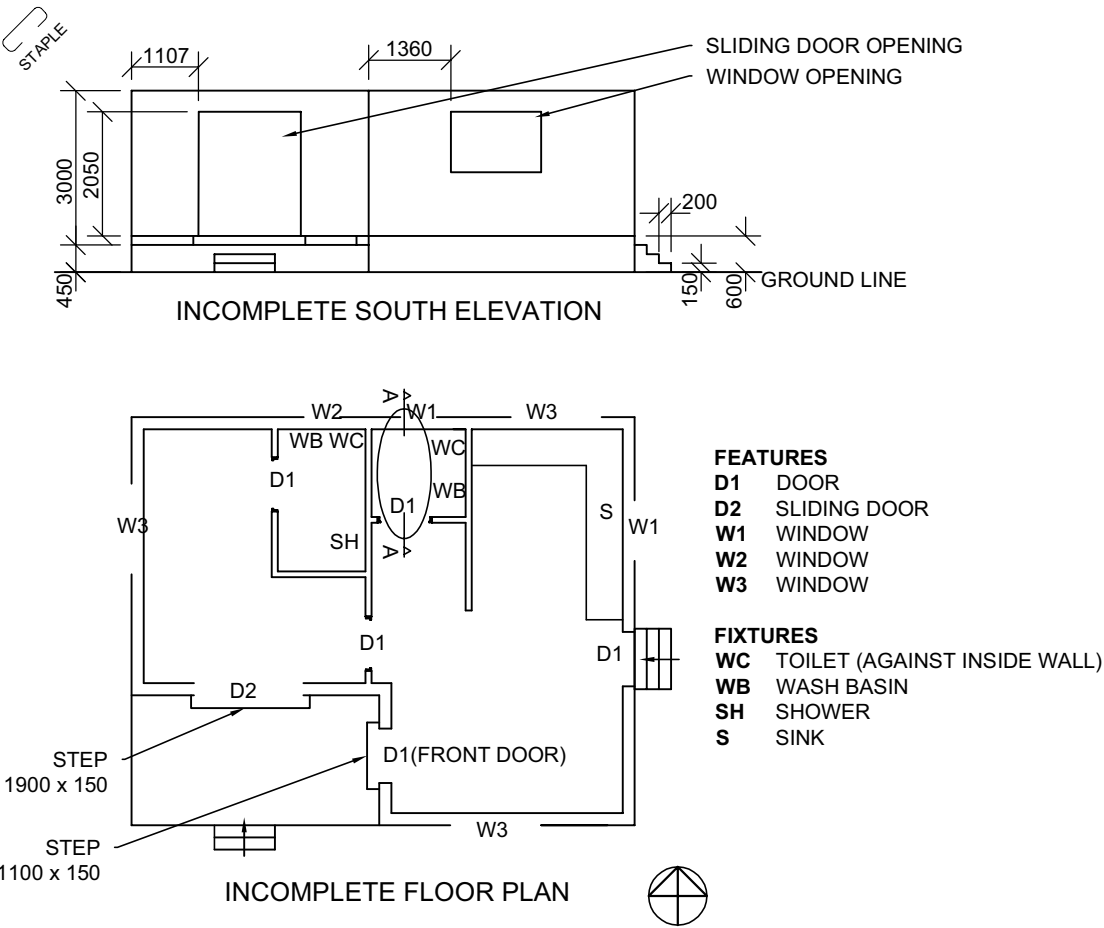
ASSESSMENT CRITERIA					
1	CONSTRUCTION + VPs	8			
2	WALLS + STEPS	15 ¹ / ₂			
3	OPENINGS	13			
4	ROOF	4 ¹ / ₂			
TOTAL		41			



NAME

NAME

4



QUESTION 4: CIVIL DRAWING

- Given:**
- The incomplete south elevation of a **proposed new cottage**, showing the walls, window, steps and the door opening
 - The incomplete floor plan showing the walls, position of the doors, windows and sanitary fixtures
 - The incomplete foundation and wall detail
 - Room designations and floor finishes
 - A door and window schedule
 - A table of sanitary fixtures
 - The floor plan of the new cottage, drawn to scale **1 : 50** and the starting point for the detiled section drawn to scale **1 : 20** on page 6.

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 **new cottage**:

- 4.1.1 THE COMPLETE FLOOR PLAN**
Add the following features to the drawing:
- ALL doors, windows and steps at the sliding door
 - ALL fixtures as indicated by the abbreviations
 - ALL hatching detail

- 4.1.2 THE SOUTH ELEVATION**
Show the following features on this view:
- The outside walls, window, door and step detail
 - The finished floor level

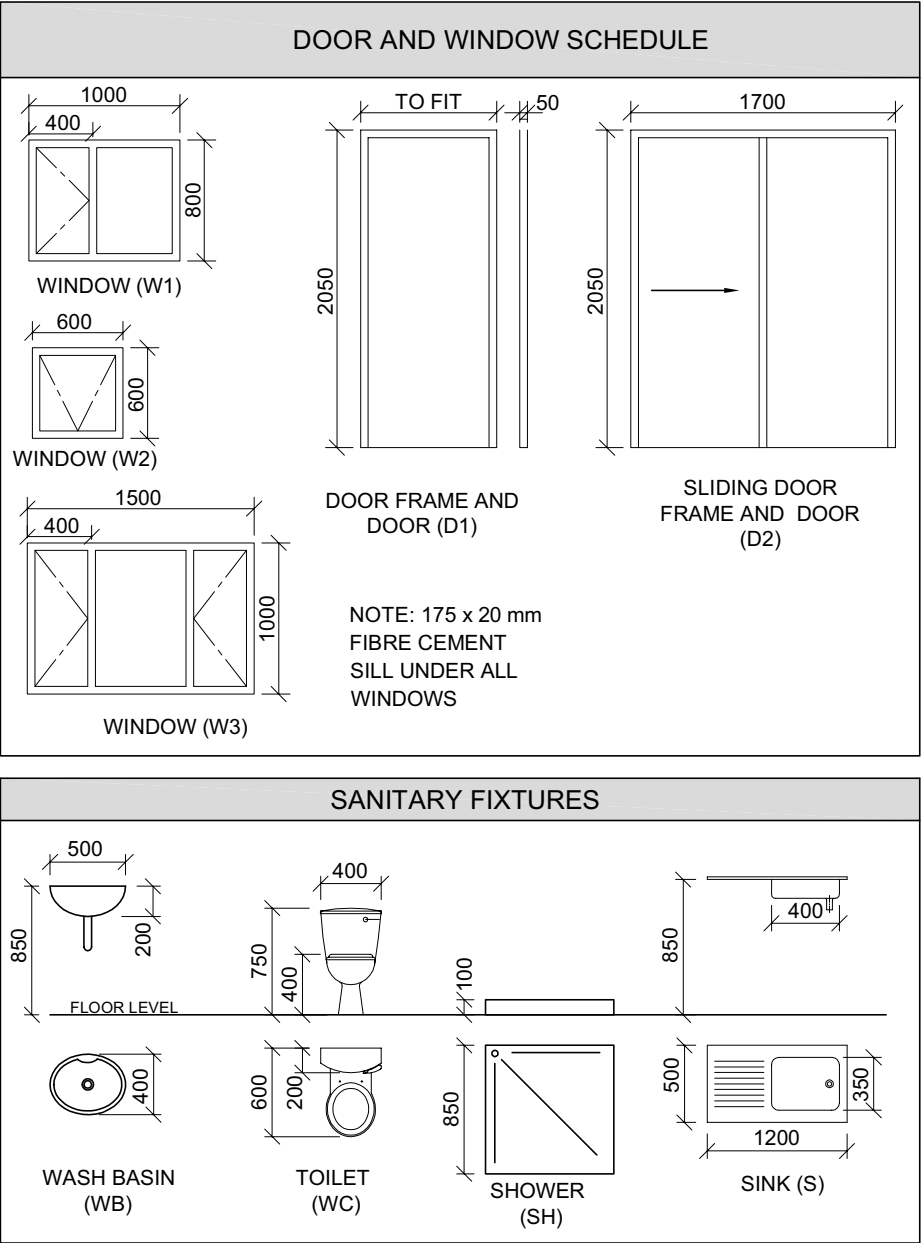
4.2 In the space provide on page 6, draw, to **scale 1 : 20**, a **DETAILED SECTION** according to cutting plane A-A of the area in the ellipse shown on the floor plan

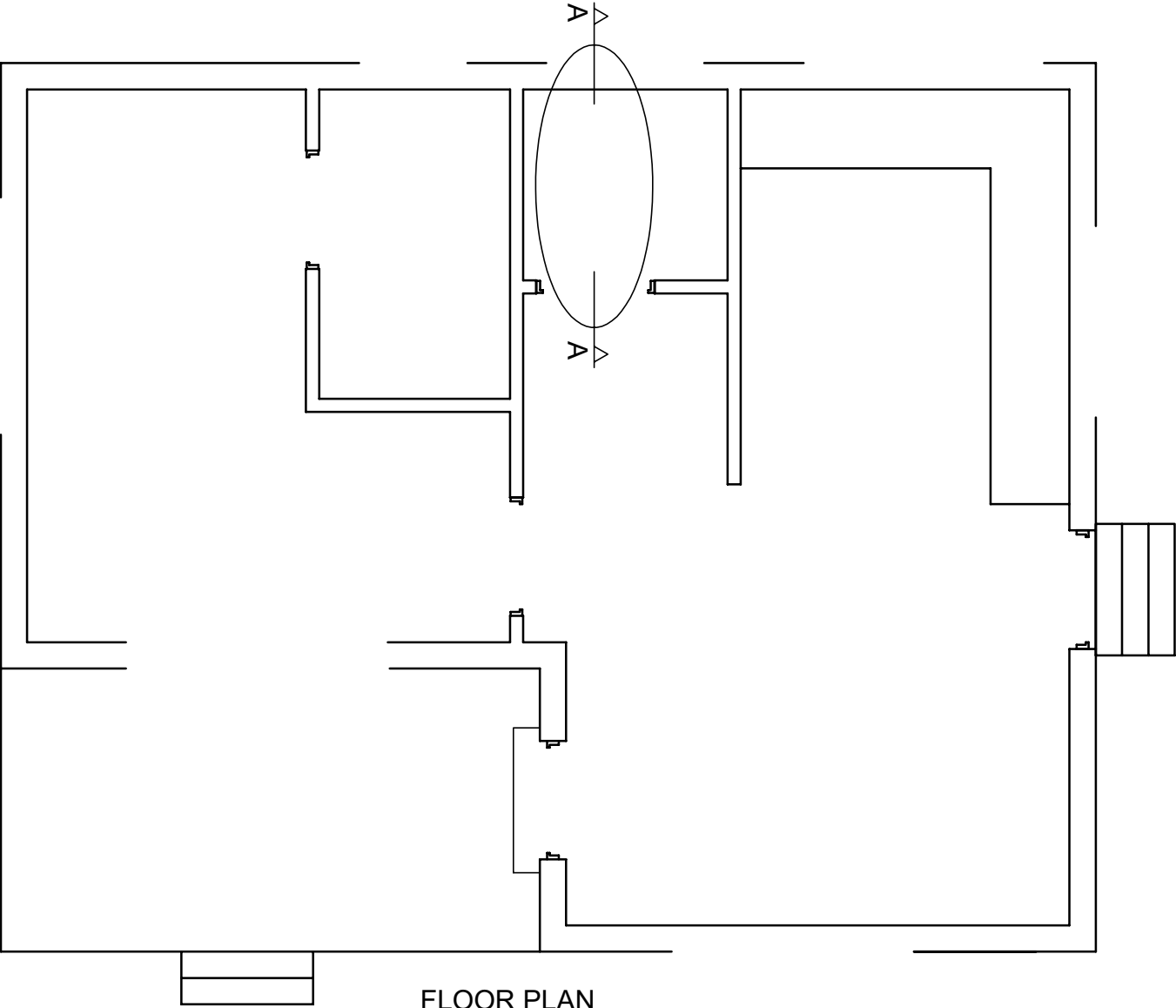
Show the following features on this view:

- The complete foundation, walls, door and window detail
- ALL hatching detail. ONLY the substructure hatching may be drawn in neat freehand.
- The lintels above the door and window
- All visible sanitary fixtures

- Label the following:**
- The south elevation including the scale
 - The room designations and floor finishes
 - Using the correct abbreviations, label the following features in the correct view: natural ground level, finished floor level and damp proof course

NOTE:
ALL drawings must comply with the **guidelines** and **graphical symbols** contained in the *SANS 10143*. [86]





FLOOR PLAN
SCALE 1 : 50

STARTING POINT FOR
DETAILED SECTION

SECTION A-A
SCALE 1 : 20

OFFICIAL USE		
1	INCORRECT OVERALL SCALE	
2	INCORRECT POSITIONING OF VIEWS	
3	NON-ALIGNMENT OF VIEWS	
TOTAL PENALTIES (-)		

ASSESSMENT CRITERIA					
FLOOR PLAN					
1	DOORS + WINDOWS + STEPS	20			
2	FIXTURES	6			
3	HATCHING	6			
4	LABELS	6			
SUBTOTAL		38			
SOUTH ELEVATION					
1	WALLS	3			
2	DOOR	2 ½			
3	WINDOW	5 ½			
4	STEPS	6 ½			
5	LABELS	3			
SUBTOTAL		20 ½			
DETAILED SECTION					
1	FOUNDATIONS + WALLS + SLAB	11			
2	DOOR + WINDOW + LINTEL + SILL	5			
3	HATCHING	5 ½			
4	LABELS	2			
5	FIXTURES	2			
SUBTOTAL		25 ½			
TOTAL		84			
PENALTIES (-)					
FINAL TOTAL					

NAME	
NAME	6