



EXAMINATION NATIONAL SENIOR CERTIFICATE	
DATE	NOVEMBER 2025
SUBJECT	ENGINEERING GRAPHICS AND DESIGN
PAPER	1
MARK TOTAL	100
DURATION (HOURS)	3
NUMBER OF PAGES	6

### INSTRUCTIONS AND INFORMATION

1. This paper consists of FOUR questions.
2. Answer ALL the questions.
3. ALL drawings are in first-angle orthographic projection, unless otherwise stated.
4. ALL drawings must be prepared using pencil and instruments, unless otherwise stated.
5. ALL answers must be drawn accurately and neatly.
6. ALL questions must be answered on the question paper, as instructed.
7. ALL pages must be placed in numerical order and stapled in ONLY the TOP LEFT CORNER once completed, regardless whether the question was answered or not.
8. Time management is essential in order to complete all the questions.
9. Print script your examination number in the block provided on each page.
10. Any detail or dimensions not given must be assumed in good proportion.



SOUTH AFRICAN COMPREHENSIVE ASSESSMENT INSTITUTE  
 SUID-AFRIKAANSE KOMPREENSIEWE ASSESSERINGSINSTITUUT

### EXAMINATION STICKER

FOR OFFICIAL USE ONLY															
QUESTION	MARK OBTAINED			½	SIGN	MODERATED			½	SIGN	RE-MARKING			½	SIGN
1															
2															
3															
4															
TOTAL:	2	0	0			2	0	0			2	0	0		

FINAL CALCULATED MARK	CHECKED
<u>100</u>	

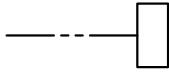
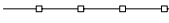



CENTRE NUMBER
CENTRE NUMBER
IDENTIFICATION NUMBER
IDENTIFICATION NUMBER
EXAMINATION NUMBER
EXAMINATION NUMBER

STAPLE

LAND SURVEYOR'S CERTIFICATE OF THE CORNER HEIGHTS AND BOUNDARY LENGTHS OF STAND 1122, SURVEYED ON 02/01/2025

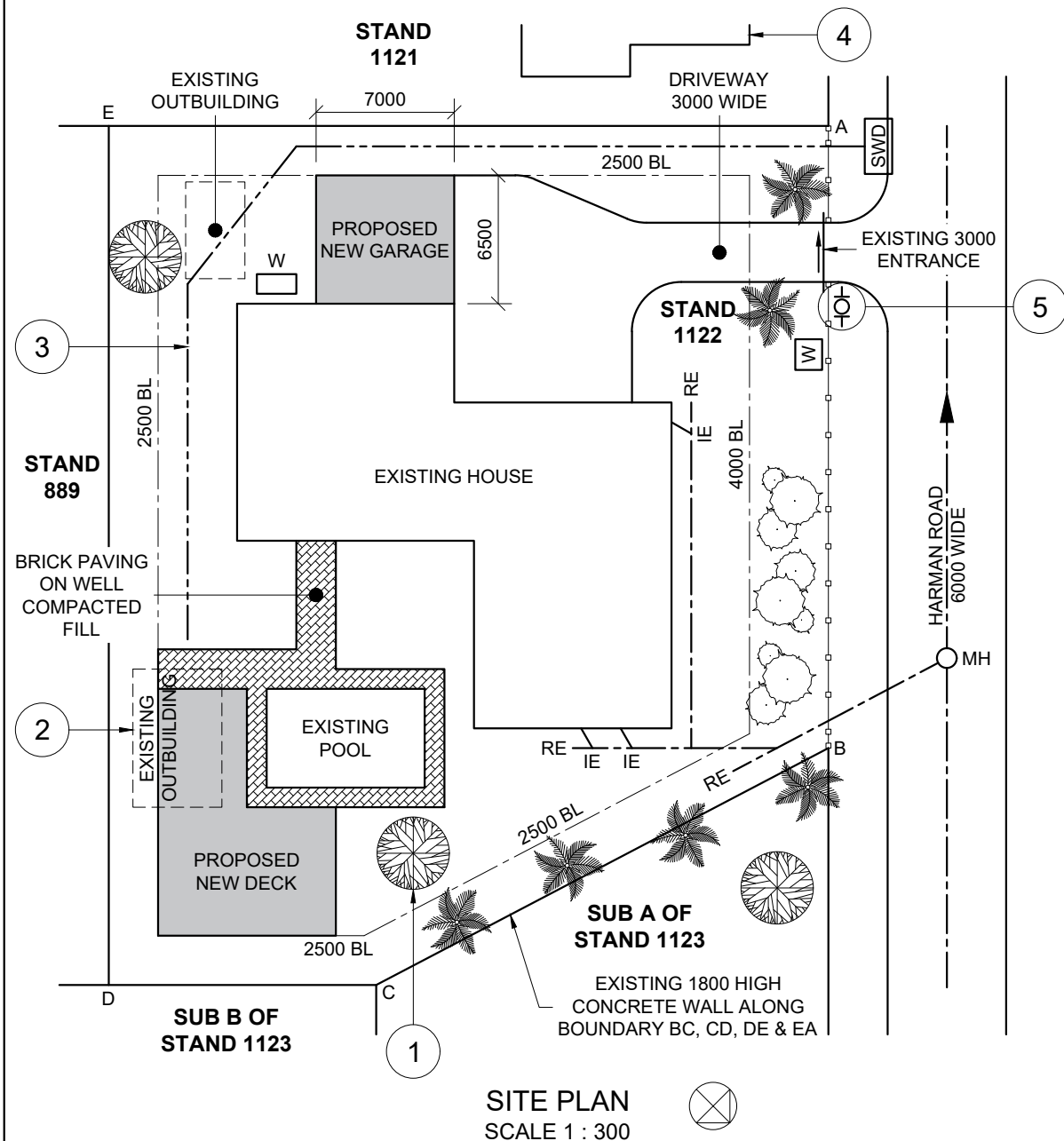
CORNER HEIGHTS IN METRES		BOUNDARY LENGTHS IN MILLIMETRES	
A	1420,2	AB	31 500
B	1422,5	BC	25 854
C	1423,1	CD	13 550
D	1422,9	DE	43 500
E	1422,7	EA	36 450

**SYMBOL LEGEND:**

- STORMWATER PIPE AND DRAIN 
- PALISADE FENCE 
- DECIDUOUS TREES 
- PALM TREES 
- SCHRUBBERY 

**GENERAL NOTES:**

- 100 mm CONCRETE ON WELL COMPACTED HARDWARE FOR EXISTING DRIVEWAY
- CONCRETE WALL TO BE EXTENDED TO A HEIGHT OF 2200 mm AROUND BOUNDARY BC, CD, DE AND EA
- NEW Ø110 mm STORMWATER PIPE TO BE LAID AT 1 : 40
- NEW MUNICIPAL WATER BACKUP SYSTEM WITH 2700 LITRE WATER STORAGE TANK



**NOTES:**

Contractors must verify all dimensions and levels on the site before commencing work. Architects must be notified immediately of any discrepancies.

ARCHITECT'S SIGNATURE: \_\_\_\_\_  
CLIENT'S SIGNATURE: \_\_\_\_\_

**ANSWER 19**

In the space below, draw, in neat freehand, the SANS 10143 graphical symbol for:  
(a) EARTH and  
(b) BIDET (plan)

(a)

(b)

**QUESTION 1: CIVIL ANALYTICAL**

**Given:**

A site plan of an existing house and pool with a proposed new garage and deck, a title panel and a table with questions. The drawing is not presented to the indicated scale.

**Instructions:**

Complete the table below by neatly answering the questions, which refer to the accompanying drawing, title panel and civil content. **[30]**

QUESTIONS		ANSWERS	
1	Who is responsible for preparing the drawing?	1	
2	Who is the client?	1	
3	On which date was the drawing printed?	1	
4	In which suburb is the architectural company located?	1	
5	What finish is used for the driveway?	1	
6	How many stands are adjacent to STAND 1122?	1	
7	What does the abbreviation SWD stand for?	1	
8	How much higher should the concrete wall be lifted along boundary BC, CD, DE and EA, in millimetres?	1	
9	Name the feature at 1.	1	
10	Name the line at 2.	1	
11	What does the line at 3 indicate?	1	
12	Name the feature at 4.	1	
13	Name the feature at 5.	1	
14	According to the SANS 10143, what would be the purpose of a working drawing?	2	
15	Determine the total length of the palisade fence, in metres.	3	
16	Which elevation of the existing house faces towards the proposed new garage?	2	
17	In the space below (ANSWER 17), determine the total perimeter of the existing house and garage, in metres.	3	
18	In the space below (ANSWER 18), determine the total area of STAND 1122, in square metres.	3	
19	In the space in the title panel (ANSWER 19), draw, in neat <b>freehand</b> , the SANS 10143 graphical symbol for: (a) EARTH and (b) BIDET (plan)	4	
<b>TOTAL: 30</b>			

REVISION	DATE	DESCRIPTION
1	09/01/2025	FIX EXISTING OUTBUILDING LINETYPE

PRINTED BY: DTJ GROUP      DATE OF PRINT: 15/01/2025

*Afternoon Architects*  
2008 THOMAS ROAD  
PRETORIA-EAST  
TEL: 012 5252 335

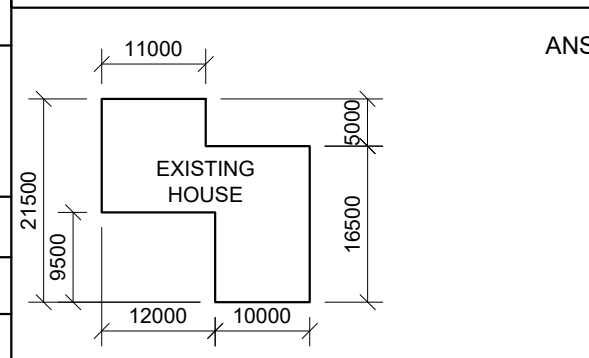
DRAWING TITLE: **SITE PLAN**

PROJECT: PROPOSED NEW GARAGE AND DECK FOR JESSE STAEDTLER, ON STAND 1122, HARMAN ROAD, CULLINUN.

PROJECT NUMBER: EGD/P1-A-2025      DRAWING NUMBER: 7 of 7

REFERENCE CODE: P1AQ1-2025      DRAWN: MONDI      CHECKED: JFK

DATE: 08/01/2025      SCALE: 1 : 300



ANSWER 17	ANSWER 18
<b>EXAMINATION NUMBER</b>	
<b>EXAMINATION NUMBER</b>	

<b>EXAMINATION NUMBER</b>	2
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**QUESTION 2: SOLID GEOMETRY**

**Given:**

- The front view and top view of a right regular hexagonal prism with a right square prismatic hole in the centre and a right equilateral triangular pyramid
- Cutting plane A-A

**Specifications:**

- The two solids do NOT touch
- BOTH solids are cut by cutting plane A-A

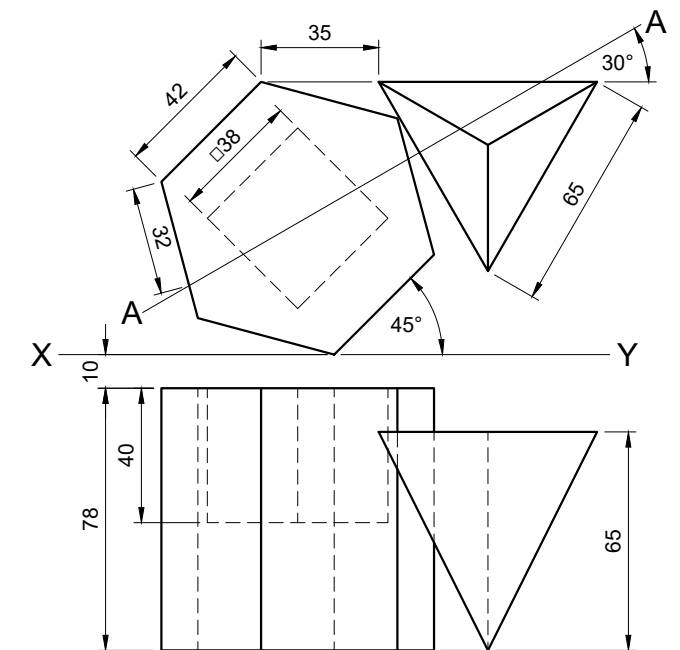
**Instructions:**

Draw, to a scale of 1 : 1, the following views of BOTH solids:

- 2.1. The given front view
- 2.2. A sectional top view
- 2.3. A sectional left view
- 2.4. The true shape of the cut surface of BOTH solids

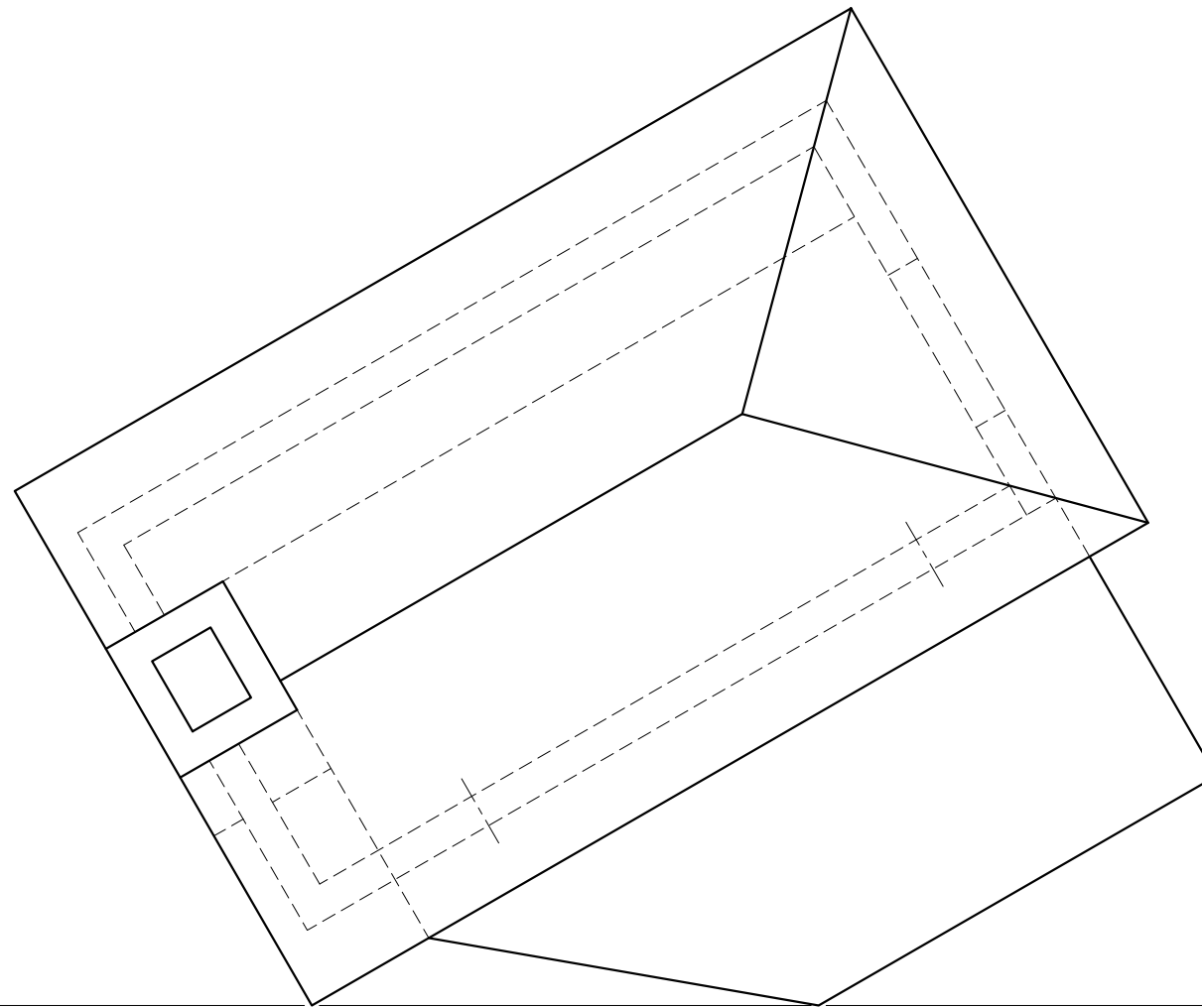
- Planning is essential.
- Show ALL hidden detail.
- Show ALL construction.

[39]



ASSESSMENT CRITERIA			
1	FRONT VIEW	10 ½	
2	SECTIONAL TOP VIEW	11 ½	
3	SECTIONAL LEFT VIEW	10	
4	TRUE SHAPE	7	
PENALTIES(-):			
<b>TOTAL:</b>		<b>39</b>	
EXAMINATION NUMBER			
EXAMINATION NUMBER			3

STAPLE



**QUESTION 3: PERSPECTIVE**

**Given:**

Two views of an outside area and all 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 horizon line (HL).
- Determine and label the vanishing points.
- Show ALL construction.
- Show depth at ALL the openings.
- Show ALL interior detail as seen through the front opening of the outside area.
- No hidden detail is required.

[39]

ASSESSMENT CRITERIA			
1	CONSTRUCTION & VP'S	6	
2	FLOOR + WALLS	9	
3	FRONT + SIDE OPENING + INTERIOR DETAIL	14 1/2	
4	CHIMNEY + ROOF	9 1/2	
PENALTIES(-):			
<b>TOTAL:</b>		<b>39</b>	

PP

PP

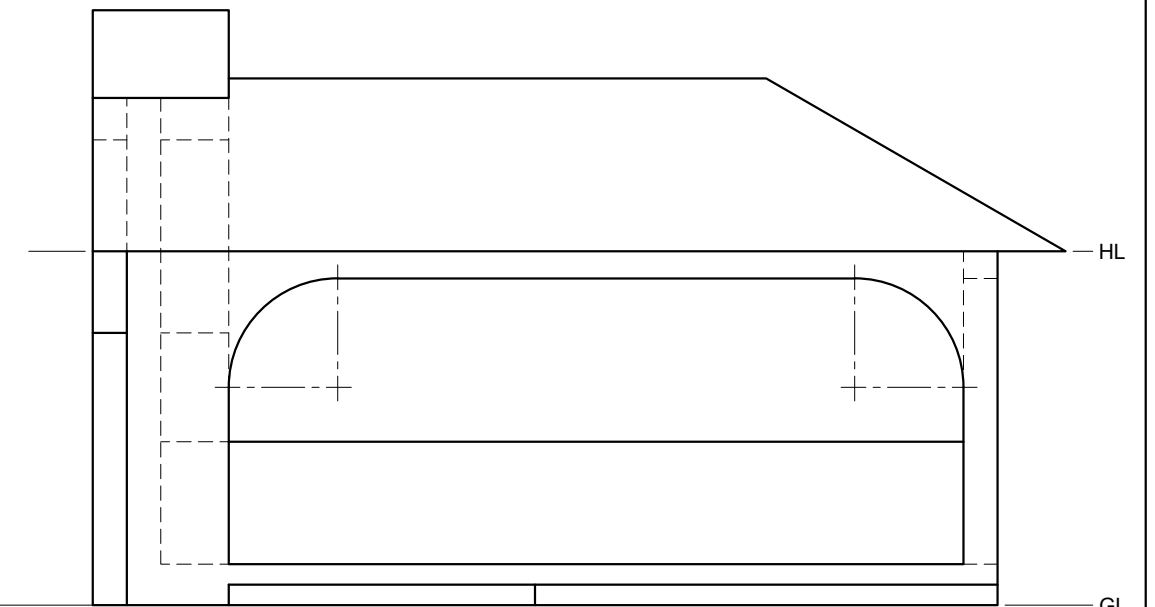
HL

HL

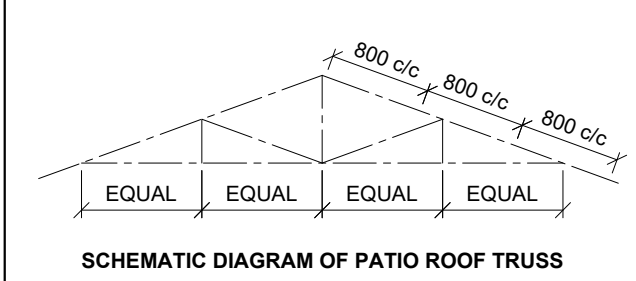
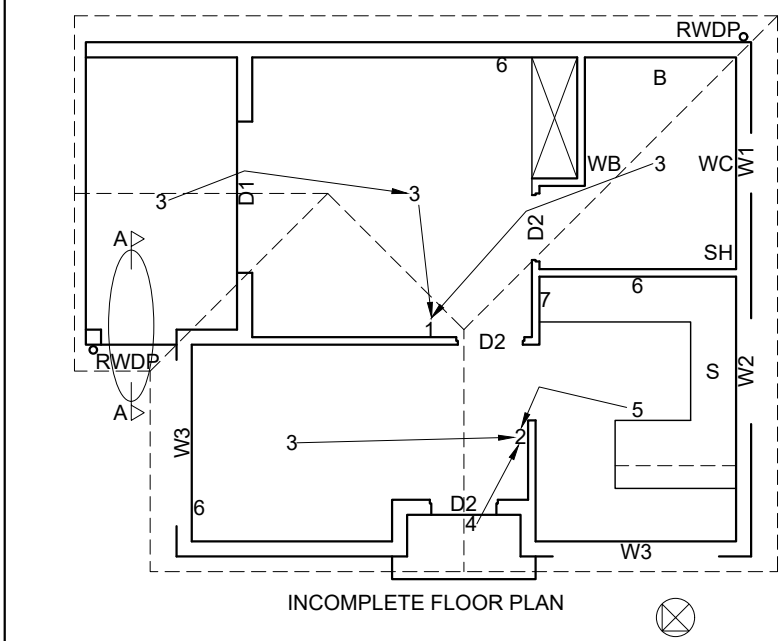
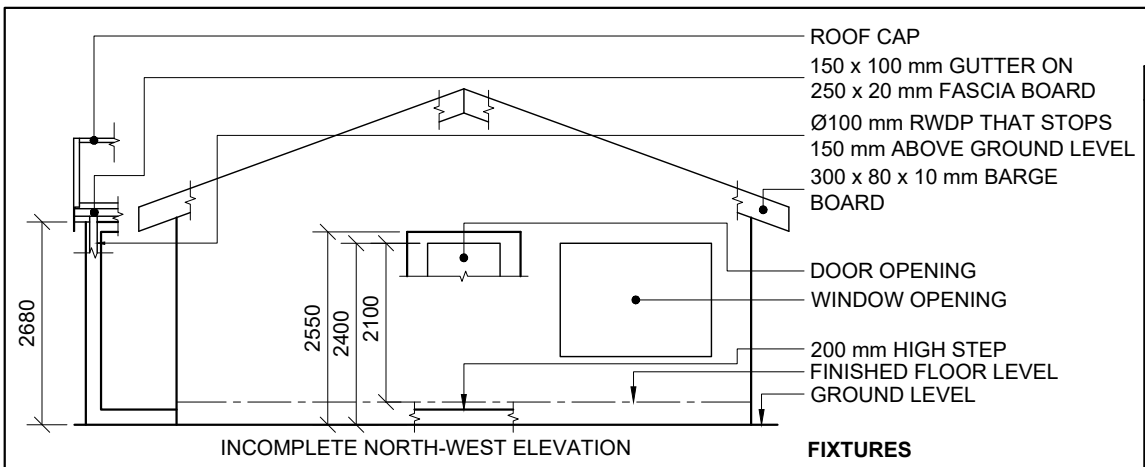
GL

GL

SP



EXAMINATION NUMBER	
EXAMINATION NUMBER	4

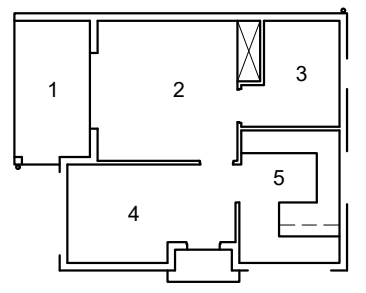


**ROOF NOTES:**  
 20° ROOF PITCH  
 120 x 40 mm ROOF TRUSSES ON 120 x 40 mm WALL PLATES  
 350 mm ROOF OVERHANG TO END OF ROOF TRUSS  
 40 mm CORRUGATED ROOF SHEETING ON 80 x 50 mm PURLINS @ 800 c/c  
 150 x 100 mm GUTTERS ON 250 x 20 mm FASCIA BOARDS ON FOUR SIDES  
 300 x 80 x 10 mm BARGE BOARDS ON GABLE END FLUSH WITH GUTTER  
 12 mm GYPSUM BOARD ON 40 x 40 mm BRANDING STRIPS @ 450 c/c

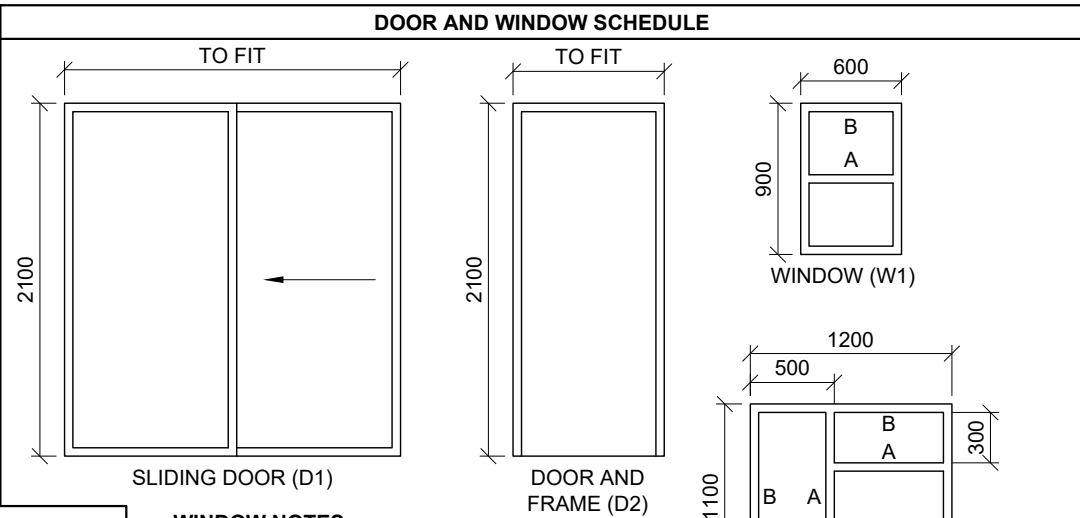
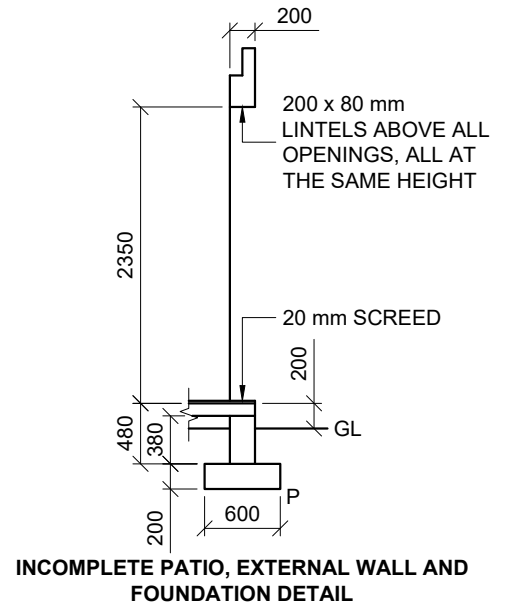
**FIXTURES**  
 WC TOILET  
 WB WASH BASIN  
 SH SHOWER  
 B BATH  
 S SINK

**ELECTRICAL FITTINGS**  
 1. ONE WAY SWITCH - DOUBLE POLE  
 2. ONE WAY SWITCH - THREE POLE  
 3. CEILING LIGHT  
 4. WALL MOUNTED LIGHT  
 5. FLUORESCENT LIGHT 2 x 40W  
 6. SWITCHED SOCKET OUTLET  
 7. DISTRIBUTION BOARD

**NOTE:**  
 THE ARROW SHOWS THE LIGHT CONNECTION TO THE SWITCH.



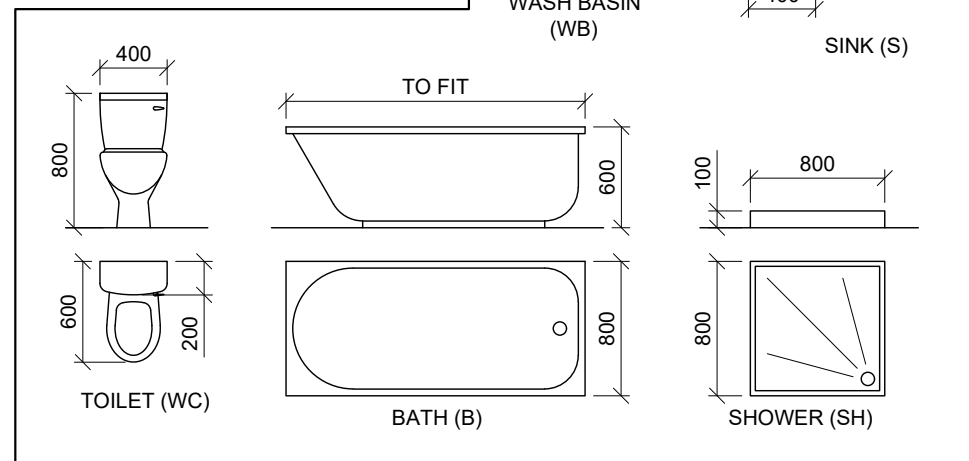
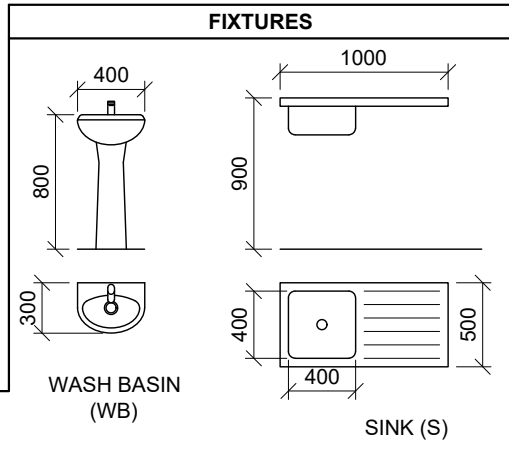
**ROOM DESIGNATIONS AND FLOOR FINISHES**  
 1. PATIO GRANO  
 2. BEDROOM CARPET  
 3. BATHROOM TILE  
 4. LIVING ROOM TILE  
 5. KITCHEN TILE



**WINDOW NOTES:**  
 • 150 x 20 mm FIBRE CEMENT SILL UNDER ALL WINDOWS  
 • ALL FRAMES 50 mm THICK  
 • A = OPENING SIDE  
 • B = HINGED SIDE

ROOF COMPONENTS	
	120 x 40 mm WALLPLATE
	250 x 20 mm FASCIA BOARD
	300 x 80 x 10 mm BARGE BOARD
	150 x 100 mm GUTTER
	ROOF CAP

ELECTRICAL SYMBOLS	



**QUESTION 4: CIVIL DRAWING**

**Given:**

- The incomplete north-west elevation of a **new house**, showing the walls, the door and window openings, the patio, the roof and labels
- The incomplete floor plan showing the walls, positions of the doors, windows, fixtures and the electrical layout
- A schematic diagram of a roof truss and roof notes
- Room designations and floor finishes
- The incomplete patio, external wall and foundation detail
- A door and window schedule
- A table of roof components
- A table of electrical symbols
- A table of fixtures
- The incomplete floor plan and the position of the ground level of the **new house**, drawn to a scale of 1 : 50, and corner 'P' of the foundation and break lines for the detailed section, drawn to scale 1 : 20, on page 6

**Instructions:**

Answer the following questions on page 6.

4.1. Using the given incomplete floor plan and ground level, draw, to a scale of 1 : 50, the following views of the **new 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 NORTH-WEST ELEVATION**

**Show the following features on the drawing:**

- The walls, patio, step, door and window detail
- The roof detail, including the roof cap, fascia board, barge boards, gutter and rainwater down-pipe
- The finished floor level

4.2. Using corner 'P' of the foundation and the break lines on page 6, draw, to a scale of 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 external wall and foundation detail
- The roof detail, including the fascia board and gutter
- The sliding door (D1), window (W3), wall and roof detail including the fascia board and gutter right (north-west) of the ellipse
- All hatching detail. ONLY the substructure hatching may be drawn in freehand.

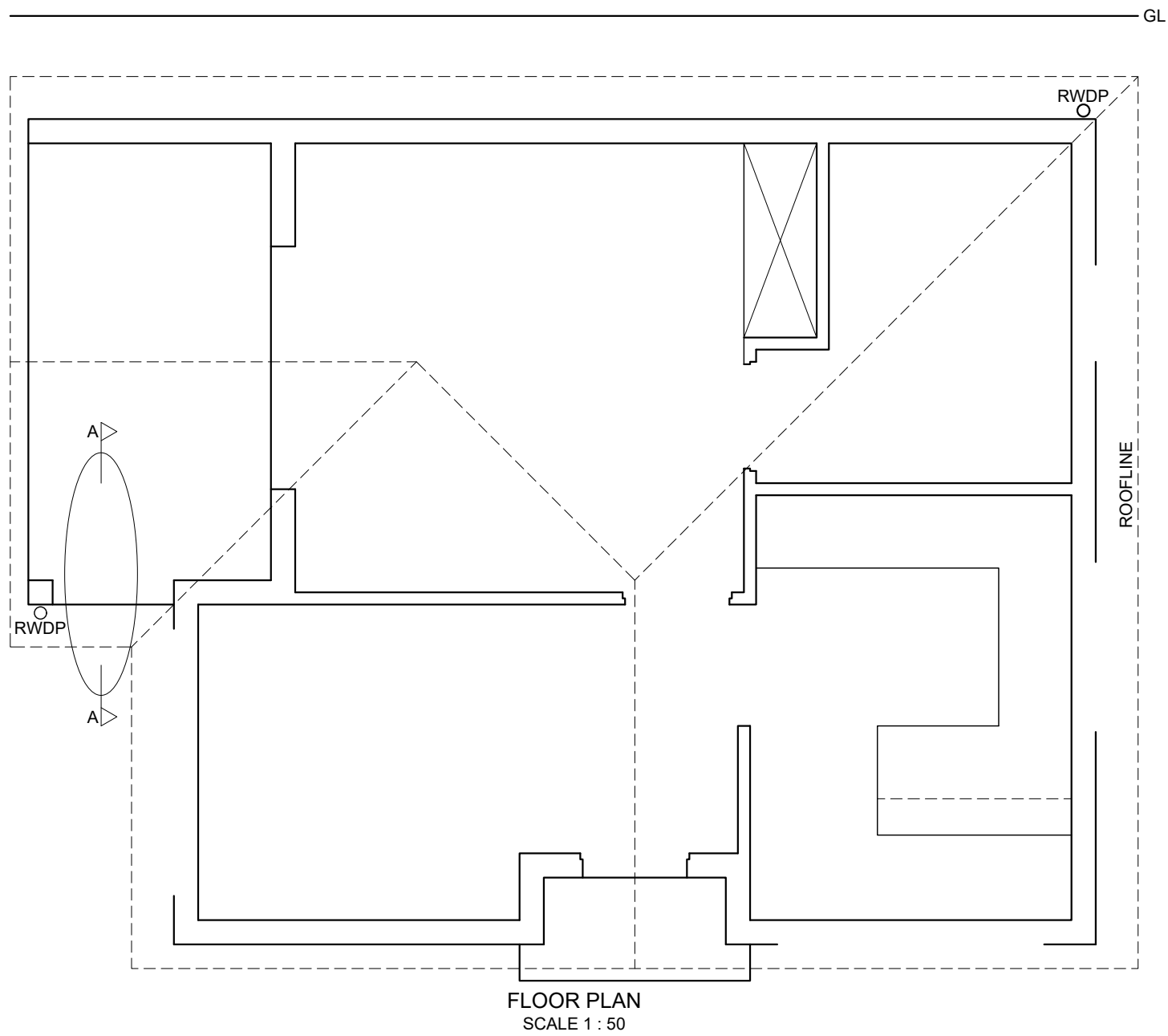
**Label the following:**

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

**NOTE:**

ALL drawings must comply with the **guidelines** and **graphical symbols** as contained in the **SANS 10143. [92]**

STAPLE



SECTION A-A  
SCALE 1:20

MARK ALLOCATION FOR ROOF SECTION	
A	
B	
C	
D	
<b>TOTAL:</b>	

PENALTIES	
INCORRECT SCALE	
NON-ALIGNMENT OF VIEWS	
VIEWS ROTATED	
SECTION VIEWED INCORRECTLY	
INCORRECT LETTERING	
<b>TOTAL:</b>	

ASSESSMENT CRITERIA			
FLOOR PLAN			
1	WINDOWS + DOORS	13	
2	FIXTURES	8	
3	ELECTRICAL	9 1/2	
4	HATCHING	3	
5	LABELS	5	
<b>SUBTOTAL:</b>		<b>38 1/2</b>	
NORTH-WEST ELEVATION			
1	ROOF + FASCIA + GUTTER + BARGE BOARDS + RWDP	8	
2	WALLS + FFL	6 1/2	
3	DOOR + WINDOW	6 1/2	
4	LABELS	1	
<b>SUBTOTAL:</b>		<b>22</b>	
DETAILED SECTION			
1	ROOF DETAIL	14	
2	WALL + SLAB	5 1/2	
3	SLIDING DOOR + LINTEL	6	
4	HATCHING	5	
5	LABELS	1	
<b>SUBTOTAL:</b>		<b>31 1/2</b>	
<b>TOTAL:</b>		<b>92</b>	
PENALTIES(-):			
<b>GRAND TOTAL:</b>			
EXAMINATION NUMBER			
			6