



**HILLCREST HIGH SCHOOL**

**GRADE 10**

**ENGINEERING GRAPHICS AND DESIGN  
NOVEMBER EXAMINATIONS 2025  
PAPER 1**

**MARKS : 95**

**TIME : 2 HOURS**

**INSTRUCTIONS AND INFORMATION**

1. This question paper consists of THREE questions and FIVE pages.
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 the questions must be answered on the QUESTION PAPER, as instructed.
7. ALL the pages, irrespective of whether the question was attempted or not, must be re-stapled in numerical sequence in the TOP LEFT-HAND CORNER ONLY.
8. Time management is essential in order to complete all the questions.
9. Write your name and surname in the block provided on every page.
10. Any details or dimensions not given must be assumed in good proportion.

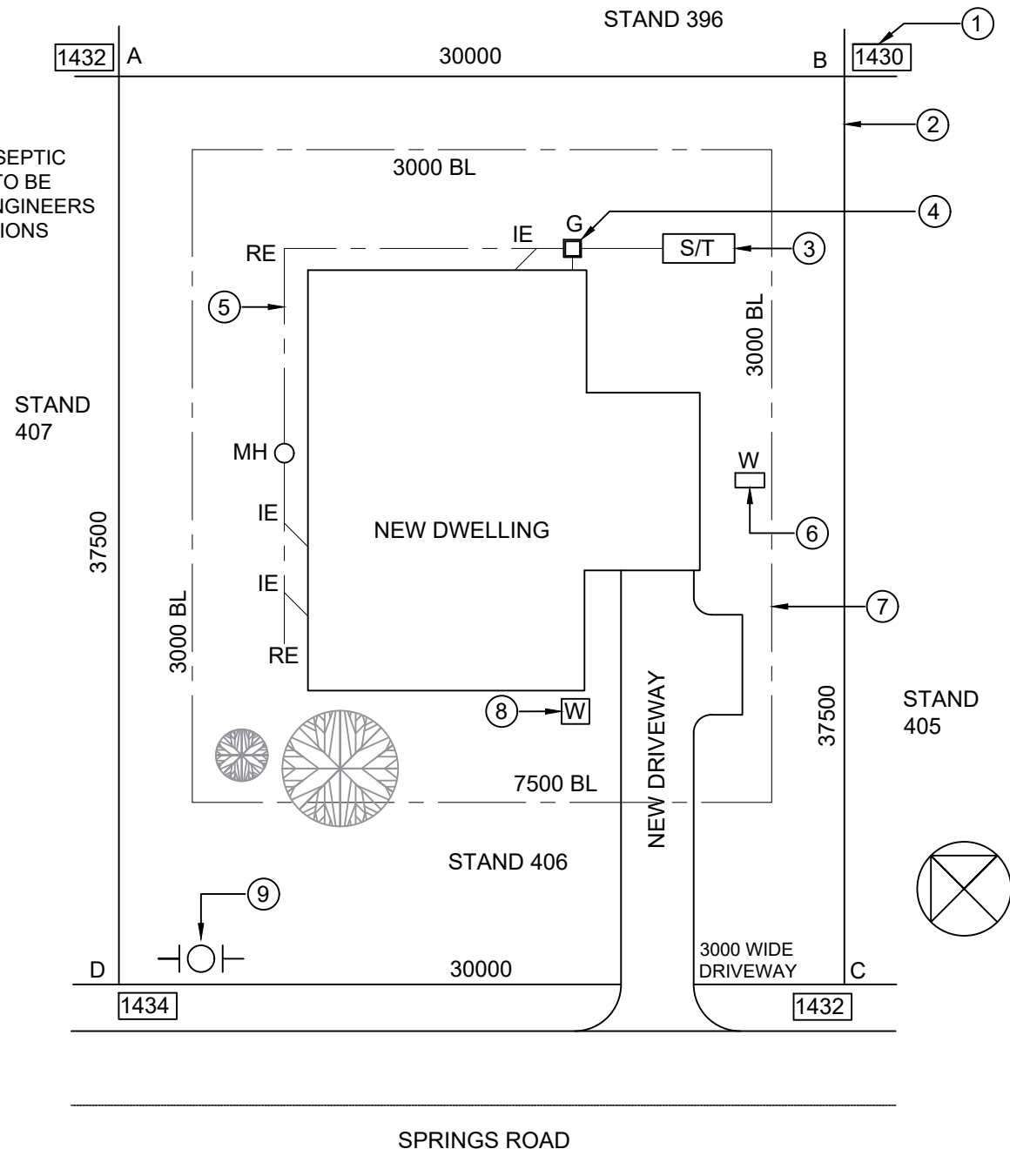
FOR OFFICIAL USE ONLY							
QUESTION	MARKS OBTAINED		$\frac{1}{2}$	MAX	MODERATED MARK		$\frac{1}{2}$
ONE				25			
TWO				20			
THREE				50			
<b>TOTAL</b>				<b>95</b>			

FINAL CONVERTED MARK	CHECKED BY
100	

NAME & SURNAME
01

LAND SURVEYOR'S CERTIFICATE OF THE BOUNDARY LENGTHS AND CORNER HEIGHTS ON STAND 406. SURVEYED ON 2015-04-10	BOUNDARY LENGTH IN MILLIMETRES	CORNER HEIGHTS IN METRES
	AB = 30 000	A = 1432
	BC = 37 500	B = 1430
	CD = 30 000	C = 1432
	DA = 37 500	D = 1434

NOTE: THE SEPTIC TANK (S/T) TO BE BUILT TO ENGINEERS SPECIFICATIONS



**QUESTION ONE : CIVIL ANALYTICAL**

**Given:**

The site plan of a proposed new dwelling and a table of questions.

**Instructions:**

Complete the table below by neatly answering the questions, which all refer to the accompanying drawing.

**[25]**

QUESTIONS		ANSWERS	
1	What road does the new driveway have access too?		1
2	Who was responsible for checking the drawing?		1
3	What does NTS stand for?		1
4	Name the feature at 1.		1
5	Name the feature (line) at 2.		1
6	Name the feature at 3.		1
7	Name the feature at 4.		1
8	Name the feature (line) at 5.		1
9	Name the feature at 6.		1
10	Name the feature (line) at 7.		1
11	Name the feature at 8.		1
12	Name the feature at 9.		1
13	What does MH stand for?		1
14	Which elevation of the new dwelling faces the road?		1
15	In what city is STAND 406 located?		1
16	How wide, in <b>metres</b> , is the new driveway?		2
17	Calculate the total area of the stand, in <b>metres squared (m²)</b> . Show ALL calculations.		3
18	Calculate the total perimeter of the stand, in <b>metres (m)</b> . Show ALL calculations		3
19	In the space provided below, draw, in neat freehand, the front and top view for a BATH.		2
		<b>TOTAL</b>	<b>25</b>

QUESTION 19

NAME & SURNAME

02

**RUSSELL ARCHITECTS**  
17 CREST DRIVE  
CAPE TOWN  
1013  
admin@russellarch.com

DRAWING TITLE <b>SITE PLAN</b>		PROJECT NUMBER 2025-PA-01		DRAWING NUMBER 2025-A1	
PROJECT PROPOSED NEW DWELLING ON STAND 406, SPRINGS ROAD, DURBAN		DATE 20/10/2025	DRAWN L. SMITH	CHECKED A. MKHIZE	SCALE NTS
REFERENCE CODE QC1-2016		DRAWING SOFTWARE AUTOCAD			

**QUESTION TWO: SOLID GEOMETRY**

**Given:**

- The front view and top view of a right regular hexagonal prism. The prism is being sectioned by cutting plane A-A.

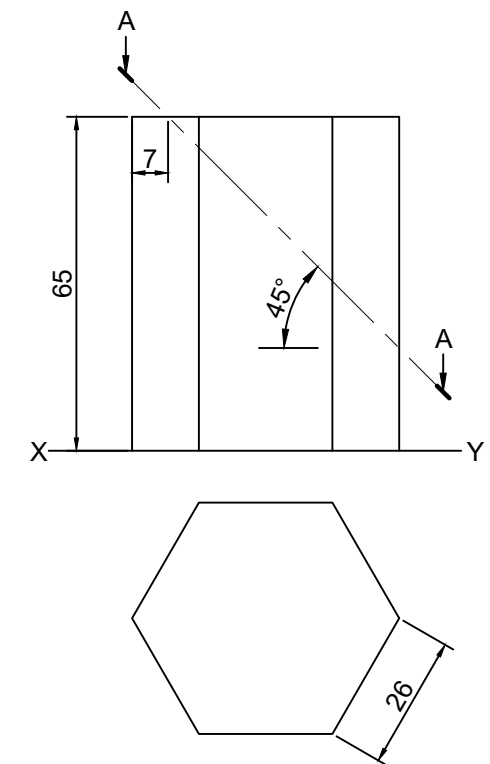
**Instruction:**

Draw, in first angle orthographic projection, to a scale 1:1, the following views of of the solid:

- The given **FRONT** view.
- The **SECTIONAL TOP** view.
- The **SECTIONAL RIGHT** view.
- The **TRUE SHAPE** of the cut.

- Show ALL construction.
- Show ALL hidden detail.

[20]



ASSESSMENT CRITERIA				
1	FRONT VIEW	6		
2	SECTIONAL TOP VIEW	4		
3	SECTIONAL RIGHT VIEW	5		
4	TRUE SHAPE	5		
<b>PENALTIES (-)</b>				
<b>TOTAL</b>		<b>20</b>		

NAME & SURNAME

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03

**QUESTION FOUR: CIVIL DRAWING**

**Given:**

- The incomplete floor plan of a **new house** showing the walls, steps, position of the doors, windows and fixture positions.
- The incomplete foundation, slab and wall details.
- Room designations as well as floor finishes.
- A door and window schedule.
- A table of sanitary fixtures and other fixtures.
- The incomplete plan of the **new house**, drawn to scale 1 : 50, on page 5.
- Starting point A of the incomplete foundation, drawn to scale 1:50, on page 5.

**Instructions:**

- Answer this question on page 5.

4.1. Use the given incomplete floor plan, to draw, in first-angle orthographic projection to scale 1:50, the **THE COMPLETE FLOOR PLAN**

**Add the following features to the drawings:**

- ALL doors and windows.
- ALL sanitary, and ALL other fixtures as indicated by the abbreviations on the incomplete floor plan.
- ALL hatching details.
- Label the room designations and floor finishes for each room, as indicated.
- Label all fixtures as indicated by the abbreviations.

4.1. Using the given foundation on page 5, draw to scale 1:50, a **DETAILED SECTION** on cutting plane A-A of the incomplete floor plan.

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

- The complete foundation and external walls.
- ALL hatching detail. ONLY the substructure hatching may be drawn in neat freehand.
- Label the ground level, finished floor level and damp proof course. (Use the correct abbreviations)

**NOTE:**

ALL drawings must comply with the **guidelines** and **graphic conventions** contained in the **SANS 10143**.

[50]

**INCOMPLETE FLOOR PLAN**

**DOORS AND WINDOWS**

D1: DOOR  
 NC4: WINDOW  
 NC6: WINDOW  
 ND4: WINDOW

**SANITARY FIXTURES**

WC: TOILET  
 WB: WASH BASIN  
 S: SINK  
 SH: SHOWER

**OTHER FIXTURES**

BIC: BUILT IN CUPBOARD

INCOMPLETE FLOOR PLAN

**DOOR AND WINDOW SCHEDULE**

**WINDOW NOTES**

A. OPENING SIDE  
 B. HINGED SIDE  
 C. FIXED PANE

THICKNESS OF ALL FRAMES: 50mm

WINDOW SILL  
 180 x 20 mm FIBRE CEMENT SILL UNDER ALL WINDOWS

**INCOMPLETE FOUNDATION DETAILS**

50mm SCREED

A

**ROOM DESIGNATIONS AND FLOOR FINISHES**

1. KITCHEN:	TILES
2. BATHROOM:	TILES
3. BEDROOM:	CARPET
4. LIVING AREA:	WOOD
5. BRAAI:	TILES

**SANITARY FIXTURES SCHEDULE**

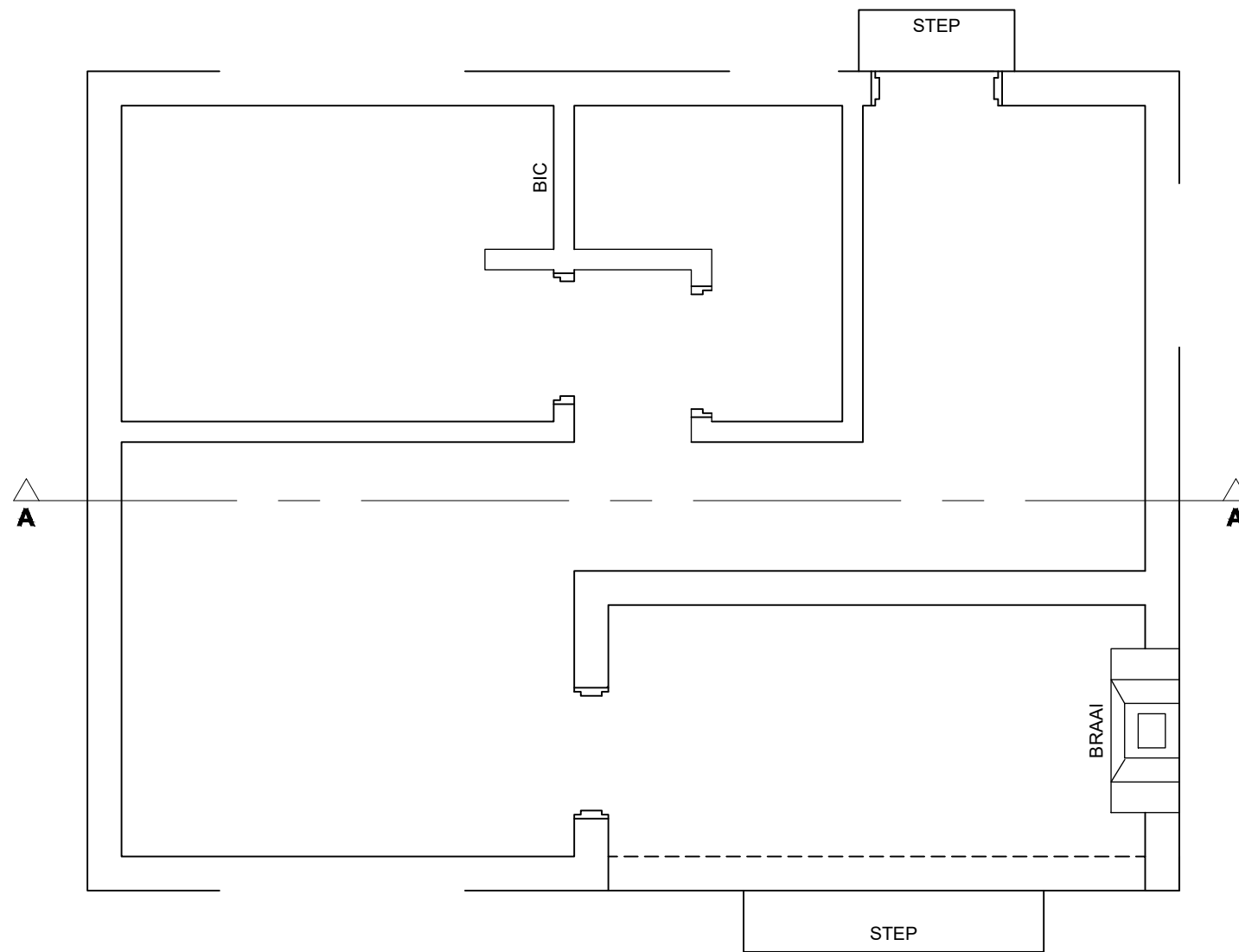
SHOWER (SH)    WASH BASIN (WB)    TOILET (WC)    SINK (S)

**OTHER FIXTURES**

BUILT IN CUPBOARD (BIC)

A 

**SECTIONAL ELEVATION ON A-A**  
SCALE 1 : 50



**FLOOR PLAN**  
SCALE 1 : 50

PENALTIES		
1	HATCHING	
2	NON-ALIGNMENT OF VIEWS	
3	FEATURES DRAWN FREEHAND	
4	INCORRECT SCALES	
5	POOR PRINTING	
6		

ASSESSMENT CRITERIA				
FLOOR PLAN				
1	DOORS + WINDOWS	12		
2	LABELS	7		
3	FIXTURES	8		
4	HATCHING	3		
<b>SUBTOTAL</b>		<b>30</b>		
SECTIONAL ELEVATION				
1	FOUNDATION + WALLS + FLOOR	11½		
2	HATCHING	6½		
3	LABELS	2		
<b>SUBTOTAL</b>		<b>20</b>		
<b>PENALTIES ( - )</b>				
<b>TOTAL</b>		<b>50</b>		

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05