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**NATIONAL
SENIOR CERTIFICATE**

GRADE 12

ENGINEERING GRAPHICS AND DESIGN P1

SEPTEMBER 2021

PREPARATORY EXAMINATION

MARKS: 200

TIME: 3 hours

This question paper consists of 6 pages.

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INSTRUCTIONS AND INFORMATION

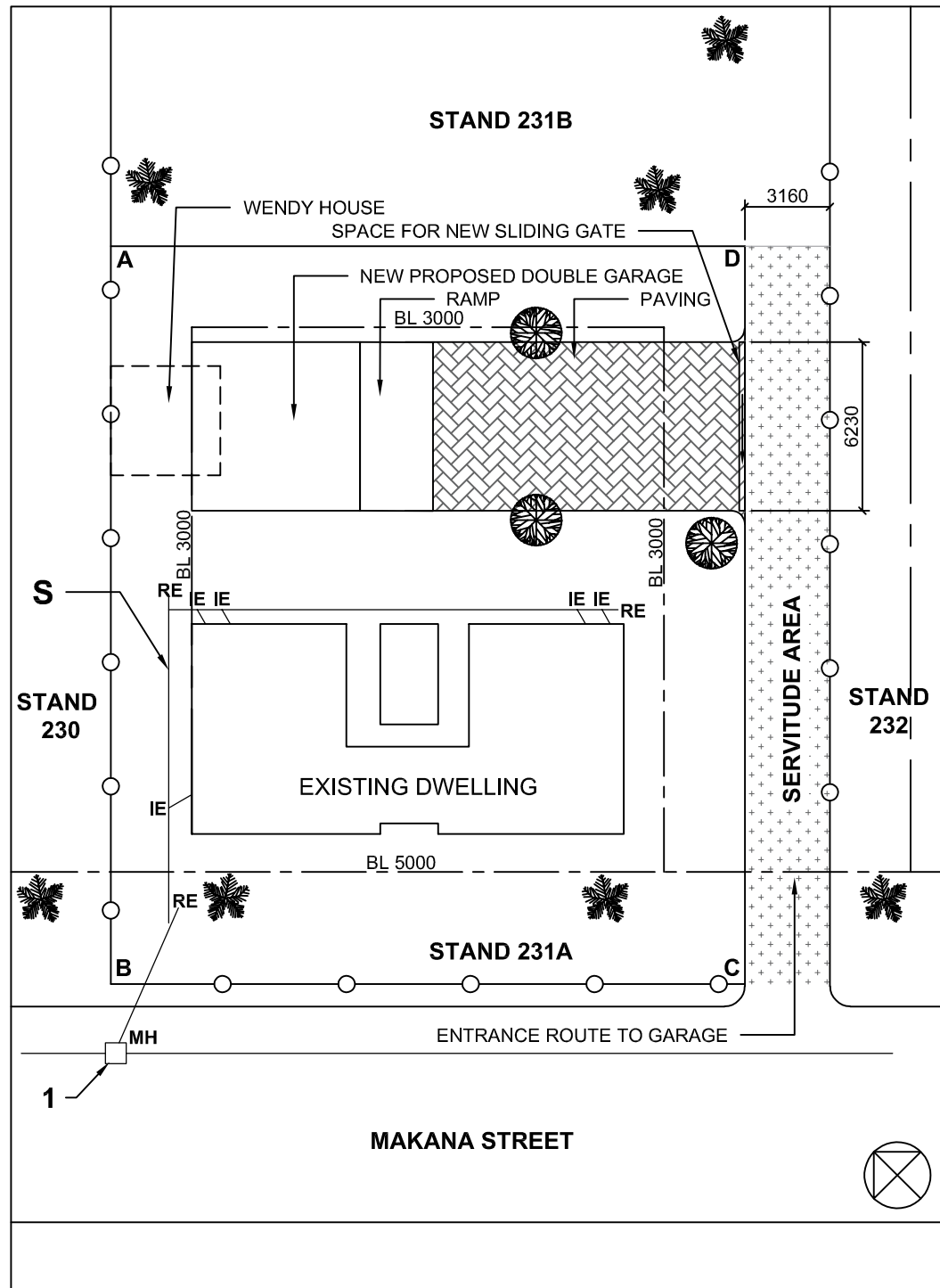
1. The question paper consists of FOUR questions.
2. Answer ALL the questions.
3. All drawings must be drawn to scale 1 : 1, unless otherwise stated.
4. The questions must be answered on the answer sheets provided.
5. All the answer sheets must be re-stapled in numerical sequence and handed in irrespective 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
1			
2			
3			
4			
TOTAL			
	2	0	0
		2	0
			0

FINAL CONVERTED MARK	CHECKED BY
100	

COMPLETE THE FOLLOWING:
NAME
NAME
EXAMINATION CENTRE
EXAMINATION CENTRE

SYMBOL LEGEND		
1		GRAVEL ROAD
2		SAFETY FENCE
3		INDIGENOUS TREE
4		PALM TREE



LAND SURVEYOR'S CERTIFICATE OF THE SIDE LENGTHS AND CORNER HEIGHTS OF STAND 321A SURVEYED ON 2020-12-02

LENGTHS IN MILLIMETRES	CORNER HEIGHTS IN METRES
AB = 28200	A = 434
BC = 23530	B = 431
CD = 28200	C = 430
AD = 23530	D = 433

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

ARCHITECT'S SIGNATURE

CLIENT'S SIGNATURE

ANSWER 15

The feature indicated by arrow **S** is a sewer line. Draw in the space below, in neat freehand according to the SANS 10143 the correct line type to be used.

2		
1	2021-04-01	Indicate the finish of the servitude area.
REVISION	DATE	DESCRIPTION

JOSHUA JANJIES ENGINEERS & ARCHITECTS
17 RUPPING STREET
KIRKWOOD
083 226 7782
josh.architect@hotmail.com

PRINTED BY: BLUEDEVILLE	DATE OF PRINT: 2021-02-21
----------------------------	------------------------------

DRAWING TITLE:
SITE PLAN

PROJECT:
PROPOSED NEW DOUBLE GARAGE FOR MR STEPHANUS HEYNS STAND 231A, MAKANA STREET, KIRKWOOD

PROJECT NUMBER: 02-2021	DRAWING NUMBER: KDH05-2021		
DATE: 2020-11-15	DRAWN: KEENAN	CHECKED: JAMIE	SCALE: 1 : 250
REFERENCE CODE: SITE- 231A-21	DRAWING NO.: 1 OF 5		

QUESTION 1: ANALYTICAL (CIVIL)

Given:

The site plan for an existing dwelling with a proposed new double garage, a title block and a table of questions. The drawing has not been prepared to the indicated scale.

Instructions:

Complete the table below by neatly answering the questions which refer to the accompanying drawing and title block. [25]

QUESTIONS		ANSWERS		
1	Who is the owner of stand 231A?	1		
2	On what date was the site plan printed?	1		
3	What scale is indicated for the drawing?	1		
4	On what date was the dimensions and heights of stand 231A verified?	1		
5	What new structure is proposed for stand 231A?	1		
6	Name the feature at 1.	1		
7	Which elevation of the existing dwelling faces Makana Street?	2		
8	In what colour must the new building on the stand be presented?	1		
9	What is the length of the specified opening for the new gate in meters?	1		
10	How many palm trees are on stand 231A?	1		
11	What is the servitude area used for?	2		
12	The municipality instructed the owner to demolish the wendy house before he decided to build the new garage. What would the reason be?	2		
13	The owner wants to erect a security fence and sliding gate on the northeast and southeast borderline of stand 231A. In the space below (ANSWER 13), Calculate the total length of the security fence needed, in meters.	3		
14	In the space provided below (ANSWER 14), determine the total building area of stand 231A in square metres.	5		
15	The feature indicated by arrow S is a sewer line. Draw in the space in the title panel (ANSWER 15), in neat freehand according to the SANS 10143 the correct line type to be used.	2		
TOTAL		25		

ANSWER 13

Show ALL calculations.

ANSWER 14

Show ALL calculations.

NAME

NAME

2

QUESTION 2: INTERPENETRATION AND DEVELOPMENT

Given:

- The top view and incomplete front view of a regular triangular pipe penetrating a square pipe.
- Starting point **X**, the centre of the main pipe (vertical pipe) in the top view.
- **AB** is the seam of the square pipe.

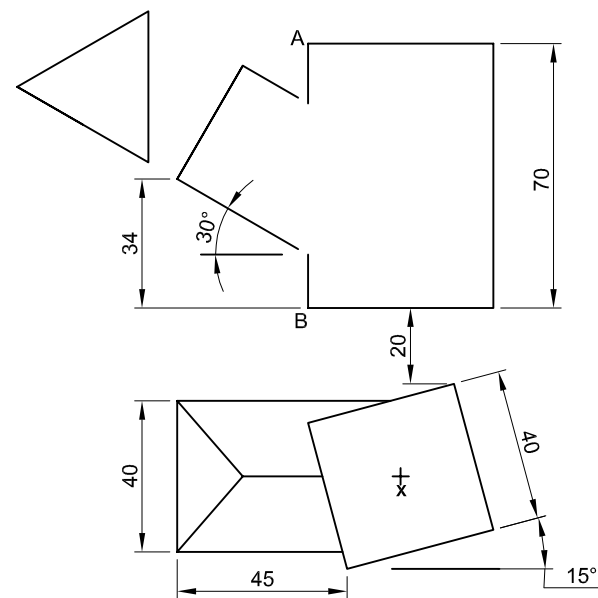
Instructions:

Draw to scale 1 : 1, the following views of the interpenetrating pipes:

- 2.1 The top view.
- 2.2 The complete front view clearly showing the curve of interpenetration.
- 2.3 The development of the surface of the square pipe with **AB** as the seam.

- Show ALL hidden detail and folding lines.
- Show ALL necessary construction lines.

[29]



+
X

ASSESSMENT CRITERIA				
1	TOP VIEW	6		
2	FRONT VIEW	9		
3	CONSTRUCTION	3		
4	DEVELOPMENT	11		
PENALTIES (-)				
TOTAL		29		

NAME	
NAME	
3	

QUESTION 3: PERSPECTIVE

Given:

- Two views of a braai area and the information needed to draw a two-point perspective drawing.

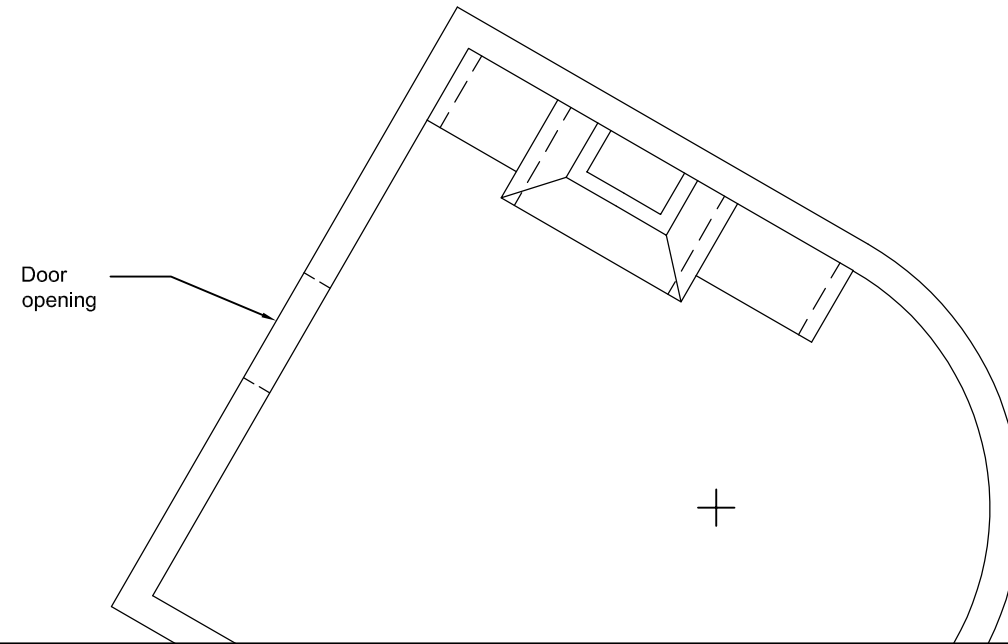
PP – Picture plane
 HL – Horizon line
 GL – Ground line
 SP – Station point

Instructions:

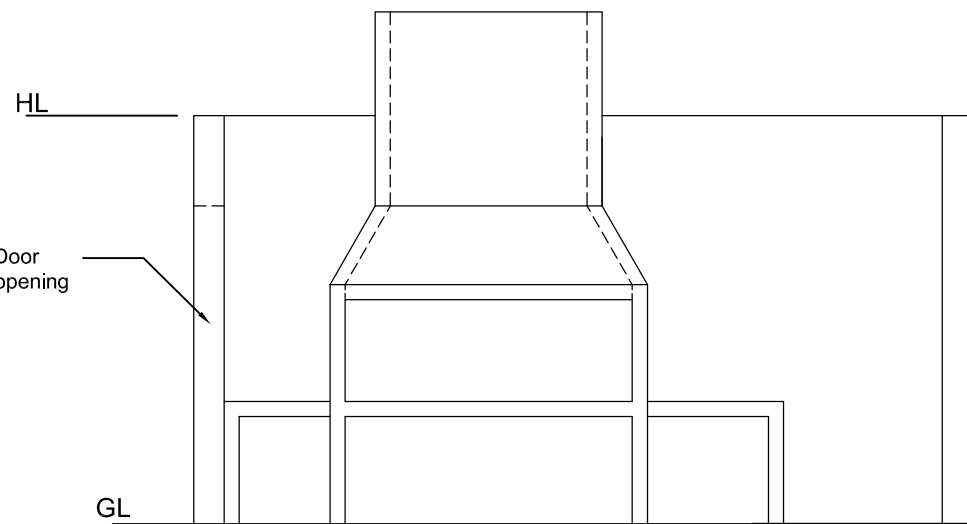
Complete the perspective drawing.

- Align the drawing sheet with the ground line (GL).
- Determine and label the vanishing points.
- Show ALL necessary construction.
- NO hidden detail is required.

[45]



ASSESSMENT CRITERIA				
1	CONSTRUCTION AND VP's	6		
2	WALLS AND DOOR	9		
3	BRAAI AREA	27		
4	ARCH AND CONSTRUCTION	3		
PENALTIES (-)				
TOTAL		45		



+
SP

NAME	
NAME	

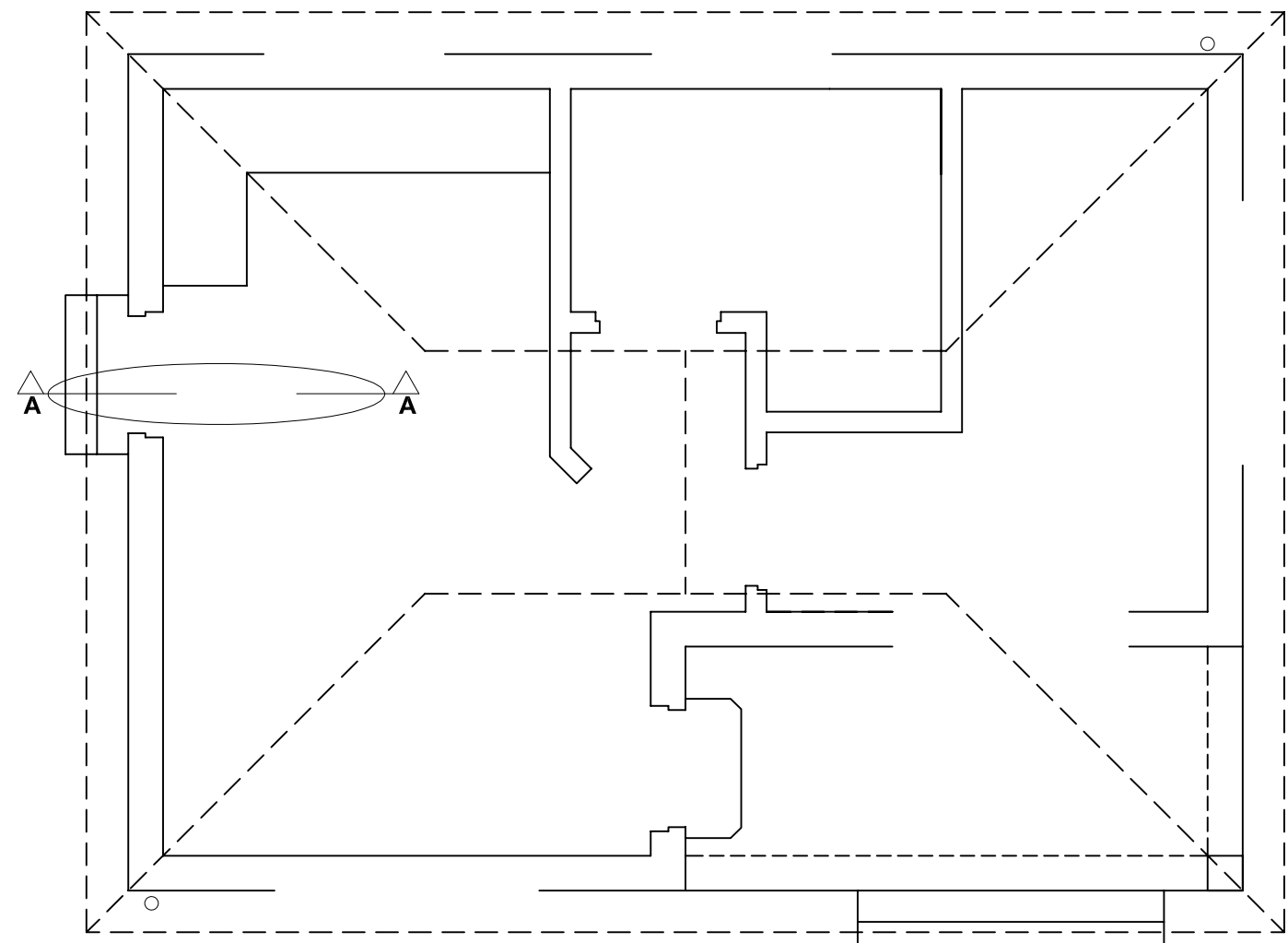
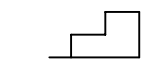
ROOF DETAIL: MARK ALLOCATION						
1	ROOF ANGLE	1/2		6	CEILING BOARD	1/2
2	ROOF SHEET	1		7	WALL PLATE	1
3	ROOF TRUSS	3		8	FACIA BOARD	1
4	PURLIN + SPACING	1 1/2		9	GUTTER	1
5	BRANDERING + SPACING	1 1/2				
TOTAL						11

PENALTIES		
1	INCORRECT SCALE	
2	NON-ALIGNMENT OF VIEWS	
3	INCORRECT LETTERING	
TOTAL PENALTIES (-)		

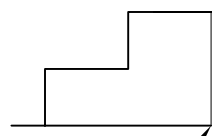
ASSESSMENT CRITERIA				
FLOOR PLAN				
1	DOORS AND WINDOWS	15		
2	ELECTRICAL	8		
3	FIXTURES	8		
4	HATCHING	3		
5	LABELS	5		
SUBTOTAL		39		

NORTH ELEVATION				
1	ROOF, GUTTER, RWDP, FACIA, BARGE BOARD, RIDGE COVER	10		
2	WALLS, PORCH, FFL	6 1/2		
3	DOOR AND WINDOW	7		
4	LABELS	1 1/2		
SUBTOTAL		25		

DETAILED SECTION				
1	ROOF DETAIL	11		
2	FOUNDATIONS, WALLS, FLOOR	8		
3	DOOR, WINDOW, SINK	12		
4	HATCHING	5		
5	LABELS	1		
SUBTOTAL		37		
TOTAL		101		
PENALTIES (-)				
GRAND TOTAL				



FLOOR PLAN
SCALE 1 : 50



STARTING POINT

DETAILED SECTION A-A
SCALE 1 : 20

NAME	
NAME	
6	