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**SA EXAM  
PAPERS**



# basic education

Department:  
Basic Education  
REPUBLIC OF SOUTH AFRICA

**NATIONAL  
SENIOR CERTIFICATE**

**GRADE 12**

**ENGINEERING GRAPHICS AND DESIGN P1**

**FEBRUARY/MARCH 2011**

**MARKS: 100**

**TIME: 3 hours**

This question paper consists of 6 pages.

## INSTRUCTIONS AND INFORMATION

1. This question paper consists of FOUR questions.
2. Answer ALL the questions.
3. ALL drawings are in first-angle orthographic projection, unless stated otherwise.
4. ALL drawings must be drawn to scale 1 : 1, unless stated otherwise.
5. ALL the questions must be answered on the QUESTION PAPER as instructed.
6. ALL the pages must be restapled in numerical sequence, irrespective of whether the question was attempted.
7. Time management is essential in order to complete all the questions.
8. Print your examination number in the block provided on every page.
9. Any details or dimensions not given, must be assumed in good proportion.
10. ALL answers must be drawn accurately and neatly.

FOR OFFICIAL USE ONLY									
QUESTION	MARKS OBTAINED			½	SIGN	MODERATED			½
1									
2									
3									
4									
TOTAL									
	2	0	0			2	0	0	

FINAL CONVERTED MARK	CHECKED BY
100	

COMPLETE THE FOLLOWING:	
CENTRE NUMBER	
CENTRE NUMBER	
EXAMINATION NUMBER	
EXAMINATION NUMBER	



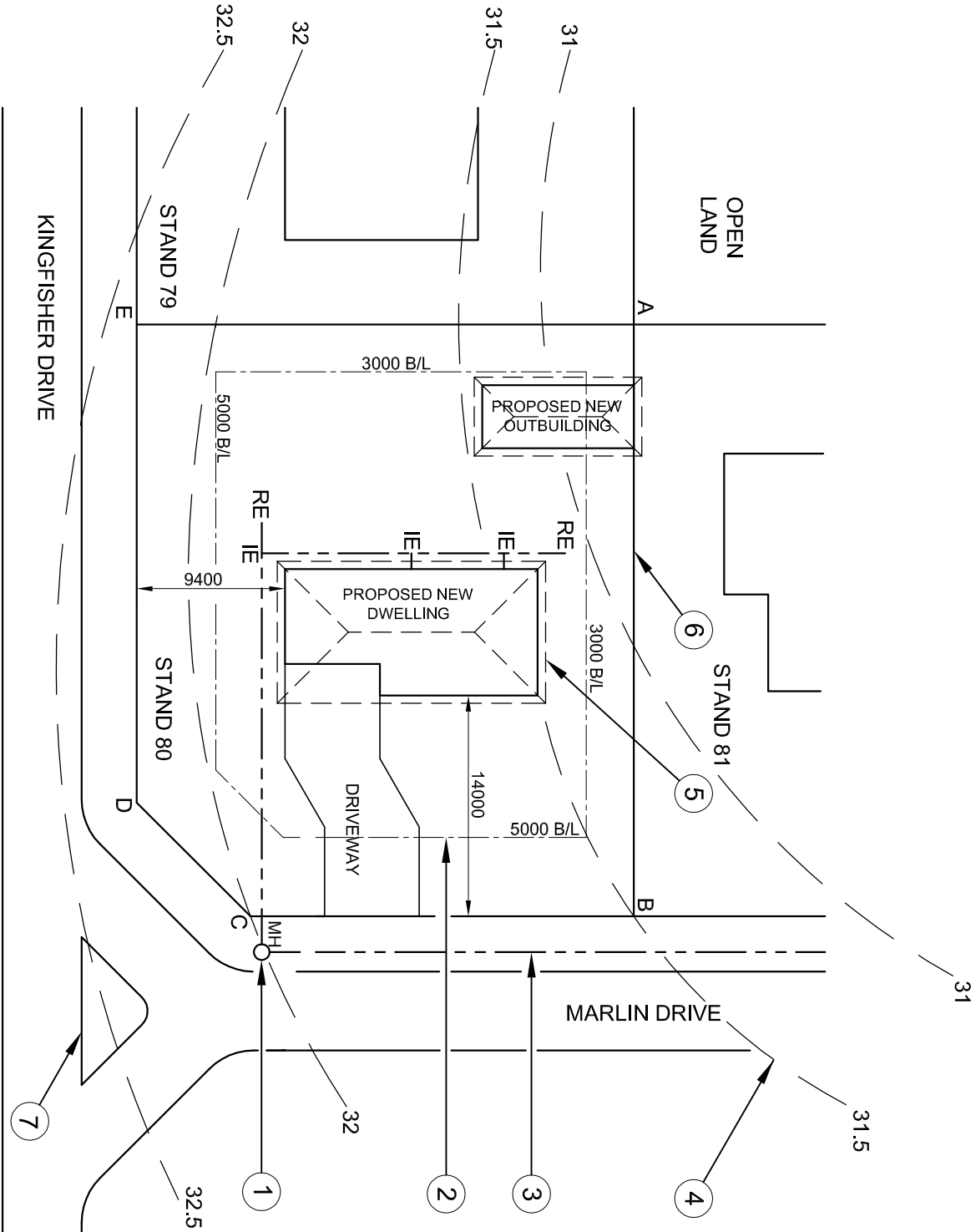


THE SITE PLAN SHOWS STAND 80  
SITUATED AT KAYSERS BEACH

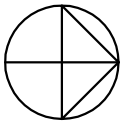
SURVEYED ON 12-04-2010

LAND SURVEYOR'S CERTIFICATE  
SIDE LENGTHS

AB = 37 806  
BC = 24 200  
CD = 10 615  
DE = 30 300  
EA = 31 706



SITE PLAN  
SCALE 1 : 200



**QUESTION 1: ANALYTICAL (CIVIL)**

**Given:**  
The site plan of a proposed new dwelling and outbuilding and a table of questions. The drawing is not to scale.

**Instructions:**  
Complete the table below by neatly answering the questions, which all refer to the accompanying drawing. [27]

QUESTIONS		ANSWERS	
1	Why would the site plan for the proposed new dwelling and outbuilding not be approved by the municipality?		2
2	Which stand is to the west of stand 80?		1
3	How many complete stands are shown on the site plan?		1
4	What scale is indicated for the drawing?		1
5	On what date was the site surveyed?		1
6	In which residential area is the proposed dwelling situated?		1
7	From which street is the motor vehicle access to the site?		1
8	How many rodding eyes are shown on the site plan?		1
9	What is the distance, in metres, from the municipal boundary line on Marlin Drive to the proposed new dwelling ?		1
10	What does the abbreviation IE stand for?		1
11	Name the feature at 1.		1
12	What does the line at 2 indicate?		1
13	What does the line at 3 indicate?		1
14	Name the feature at 4.		1
15	What does the line at 5 indicate?		1
16	What does the line at 6 indicate?		1
17	What does the complete feature at 7 indicate?		1
18	Determine, in metres, the difference in height between corner B and corner C of the stand.		1
19	The side of the new dwelling that faces Kingfisher Drive will be called the ____ elevation.		1
20	Determine the perimeter of the stand in metres. Show ALL calculations.		2 <sup>1</sup> <sub>2</sub>
21	Determine the total area of the stand in square meters. Show ALL calculations.		4 <sup>1</sup> <sub>2</sub>
TOTAL			27

EXAMINATION NUMBER	
EXAMINATION NUMBER	2





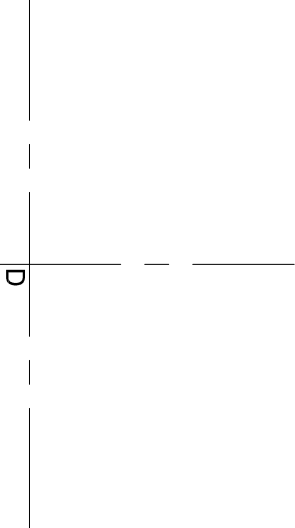
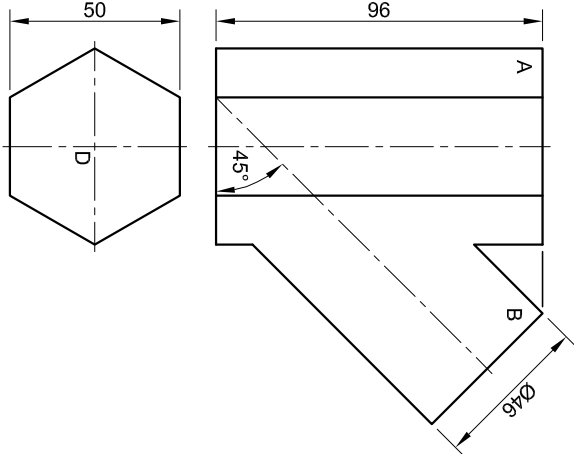
QUESTION 2: INTERPENETRATION AND DEVELOPMENT

Given:

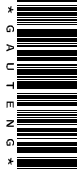
- The incomplete front view and top view of a connecting piece for a ventilation system. The connecting piece consists of a hexagonal pipe (A) and a cylindrical branch pipe (B) that lie in a common vertical plane
- Centre point D as the reference point on the drawing sheet

Instructions:

- 2.1 Draw, to scale 1 : 1, the following views of the connecting piece:
  - 2.1.1 The complete top view using point D as the reference point
  - 2.1.2 The complete front view clearly showing the curve of interpenetration
- 2.2 Develop the surface of the cylindrical branch pipe (B).
- Show ALL necessary construction and calculations. [40]



ASSESSMENT CRITERIA				
1. GIVEN + CENTRE LINES	8			
2. AUX. CIRCLES	4			
3. PROJECTION	4			
4. INTERPENETRATION	5½			
5. TOP VIEW OF CYLINDER	7			
6. DEVELOPMENT	11½			
TOTAL	40			
EXAMINATION NUMBER				
EXAMINATION NUMBER				





QUESTION 3: PERSPECTIVE

Given:

Three views of a single-pillar bridge and the information needed to draw a two-point perspective drawing.

PP - Picture Plane

HL - Horizon Line

GL - Ground Line

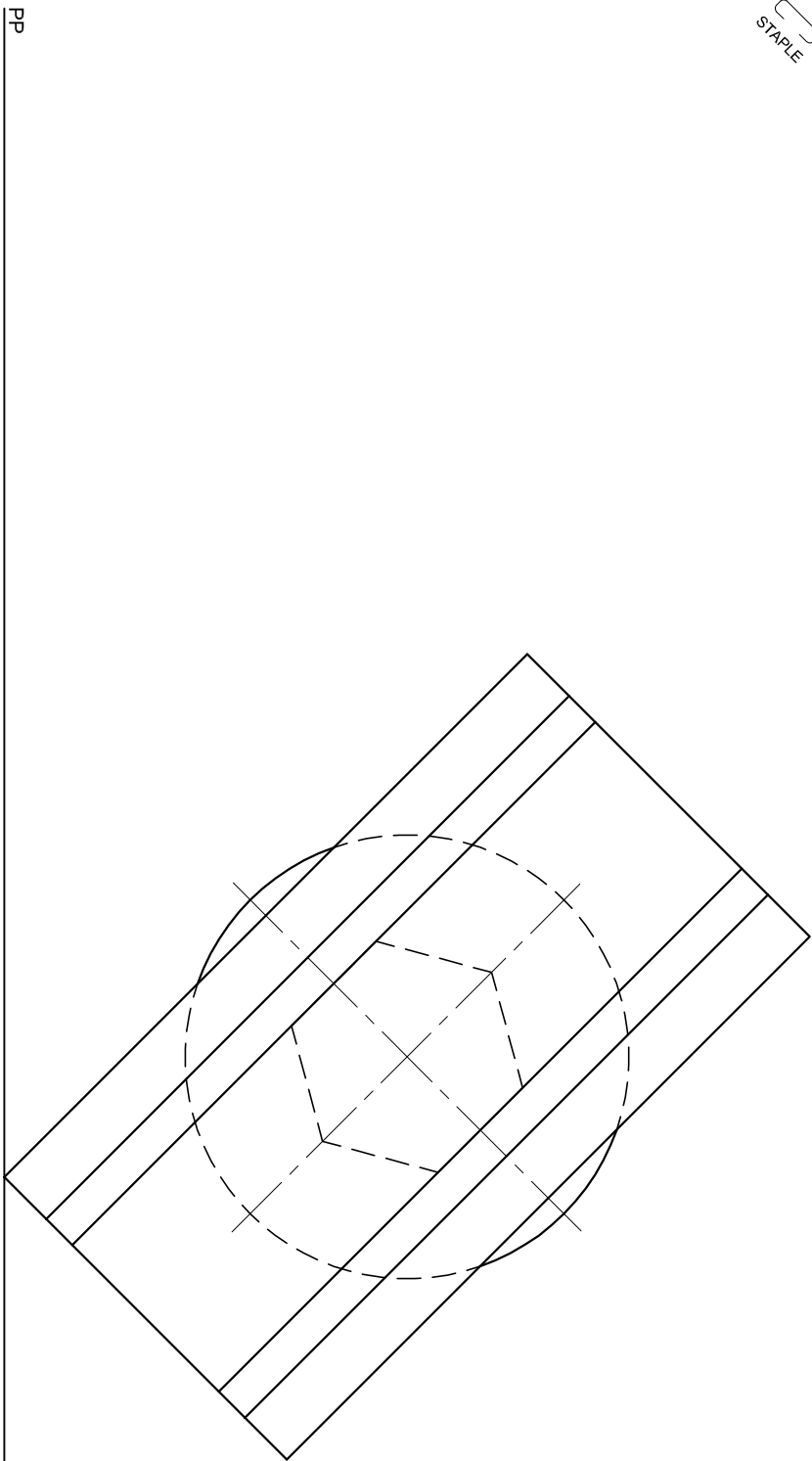
SP - Station Point

Instructions:

Complete the perspective drawing.

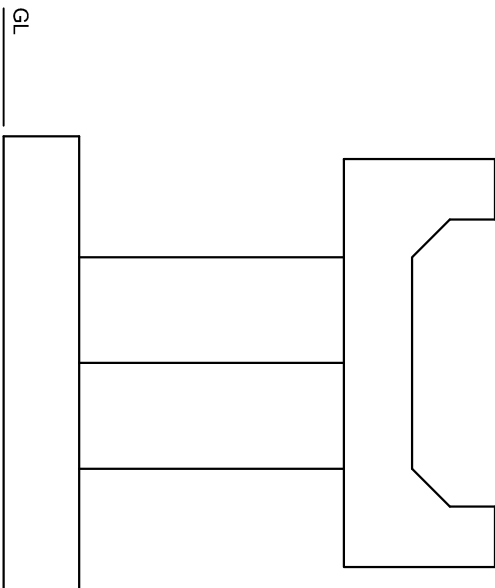
- Align the drawing sheet with the horizon line (HL).
- Locate and label the vanishing points.
- Show ALL necessary construction.
- NO hidden detail is required.

[36]

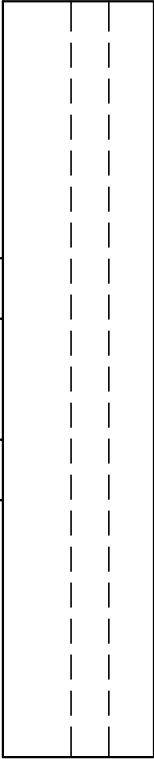


PP

HL



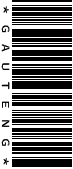
GL



ASSESSMENT CRITERIA				
1. CONSTRUCTION + VPs	7			
2. ROAD	10			
3. HEXAGONAL PILLAR	6			
4. ROUND BASE	13			
TOTAL	36			
EXAMINATION NUMBER				
EXAMINATION NUMBER				

EXAMINATION NUMBER 4

SP







ASSESSMENT CRITERIA				
SECTIONAL SOUTH ELEVATION				
	POSSIBLE	OBTAINED	SIGN	MODERATE
1. WALLS + HATCHING	16			
2. WINDOWS + DOORS	10			
3. FIXTURES	5			
4. ROOF + CEILING	15			
5. LABELS	1			
SUBTOTAL	47			
FLOOR PLAN				
1. WALLS + HATCHING	12			
2. WINDOWS + DOORS	9			
3. FEATURES	11			
4. ELECTRIC	10			
5. LABELS	6			
6. CUTTING PLANE A-A	2			
SUBTOTAL	50			
TOTAL	97			

EXAMINATION NUMBER
EXAMINATION NUMBER
6

