education

Department:
Education
REPUBLIC OF SOUTH AFRICA

INSTRUCTIONS AND INFORMATION

1. The 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 ANSWER SHEETS provided.
6. All the answer sheets must be re-stapled in numerical sequence and handed in irrespective of whether the question was attempted or not.
7. Time management is essential in order to complete all the questions.
8. Print your examination number in the block provided on every answer sheet.
9. All answers must be drawn accurately and neatly.
10. Any details or dimensions not given must be assumed in good proportion.

NATIONAL SENIOR CERTIFICATE

GRADE 12

ENGINEERING GRAPHICS AND DESIGN P1

FEBRUARY/MARCH 2009

MARKS: 100

TIME: 3 hours

This question paper consists of 6 pages.

FOR OFFICIAL USE ONLY							
					MODERATED MARK		
1							
2							
3							
4							
TOTAL							
	2	0	0				

FINAL CONVERTED MARK	CHECKED BY
100	

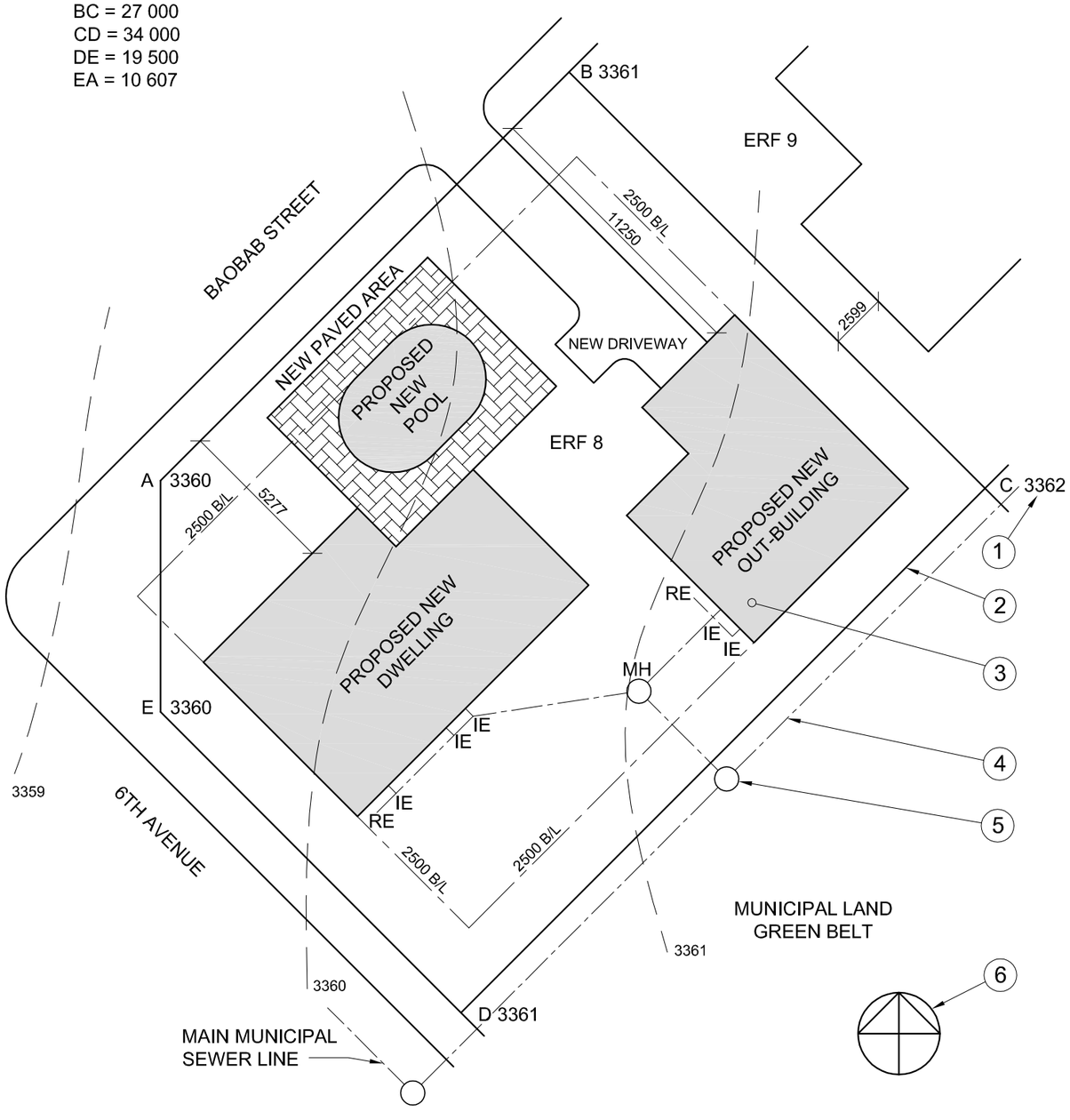
COMPLETE THE FOLLOWING:
EXAMINATION NUMBER
EXAMINATION NUMBER
EXAMINATION CENTRE
EXAMINATION CENTRE

STAPLE

THE SITE PLAN SHOWS ERF 8
SITUATED IN GOODWOOD

SURVEYED ON 19-02-2009

LAND SURVEYOR'S CERTIFICATE
SIDE LENGTHS
AB = 26 500
BC = 27 000
CD = 34 000
DE = 19 500
EA = 10 607



SITE PLAN
SCALE 1:250

QUESTION 1: ANALYTICAL (CIVIL)

Given:
A table of questions and the site plan of a proposed new dwelling, not to scale.

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

	QUESTIONS	ANSWERS	
1	How many new buildings have been proposed on the stand?		1
2	What is the stand number to the northeast?		1
3	What is the scale of the drawing?		1
4	On what date was the site surveyed?		1
5	What must the building contractor place around the new pool?		1
6	What street runs along the southwestern boundary?		1
7	For what purpose has the municipality reserved the stand behind the property?		1
8	What is the distance from the municipal boundary line on 6th Avenue to the propopsed new dwelling?		1
9	How many inspection eyes are there?		1
10	Name the feature at 1.		1
11	What does the line at 2 indicate?		1
12	Name the feature at 3.		1
13	What does the line at 4 indicate?		1
14	Name the feature at 5.		1
15	Name the feature at 6.		1
16	Determine, in metres, the difference in height between corner C and corner E on the stand.		2
17	Determine, in metres, the total length of the stand boundary facing the roads.		2
18	The side of the new dwelling that faces Baobab Street will be called the ____ elevation.		2
19	Determine the perimeter of the stand in metres.		3
20	Determine the total area of the stand in m².		3
		TOTAL 27	

EXAMINATION NUMBER	
EXAMINATION NUMBER	2

STAPLE

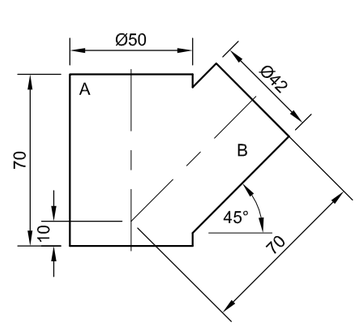
QUESTION 2: INTERPENETRATION AND DEVELOPMENT

A company that installs ventilation systems in buildings, designed a pipe system to fit into an office block. The system consists of a main cylindrical pipe and smaller branch pipes.

Given:
The incomplete front view of a connecting piece for the ventilation system consisting of a cylindrical pipe (A) and a cylindrical branch pipe (B). The axes of both pipes lie in a common vertical plane.

Instructions:
2.1 Draw in first-angle orthographic projection the following views of the connecting piece clearly showing the curve of interpenetration:
  2.1.1 The front view
  2.1.2 The top view
2.2 Develop the surface of the branch pipe marked B.

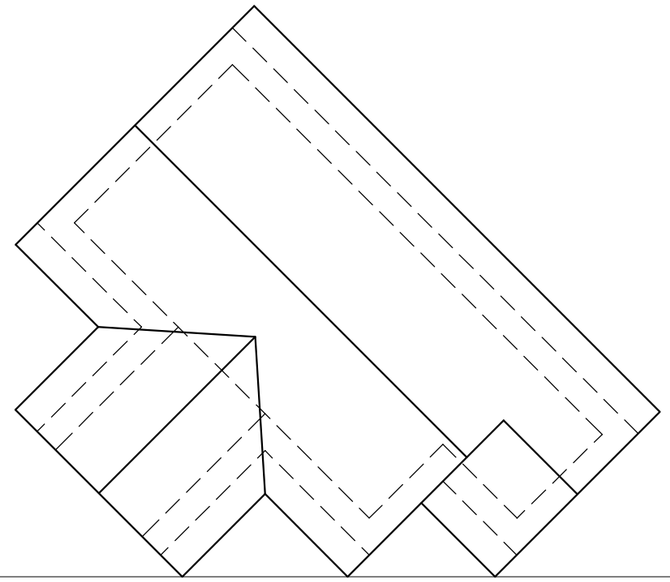
- Show ALL necessary construction and calculations. **[37]**



ASSESSMENT CRITERIA	
FRONT VIEW	10
TOP VIEW	6
CENTRE LINES (5x½)	2½
CONSTRUCTION	6
FORMULA	2
DEVELOPMENT	10½
TOTAL	**37**

EXAMINATION NUMBER	
EXAMINATION NUMBER	3

STAPLE



QUESTION 3: PERSPECTIVE

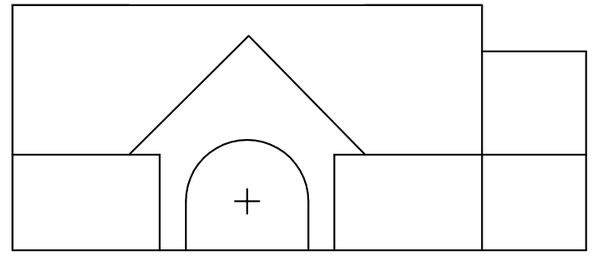
Given:
Two views of a structure and the information needed to draw a two-point perspective drawing.
PP - Picture Plane
HL - Horizon Line
GL - Ground Line
SP - Station Point

Instructions:
3.1 Complete the perspective drawing.

- Locate and label the vanishing points.
- NO hidden detail is required.
- Show ALL necessary construction.
- Align the drawing sheet with the horizon line (HL). **[39]**

PP

HL



GL

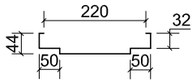
SP

ASSESSMENT CRITERIA	
CONSTRUCTION	4
FIND AND LABEL VP's	4
CIRCLE + CONSTRUCTION	8
ROOF	14
WALLS, DOOR	9
TOTAL	**39**

EXAMINATION NUMBER	
EXAMINATION NUMBER	4

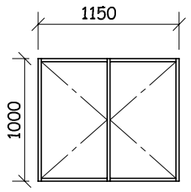
FEATURE SCHEDULE

DOOR FRAME
STANDARD, EXTERNAL, MILD STEEL

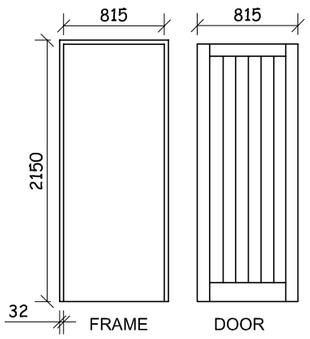


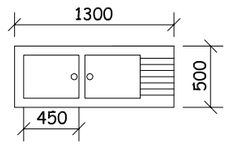
FRAME PROFILE

WINDOW
STANDARD C2 TIMBER FRAME



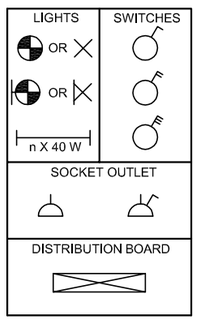
DOOR
H/W FRAMED, LEDGED AND BATTENED

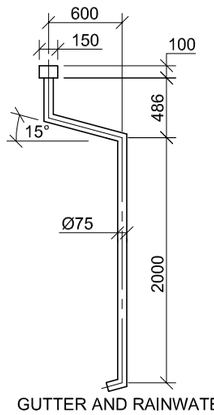




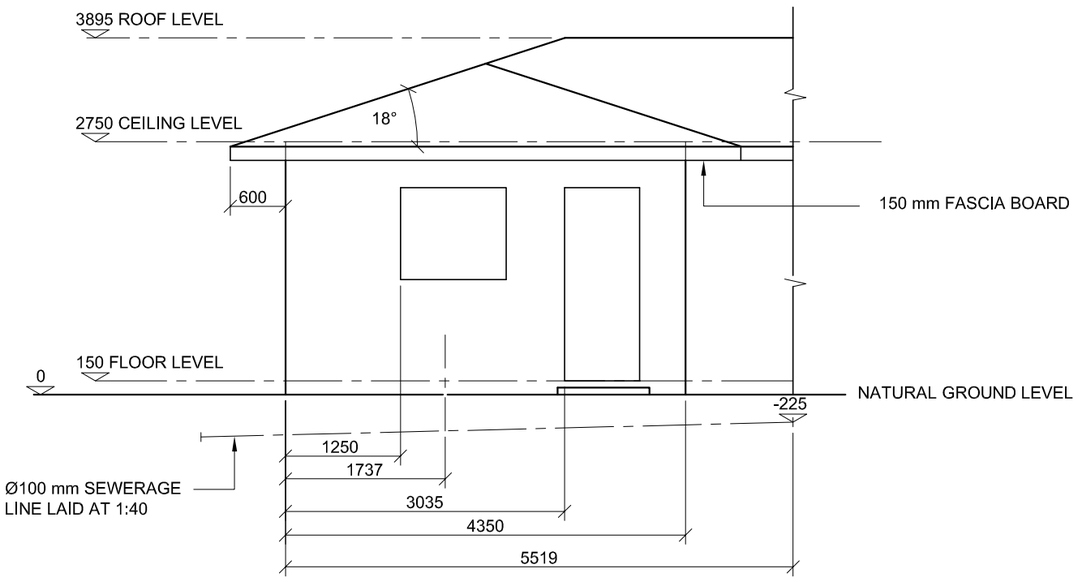
SINK

ELECTRICAL LEGEND

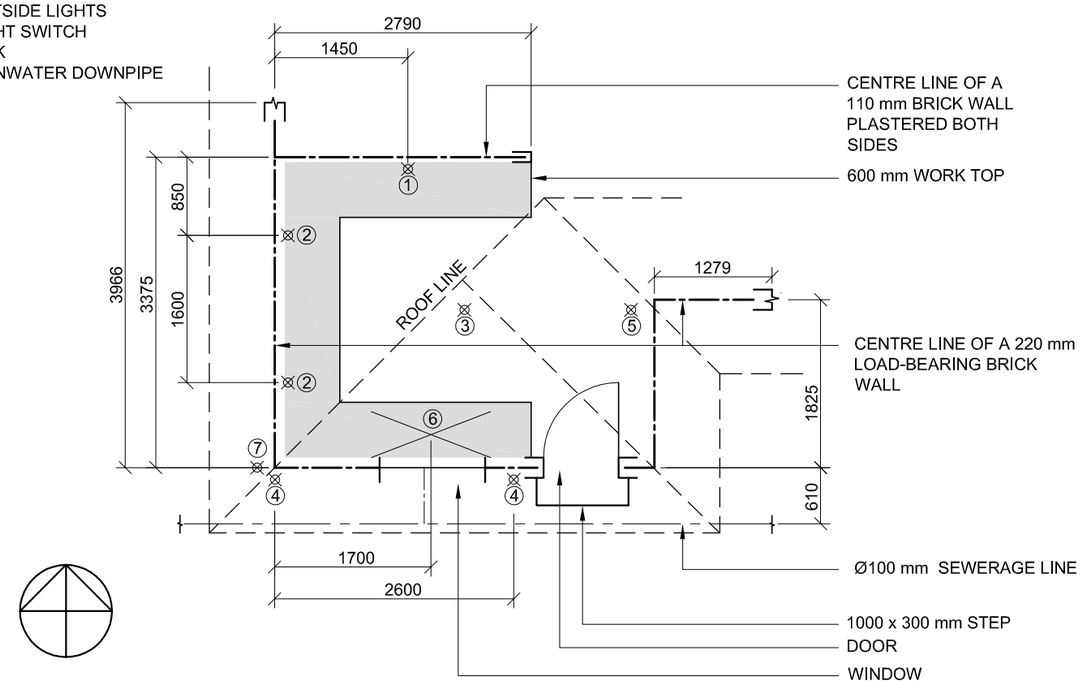




GUTTER AND RAINWATER DOWNPIPE DETAIL



KEY TO NUMBERED FEATURES ON PLAN
1. DISTRIBUTION BOARD
2. SWITCHED SOCKET OUTLET
3. FLUORESCENT LIGHT FITTING (3 x 40 W TUBES)
4. OUTSIDE LIGHTS
5. LIGHT SWITCH
6. SINK
7. RAINWATER DOWNPIPE



QUESTION 4: CIVIL DRAWING

Given:
- A schematic floor plan of a ***kitchen*** showing the centre lines of the walls with dimensions, the positions of all the features and notes.
- The incomplete south elevation of the ***kitchen*** showing the outside lines of the walls and the positions of some of the features.
- A schedule of features.
- A detailed drawing of the sink.
- A detailed drawing of the gutter and rainwater downpipe.
- A legend of electrical symbols.

Instructions:
- Answer this question on ANSWER SHEET 4 on page 6.
- **Draw to scale 1:50:**
  - **4.1 The complete floor plan**
  - **4.2 The complete southern elevation of the kitchen to the given specifications**
- ALL drawing must comply with the guidelines contained in the *SABS 0143.*

SPECIFICATIONS:
THE FLOOR PLAN
Add the following features as indicated:
- ALL the walls with hatching detail
- The step
- The door and the window detail
- The distribution board
- ALL lights connected to ONE two-pole light switch
- TWO outside lights and ONE fluorescent light
- TWO switched socket outlets
- The work surfaces and the sink
- The waste-water disposal system (sewerage)
- The roof line

THE SOUTH ELEVATION
Add the following features as indicated:
- The complete wall and roof detail
- The step 75 mm high
- The door and complete window detail
- The gutter
- Rainwater downpipe detail on the west side of the building ONLY
- The waste-water disposal system (sewerage)

Label the following:
- The floor plan and include the scale
- The elevation
- Using the correct abbreviations, label the following features and on the correct view: natural ground level, finished floor level, rainwater downpipe (RWDP), sink, angle of the waste-water disposal system, inspection eye, room designation and floor finish (ceramic tiles). **[97]**

STAPLE

ANSWER SHEET 4

ASSESSMENT CRITERIA		
ELEVATION	POSSIBLE	OBTAINED
1 ROOF	4	
2 GUTTER/FASCIA	$7\frac{1}{2}$	
3 WINDOW/DOOR	11	
4 WALLS/FFL/STEP	$8\frac{1}{2}$	
5 WASTE PIPES	3	
6 LABELS	6	
PLAN	POSSIBLE	OBTAINED
1 ROOF	4	
2 ELECTRICAL	9	
3 WINDOW/DOOR	$7\frac{1}{2}$	
4 WALLS/STEP	14	
5 WASTE PIPES/ RWDP	5	
6 SINK/WORK AREA	6	
HATCHING	$5\frac{1}{2}$	
LABELS	6	
TOTAL	97	

EXAMINATION NUMBER	
EXAMINATION NUMBER	6