



basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

**NATIONAL
SENIOR CERTIFICATE**

GRADE 12

ENGINEERING GRAPHICS AND DESIGN P1
NOVEMBER 2013

MARKS: 100

TIME: 3 hours

This question paper consists of 6 pages.

INSTRUCTIONS AND INFORMATION

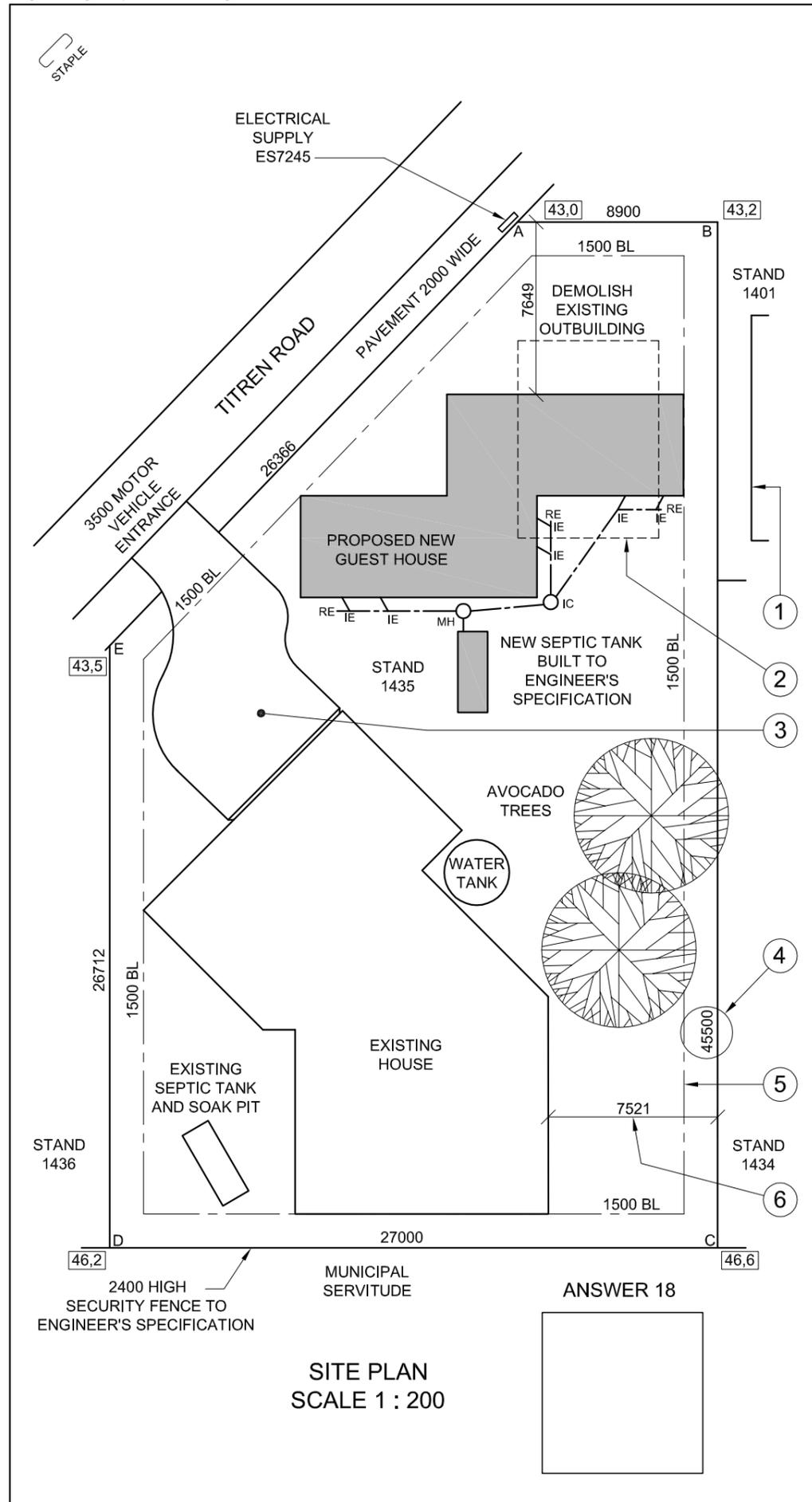
1. This question paper consists of FOUR questions.
2. Answer ALL the questions.
3. ALL drawings are in first-angle orthographic projection, unless otherwise stated.
4. ALL drawings must be completed using instruments, unless otherwise stated.
5. ALL answers must be drawn accurately and neatly.
6. ALL the questions must be answered on the QUESTION PAPER as instructed.
7. ALL the pages must be re-stapled in numerical sequence, irrespective of whether the question was attempted.
8. Time management is essential in order to complete all the questions.
9. Print your examination number 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			½	SIGN	MODERATED			½	SIGN
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





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

19. In the space below, draw, in neat freehand, the front view and top view of the SANS 10143 graphical symbol (convention) for a SINGLE KITCHEN SINK.

ARCHITECT'S SIGNATURE

CLIENT'S SIGNATURE

REVISION	DATE	DESCRIPTION
2	2013-06-12	SEPTIC TANK
1	2013-05-25	DRIVEWAY

PROJECT
PROPOSED NEW GUEST HOUSE FOR MR R VAN DER LINDE ON STAND 1435 AT 5 TITREN ROAD SEA VIEW.

PRINTED BY: SPEEDPRINT DATE OF PRINT: 2013-07-01

DRAWING TITLE: **SITE PLAN**

PROJECT NUMBER: 114 DRAWING NUMBER: 003

REFERENCE CODE: Q1P1-NOV-2013 DRAWN BY: JASON DATE: 2013-03-14

SCALE: 1 : 200 CHECKED BY: MINKI DATE: 2013-03-18

CM ARCHITECTS
21ST FLOOR THE SQUARE
320 SMITH STREET DURBAN
Tel: 031 352 6788/9

QUESTION 1: ANALYTICAL (CIVIL)

Given:
The site plan for a proposed new guest house, a title panel 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 all refer to the accompanying drawing and title panel. [30]

QUESTIONS		ANSWERS	
1	How many revisions have been made to the drawing?	1	
2	How many signatures are required on the site plan?	1	
3	What is the project number?	1	
4	How wide is the motor vehicle entrance in metres?	1	
5	What does the abbreviation <i>MH</i> stand for?	1	
6	How high is the security fence in metres?	1	
7	What does the feature at 1 indicate?	1	
8	What does the line at 2 indicate?	1	
9	Name the feature at 3.	1	
10	What does the number at 4 indicate?	1	
11	What does the line at 5 indicate?	1	
12	If scale 1 : 50 was used for the site plan, what would the dimension at 6 read?	1	
13	What is the reference number of the electrical supply?	1	
14	What type of tree is found on the stand?	1	
15	In what SI unit are the dimensions?	1	
16	Is corner C of stand 1435 higher or lower than Titren Road?	2	
17	What is the shortest distance in metres from the proposed new guest house to Titren Road?	2	
18	If the side of the existing house that faces Titren Road is the south-west elevation, draw, in the space provided below the site plan and in neat freehand, a correctly orientated SANS 10143 north-point symbol.	4	
19	In the space provided in the title panel, draw, in neat freehand, the front view and top view of the SANS 10143 graphical symbol (convention) for a single kitchen sink.	4	
20	In the space below, determine the perimeter of the new guest house in metres.	3	
ANSWER 20 Show ALL calculations.		TOTAL	30

EXAMINATION NUMBER	
EXAMINATION NUMBER	2





QUESTION 2: INTERPENETRATION AND DEVELOPMENT

Given:

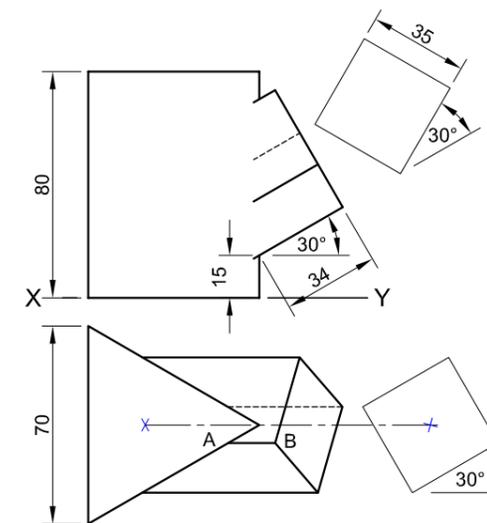
- The incomplete front view and top view of a right square prism that has been shaped to fit around a right equilateral triangular prism. The axes of both prisms lie in a common vertical plane.
- The auxiliary views of the square prism.

Instructions:

Draw, to scale 1 : 1, the following:

- 2.1 The given top view
- 2.2 The complete front view clearly showing the curve of interpenetration
- 2.3 The development of the surface of the square prism.
Make **AB** the seam.

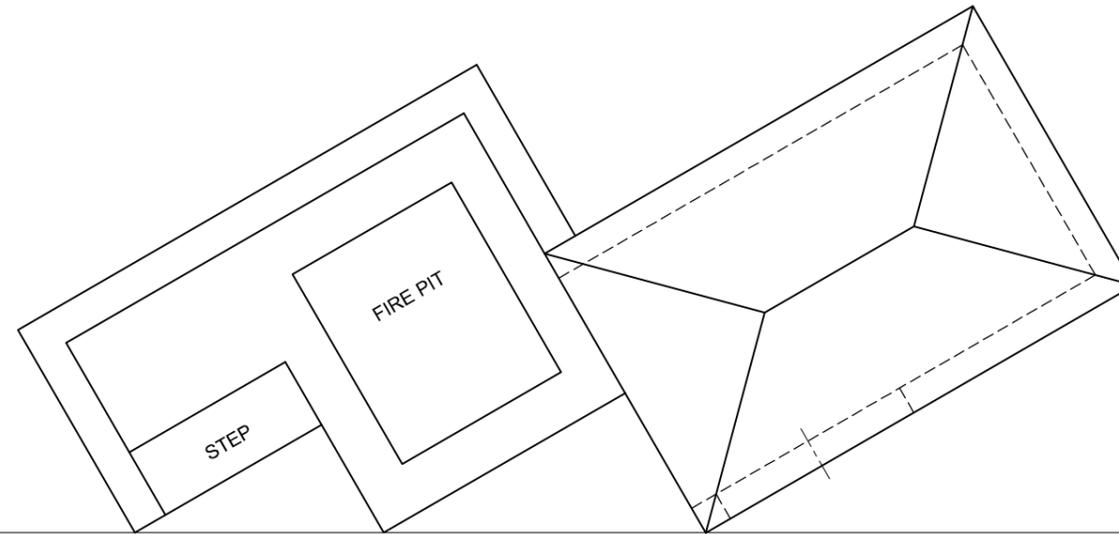
- Show ALL hidden detail.
- Show ALL necessary construction and fold lines. **[33]**



AB IS THE SEAM.

ASSESSMENT CRITERIA				
1	TOP VIEW	7½		
2	FRONT VIEW	14		
3	DEVELOPMENT	11½		
TOTAL		33		
EXAMINATION NUMBER				
EXAMINATION NUMBER				
EXAMINATION NUMBER				3





QUESTION 3: PERSPECTIVE

Given:

Two views of a recreational 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.

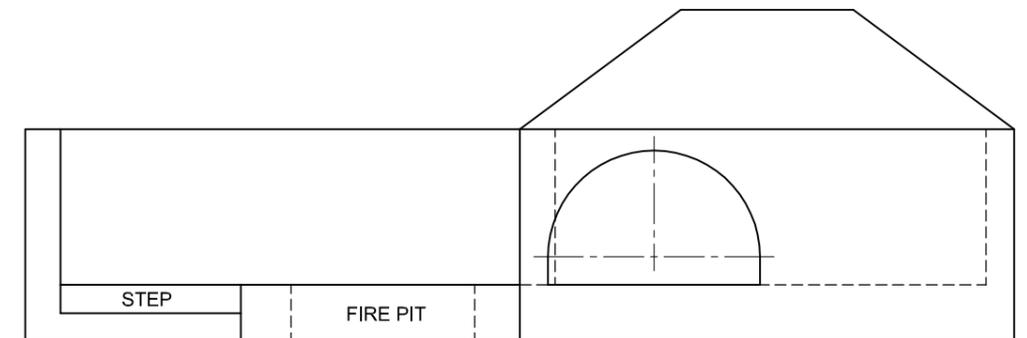
- Align the drawing sheet with the ground line (GL).
- Determine and label the vanishing points.
- Show ALL necessary construction.
- NO hidden detail is required.

[41]

PP

HL

GL



+

SP

ASSESSMENT CRITERIA			
1	CONSTRUCTION + VPs	7	
2	WALLS	13½	
3	BUILDING + ROOF	9	
4	ARCH + CONSTR' + PIT	11½	
TOTAL		41	
EXAMINATION NUMBER			
EXAMINATION NUMBER			4



DOOR AND WINDOW SCHEDULE

WINDOW (W1)
 NOTE: 175 x 20 FIBRE CEMENT SILL UNDER ALL WINDOWS

FRONT AND LEFT VIEW OF FRONT DOOR FRAME WITH SIDE PANELS (D2)

INTERNAL DOOR AND FRAME (D1)

FRONT DOOR (D2)

ROOF COMPONENTS	
75 x 50 PURLINS	
200 x 20 FASCIA BOARD	
114 x 38 WALL PLATE	
125 x 100 GUTTER	
ROOF CAP	

ELECTRICAL SYMBOLS

SANITARY FIXTURES	

NSC

200 x 20 BARGE BOARD

125 x 100 GUTTER

Ø100 mm RWDP

W1 WINDOW

FRONT DOOR

FLOOR LEVEL

GROUND LEVEL

SOUTH-EAST ELEVATION

FIXTURES

D1 INTERIOR DOOR OPENINGS
D2 FRONT DOOR OPENING
W1 WINDOW OPENINGS
WC TOILET
WB WASHBASIN
BIC BUILT-IN CUPBOARD

ELECTRICAL FITTINGS

1. SINGLE-POLE LIGHT SWITCH
2. CEILING LIGHT
3. 2 x 40 W FLUORESCENT TUBES
4. SWITCH SOCKET OUTLET

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

ROOF NOTES:
 ROOF COVER 15 mm CORRUGATED IRON ON 75 x 50 mm PURLINS @ 1800 c/c

114 x 38 mm ROOF TRUSSES ON 114 x 38 mm WALL PLATES

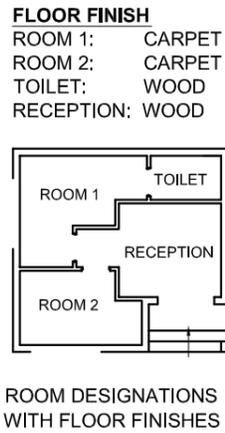
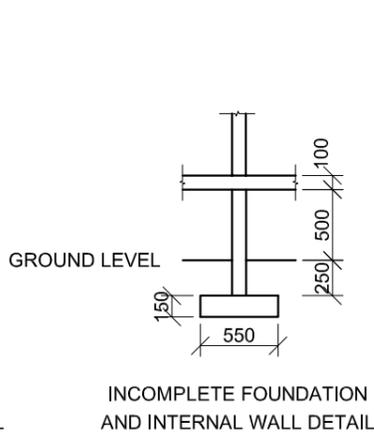
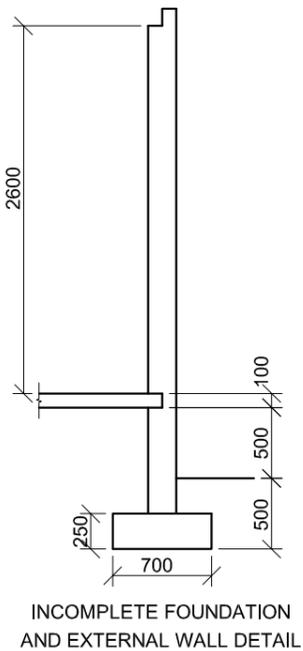
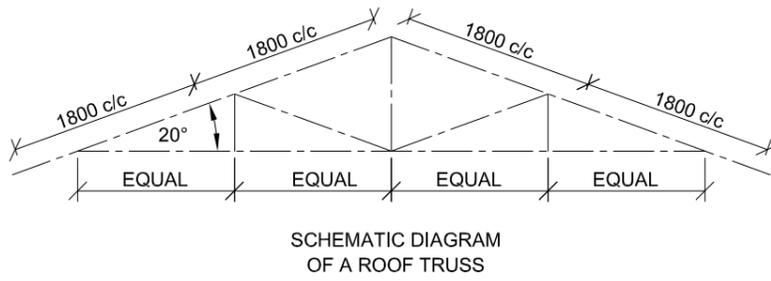
ROOF PITCH 20° WITH 200 x 20 mm FASCIA BOARD ON BOTH ENDS

125 x 100 mm GUTTER ON BOTH ENDS

PLASTER CEILING BOARD ON 6 STRIPS OF 38 x 38 mm BRANDING, EVENLY SPACED

INCOMPLETE FLOOR PLAN

SIDE OPENING HEIGHT 2700 FROM GROUND LEVEL



QUESTION 4: CIVIL DRAWING

Given:

- The complete south-east elevation of new **consulting rooms**, showing the walls, the window, the front door, the roof and notes
- The incomplete floor plan, showing the walls, position of the windows, doors, fixtures and the electrical fittings
- Roof notes and a schematic diagram of a roof truss
- Incomplete foundation and wall detail
- The floor finishes and a diagram showing the room designations
- A door and window schedule
- A table of roof components
- A table of electrical symbols
- A table of sanitary fixtures
- The incomplete floor plan of the new **consulting rooms**, drawn to scale 1 : 50, on page 6

Instructions:

- Answer this question on page 6.
- Using the given incomplete floor plan, draw, in first-angle orthographic projection and to scale 1 : 50, the following views of the new **consulting rooms**:
 - 4.1 The complete floor plan**
 - 4.2 A sectional elevation** on cutting plane A-A
 - 4.3 The north-east elevation**
- ALL drawings must comply with the **guidelines** and **graphical symbols** contained in the **SANS 10143**.

SPECIFICATIONS:

- THE FLOOR PLAN**
- Add the following features to the drawing:**
- ALL doors and windows
 - ALL the sanitary fixtures as indicated by the abbreviations
 - ALL the electrical fittings as indicated by the numbers
 - ALL hatching detail
- THE SECTIONAL ELEVATION**
- Show the following features on the drawing:**
- The complete foundation, wall, slab, roof and ceiling detail
 - The window detail, with a double lintel, and the door detail
 - The sanitary fixtures
 - ALL hatching detail

THE NORTH-EAST ELEVATION

- Show the following features on the drawing:**
- The outside walls and finished floor level
 - The roof detail, including the gutter, fascia board and rain-water downpipe
 - The window detail

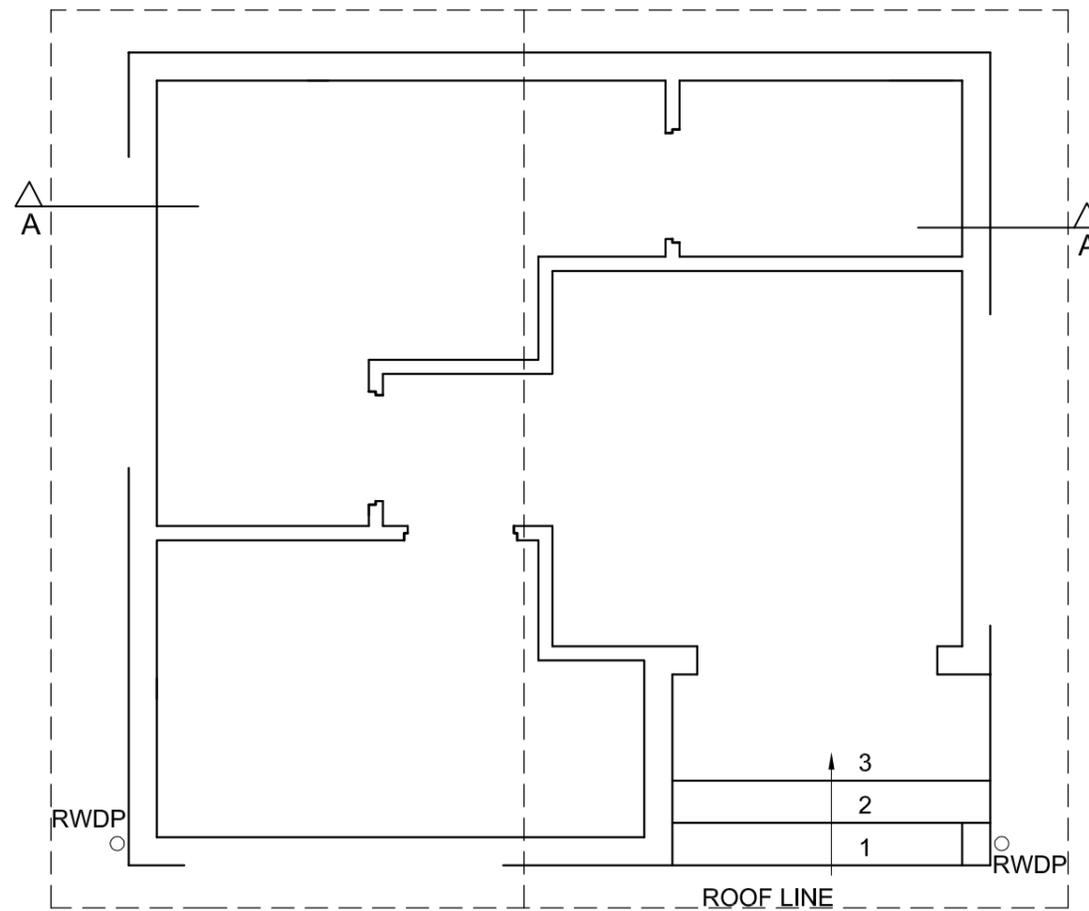
Label the following:

- The room designations with floor finishes
- The sectional elevation and north-east elevation
- Using the correct abbreviations, label the following features in the correct view: ground level and damp-proof course.

NOTE:

- ALL substructure hatching may be drawn in freehand. **[96]**





FLOOR PLAN
SCALE 1 : 50



ASSESSMENT CRITERIA					
FLOOR PLAN					
		POSSIBLE	OBTAINED	SIGN	MODERATED
1	LABELS	4			
2	ELECTRICAL	11			
3	FITTINGS	6			
4	DOORS + WINDOWS	14			
5	HATCHING	3			
SUBTOTAL		38			
SECTIONAL ELEVATION					
1	ROOF	16			
2	WALLS + FLOOR + FOUNDATIONS	11			
3	WINDOW	2			
4	LABELS	3			
5	HATCHING	6			
6	FIXTURES	4			
SUBTOTAL		42			
NORTH-EAST ELEVATION					
1	WALLS + FFL	5			
2	ROOF + GUTTER + RWDP	5			
3	WINDOW	5			
4	LABELS	1			
SUBTOTAL		16			
TOTAL		96			
EXAMINATION NUMBER					
EXAMINATION NUMBER				6	