

STAPLE



basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

**NATIONAL
SENIOR CERTIFICATE**

GRADE 12

ENGINEERING GRAPHICS AND DESIGN P1
NOVEMBER 2015

MARKS: 100

TIME: 3 hours

This question paper consists of 6 pages.

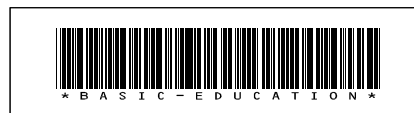
INSTRUCTIONS AND INFORMATION

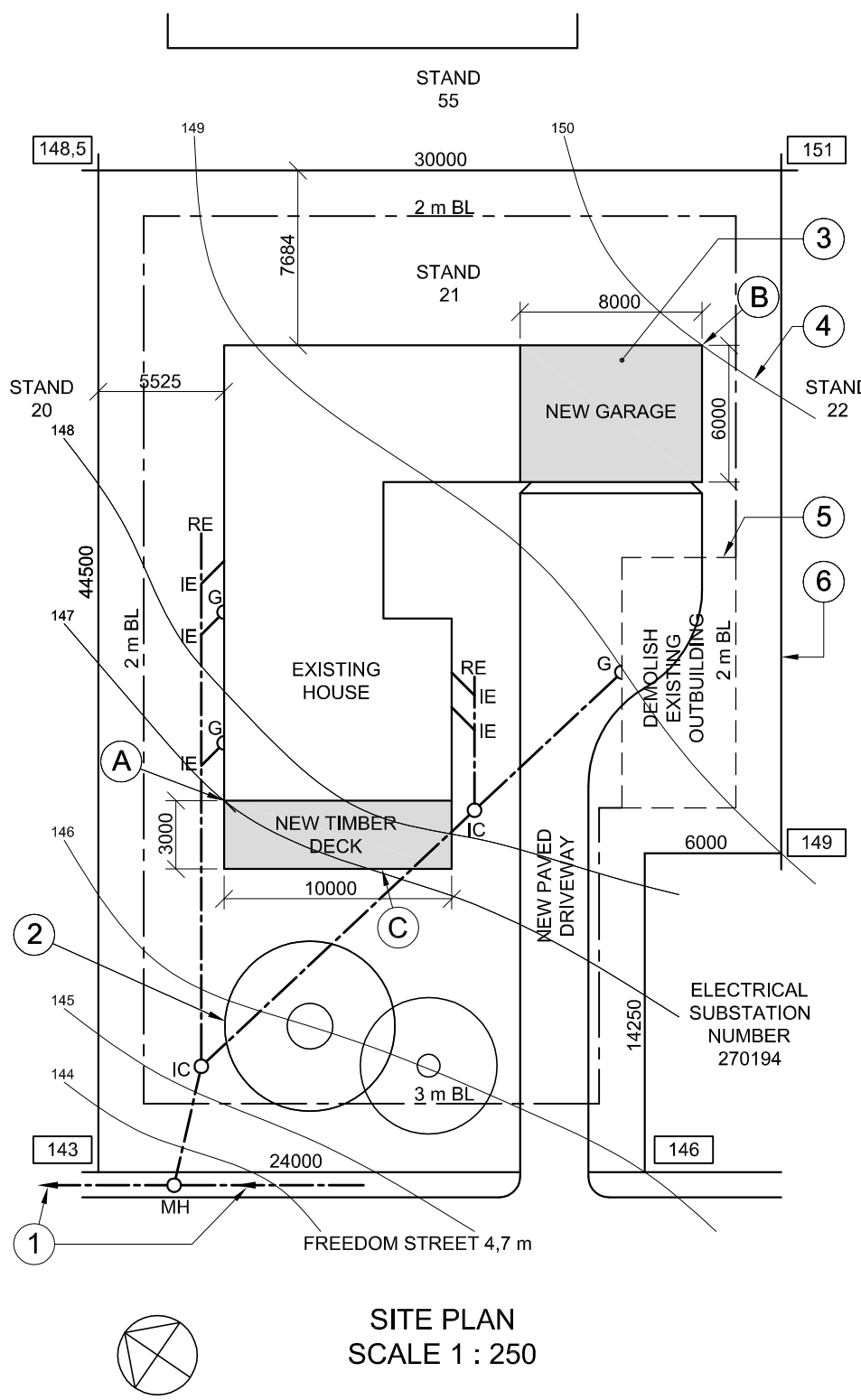
1. This question paper consists of FOUR questions.
2. Answer ALL the questions.
3. ALL drawings are in first-angle orthographic projection, unless otherwise stated.
4. ALL drawings must be completed using instruments, unless otherwise stated.
5. ALL answers must be drawn accurately and neatly.
6. ALL the questions must be answered on the QUESTION PAPER as instructed.
7. ALL the pages, 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. 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			$\frac{1}{2}$	SIGN	MODERATED			$\frac{1}{2}$	SIGN	RE-MARKING			$\frac{1}{2}$	SIGN
1															
2															
3															
4															
TOTAL															
	2	0	0			2	0	0			2	0	0		

FINAL CONVERTED MARK	CHECKED BY
100	

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

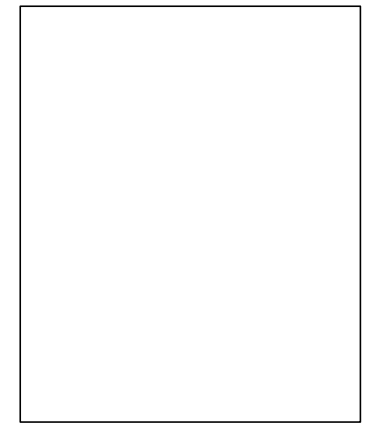




NOTE:
Contractors must verify all dimensions and levels on site before commencing work. Architects must be notified immediately of any discrepancies.

ARCHITECT'S SIGNATURE
CLIENT'S SIGNATURE

ANSWER 20
In the space below, draw, in neat freehand, the front view and top view of the SANS 10143 graphical symbol for a BATH.



REVISION	DATE	DESCRIPTION
1	2015-01-27	Add timber deck

KEY ARCHITECTS
96 Protea Street
POTCHEFSTROOM
083 130 2201
key@webmail.co.za

PRINTED BY: ILM PRINTERS
DATE OF PRINT: 2015-02-13

DRAWING TITLE: **SITE PLAN**

PROJECT: **PROPOSED NEW GARAGE AND TIMBER DECK FOR MRS SCHUTTE ON STAND 21, FREEDOM STREET.**

PROJECT NUMBER AFSP-2015	DRAWING NUMBER VG 002		
DATE 2015-01-10	DRAWN AD	CHECKED BC	SCALE 1 : 250

REFERENCE CODE: Q1P1N2015



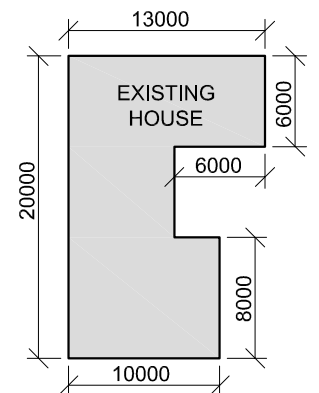
QUESTION 1: ANALYTICAL (CIVIL)

Given:
The site plan of an existing house with a proposed new garage and timber deck, 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 refer to the accompanying drawing and title panel. [30]

QUESTIONS		ANSWERS	
1	What is the project number?	1	
2	How many signatures are required?	1	
3	How many revisions have been made to the drawing?	1	
4	Who is the client?	1	
5	On what date was the site plan printed?	1	
6	How many new additions are indicated on the site plan?	1	
7	What does the abbreviation IC stand for?	1	
8	What is indicated by the arrows on the line at 1?	1	
9	Name the feature at 2.	1	
10	In what colour should the feature at 3 be shown?	1	
11	What does the line at 4 indicate?	1	
12	What does the broken line at 5 indicate?	1	
13	What is the length of the boundary line at 6 in metres?	1	
14	What is the width of Freedom Street in millimetres?	1	
15	What is the difference in ground level height between corner A and corner B of the buildings in metres?	2	
16	On which side of the existing house is the new timber deck?	2	
17	Which municipal service is found on the land adjacent to stand 21?	2	
18	In the space below, determine the perimeter of the existing house in metres.	3	
19	In the space below, determine the combined total area of the existing house and the new garage in square metres.	3	
20	In the space provided in the title panel, draw, in neat freehand, the front view and top view of the SANS 10143 graphical symbol for a BATH.	4	
		TOTAL 30	

ANSWER 18
Show ALL calculations.



ANSWER 19
Show ALL calculations.

EXAMINATION NUMBER	
EXAMINATION NUMBER	2



QUESTION 2: INTERPENETRATION AND DEVELOPMENT

Given:

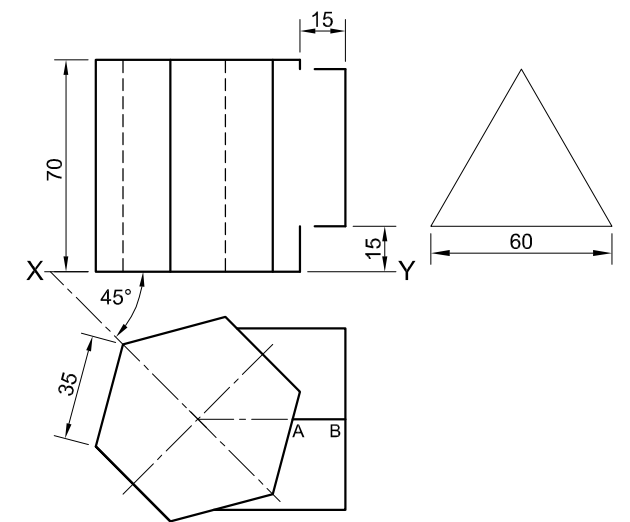
- The incomplete front view and top view of an equilateral triangular prism that has been shaped to fit around a right regular hexagonal prism. The axes of both prisms lie in a common vertical plane.
- An auxiliary view of the triangular prism.

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 complete right view
- 2.4 The development of the surface of the triangular prism
Make **AB** the seam.

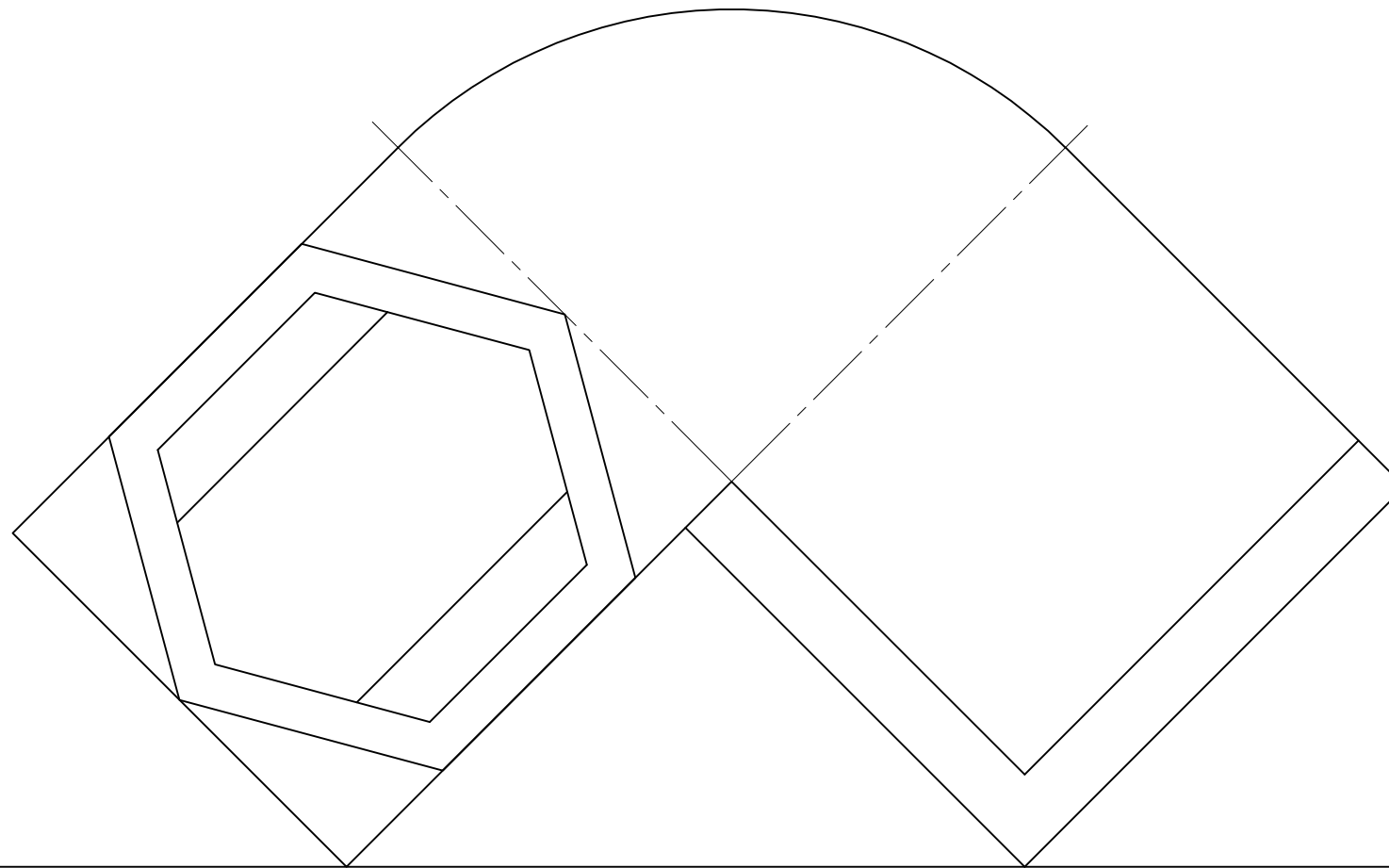
- Show ALL hidden detail.
- Show ALL necessary construction. **[35]**



AB IS THE SEAM.

ASSESSMENT CRITERIA			
1	TOP VIEW	6	
2	FRONT VIEW	11	
3	RIGHT VIEW	7	
4	DEVELOPMENT	11	
PENALTIES (-)			
TOTAL		35	
EXAMINATION NUMBER			
EXAMINATION NUMBER			
EXAMINATION NUMBER			3





QUESTION 3: PERSPECTIVE

Given:

Three views of a wooden deck with a hexagonal pool and the information needed to draw a two-point perspective drawing.

PP – Picture plane

HL – Horizon line

GL – Ground line

SP – Station point

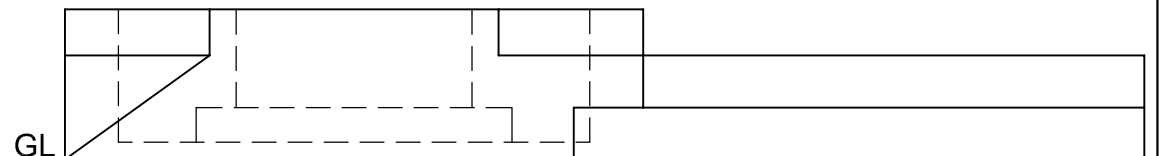
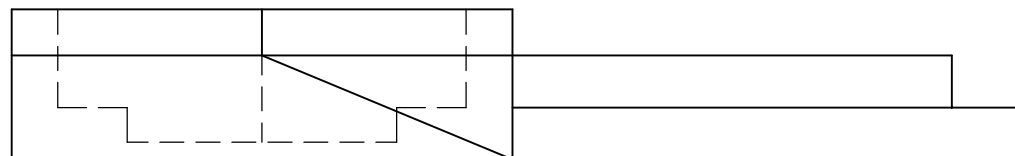
Instructions:

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. **[39]**

ASSESSMENT CRITERIA			
1	CONSTRUCTION + VPs	6	
2	BASE + STAIRS	12½	
3	POOL	13½	
4	CIRCULAR ARC	7	
PENALTIES (-)			
TOTAL		39	

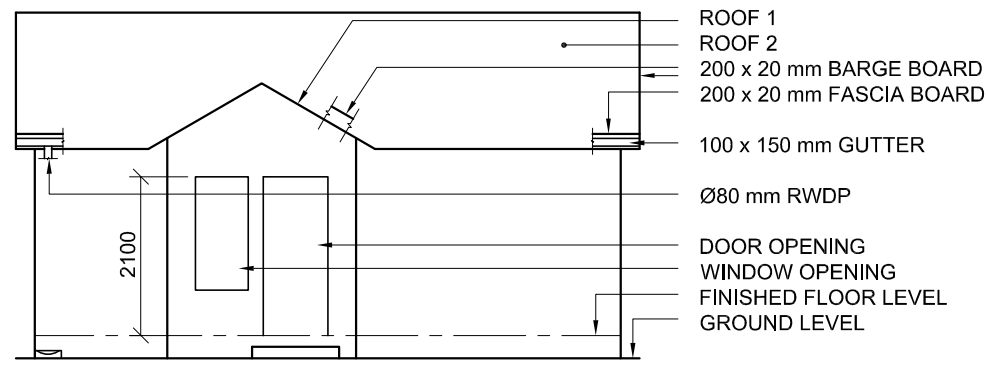
PP and HL



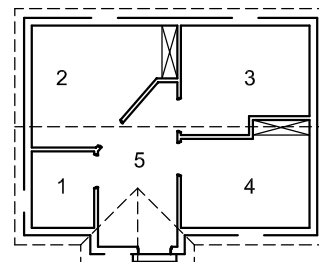
+
SP

EXAMINATION NUMBER	
EXAMINATION NUMBER	4





INCOMPLETE NORTH ELEVATION



FLOOR FINISHES

- 1 TOILET: TILE
- 2 ROOM 1: CARPET
- 3 ROOM 2: CARPET
- 4 ROOM 3: CARPET
- 5 RECEPTION: TILE

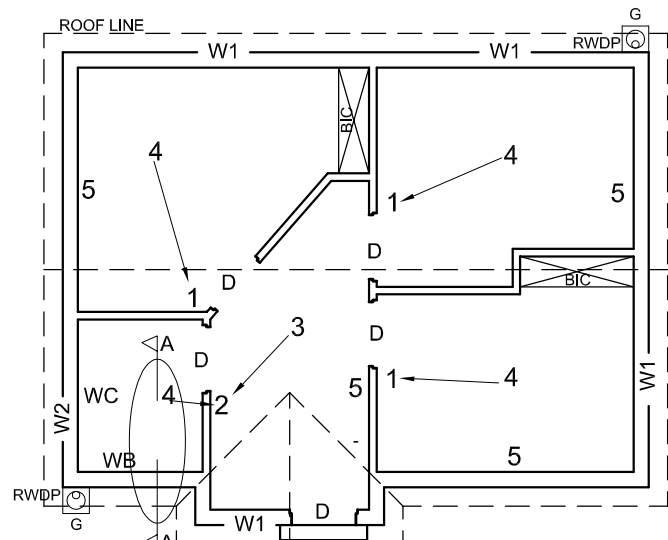
WINDOW AND DOOR SCHEDULE

WINDOW (W1) 700 x 1500
WINDOW (W2) 600 x 600
DOOR FRAME AND DOOR (D) 2100 x 50

WINDOW NOTES:

- A = OPENING SIDE
- B = HINGED SIDE
- C = FIXED PANEL
- 150 x 25 mm FIBRE CEMENT SILL UNDER ALL WINDOWS

GULLEY



INCOMPLETE FLOOR PLAN

FEATURES

- D DOOR
- W1 WINDOW
- W2 WINDOW

FIXTURES

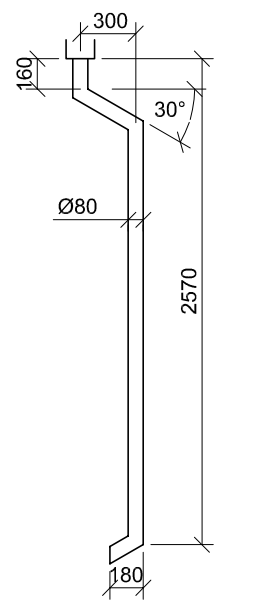
- WC TOILET
- WB WASH BASIN

ELECTRICAL FITTINGS

- 1. ONE-WAY SWITCH - SINGLE-POLE
- 2. ONE-WAY SWITCH - DOUBLE-POLE
- 3. FLUORESCENT LIGHT 2 x 40 W
- 4. CEILING LIGHT
- 5. SWITCHED SOCKET OUTLET

NOTE:

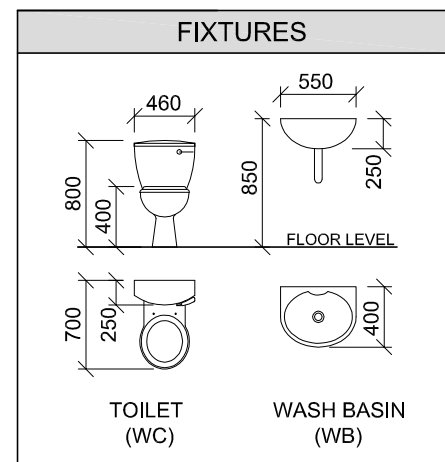
THE ARROW SHOWS THE LIGHT CONNECTION TO THE SWITCH.



ROOF COMPONENTS

	38 x 38 mm BRANDERING
	114 x 38 mm WALL PLATE
	75 x 50 mm PURLINS

ELECTRICAL SYMBOLS



QUESTION 4: CIVIL DRAWING

Given:

- The incomplete north elevation of **new consulting rooms**, showing the walls, the door and window openings, the roof and notes
- The incomplete floor plan showing the walls, positions of the doors, windows, fixtures and electrical layout
- The incomplete foundation and external wall detail
- Room designations and floor finishes
- The rainwater down-pipe detail
- Schematic diagrams of the TWO types of roof trusses and roof notes
- A window and door schedule
- The gulley detail
- A table of roof components
- A table of electrical symbols
- A table of 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.

4.1 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**:

4.1.1 THE COMPLETE FLOOR PLAN

Add the following features to the drawing:

- ALL doors and windows
- ALL fixtures as indicated by abbreviations
- ALL electrical fittings as indicated by numbers
- ALL hatching detail

4.1.2 THE COMPLETE NORTH ELEVATION

Show the following features on the drawing:

- The outside walls, door and window detail
- The roof detail, including the fascia boards, barge boards, gutters, rainwater down-pipe and gulley
- The finished floor level

4.2 In the space provided, draw, to **scale 1 : 20**, a **DETAILED SECTION** on cutting plane A-A of the area in the ellipse shown on the incomplete floor plan.

Show the following features on the drawing:

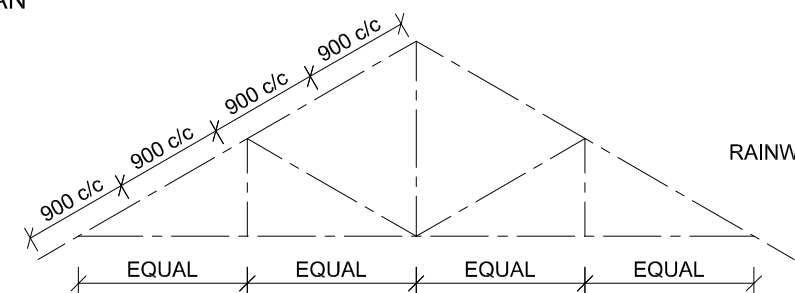
- The complete foundation and external wall detail
- The roof detail, including the fascia board and gutter
- ALL features and fixtures to the left of the section
- ALL hatching detail. **ONLY** the substructure hatching may be drawn in neat freehand.

Label the following:

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

NOTE:

- Planning is essential.
- ALL drawings must comply with the **guidelines** and **graphical symbols** as contained in the **SANS 10143**. [96]



ROOF NOTES:
ROOF PITCH 30°

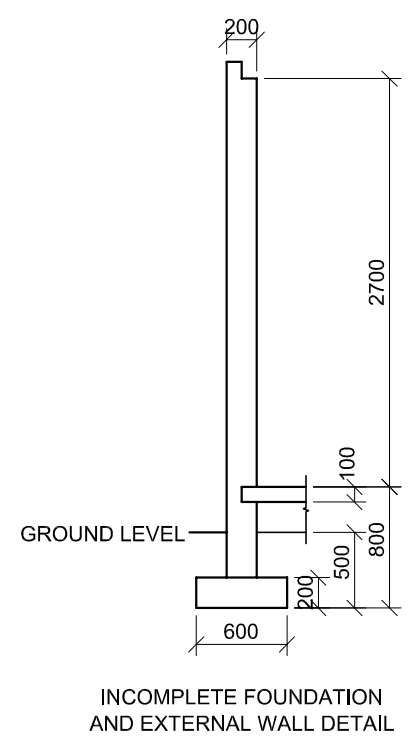
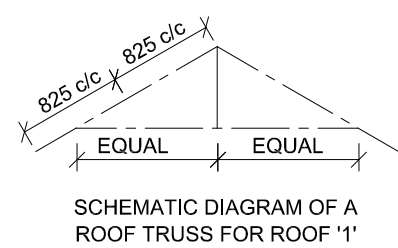
200 x 20 mm FASCIA BOARD ON ALL SIDES AND 200 x 20 mm BARGE BOARD ON THE GABLED ENDS

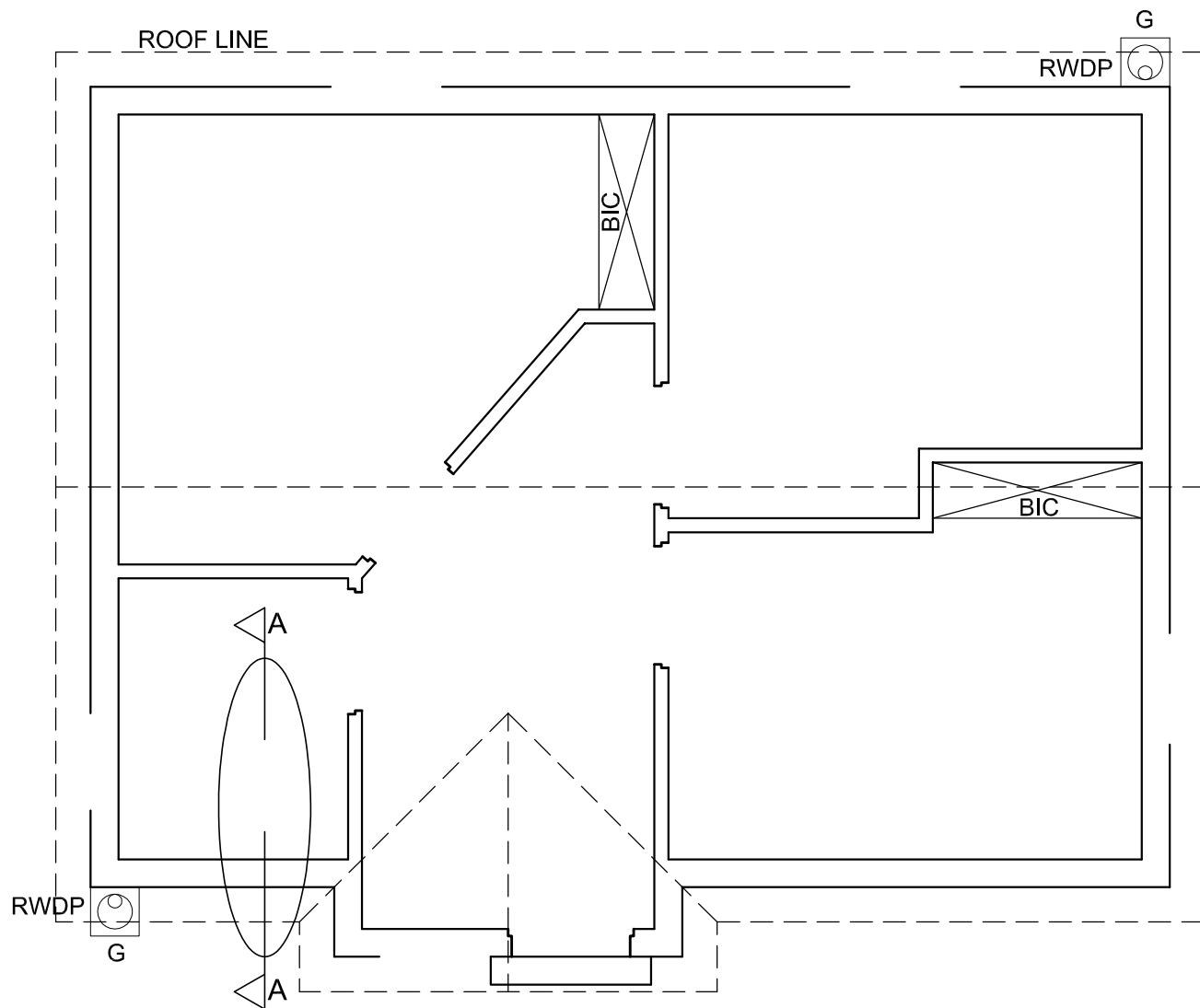
ROOF COVER 15 mm FIBRE CEMENT SHEETING ON 75 x 50 mm PURLINS SPACED ACCORDING TO SCHEMATIC DIAGRAMS

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

9 mm CEILING BOARD ON 38 x 38 mm BRANDERING STRIPS @ 600 mm c/c

100 x 150 mm GUTTER ON ALL SIDES





FLOOR PLAN
SCALE 1 : 50

DETAILED SECTION ON A-A
SCALE 1 : 20

FOR OFFICIAL USE ONLY		
INCORRECT SCALE(S)		
NON-ALIGNMENT OF VIEWS		
FEATURES DRAWN IN FREEHAND		
TOTAL PENALTIES (-)		

MARK ALLOCATION FOR SECTION OF ROOF (4.2 No. 1)										
A	B	C	D	E	F	G	H	I	J	

ASSESSMENT CRITERIA					
FLOOR PLAN					
		POSSIBLE	OBTAINED	SIGN	MODERATE
1	DOORS + WINDOWS	15			
2	ELECTRICAL	9			
3	FIXTURES	4			
4	HATCHING	4			
5	LABELS	5			
SUBTOTAL		37			
NORTH ELEVATION					
1	ROOF	8½			
2	WALLS + RWDP + FFL + GULLEY	6½			
3	DOOR + WINDOW	6			
4	LABELS	1½			
SUBTOTAL		22½			
DETAILED SECTION					
1	ROOF DETAIL	11			
2	FOUNDATION + WALL + RWDP + GULLEY + LINE BREAK	11			
3	WINDOW + WC + WB	9½			
4	HATCHING	4			
5	LABELS	1			
SUBTOTAL		36½			
TOTAL		96			
TOTAL PENALTIES (-)					
GRAND TOTAL					
EXAMINATION NUMBER					
EXAMINATION NUMBER					
6					

