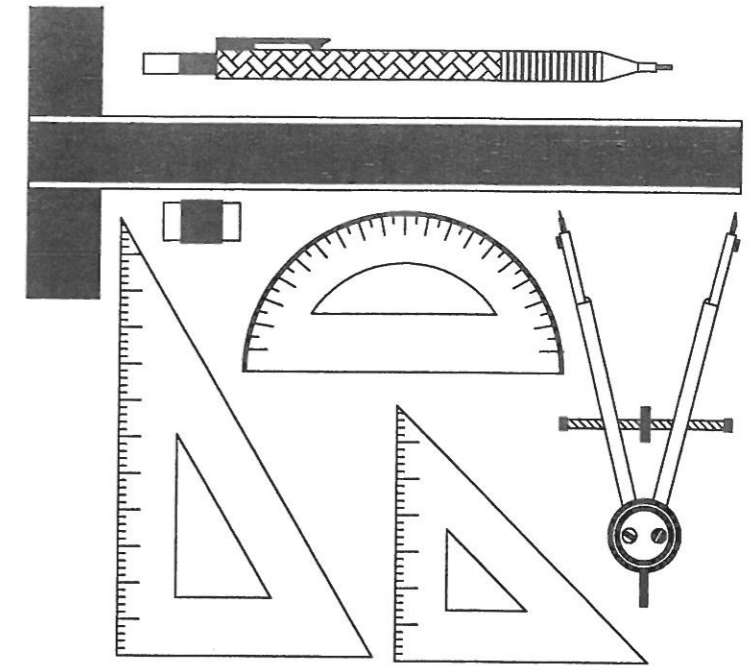




NATIONAL SENIOR CERTIFICATE EXAMINATION  
2012

ENGINEERING GRAPHICS AND DESIGN  
PAPER 1

MARKS: 200  
TIME: 3 HOURS



FOR OFFICIAL USE ONLY					
QUESTION	SECTION	MARK	MODERATED	MAXIMUM	CODE
1	CIVIL ANALYTICAL			26	
2	DEVELOPMENT			35	
3	TWO POINT PERSPECTIVE			36	
4	CIVIL DRAWING			103	
SYMBOL	TOTAL			200	
				100	

FINAL CONVERTED MARK	CHECKED BY
100	

PLEASE READ THE FOLLOWING INSTRUCTIONS CAREFULLY

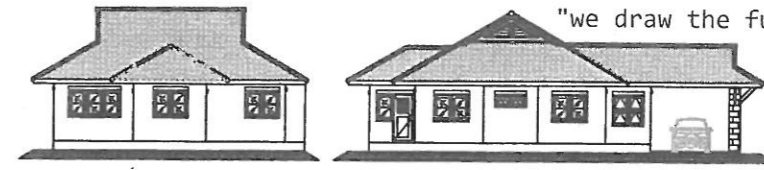
1. This question paper consists of **6 pages** including the cover page and **4 questions**.
2. **All** questions must be answered.
3. Unless specified otherwise, all questions are in **First Angle Orthographic Projection**.
4. Unless specified otherwise, all questions are to be completed to a **scale of 1:1**.
5. **All** answer sheets must be re-stapled in numerical order, even questions that are not attempted/blank.
6. All **construction work** must be shown.
7. Print your **examination number** neatly on each page.
8. Use only the **drawing sheets** provided.
9. Your drawings should reflect **neatness** and **accuracy**.
10. All dimensions or detail not given may be **assumed** in **good proportion**.

EXAMINATION NUMBER

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# C G and Associates Architects

"we draw the future"



QUESTION 1

CIVIL ANALYTICAL

STUDY THE ADJACENT DRAWING AND ANSWER THE QUESTIONS THAT FOLLOW:

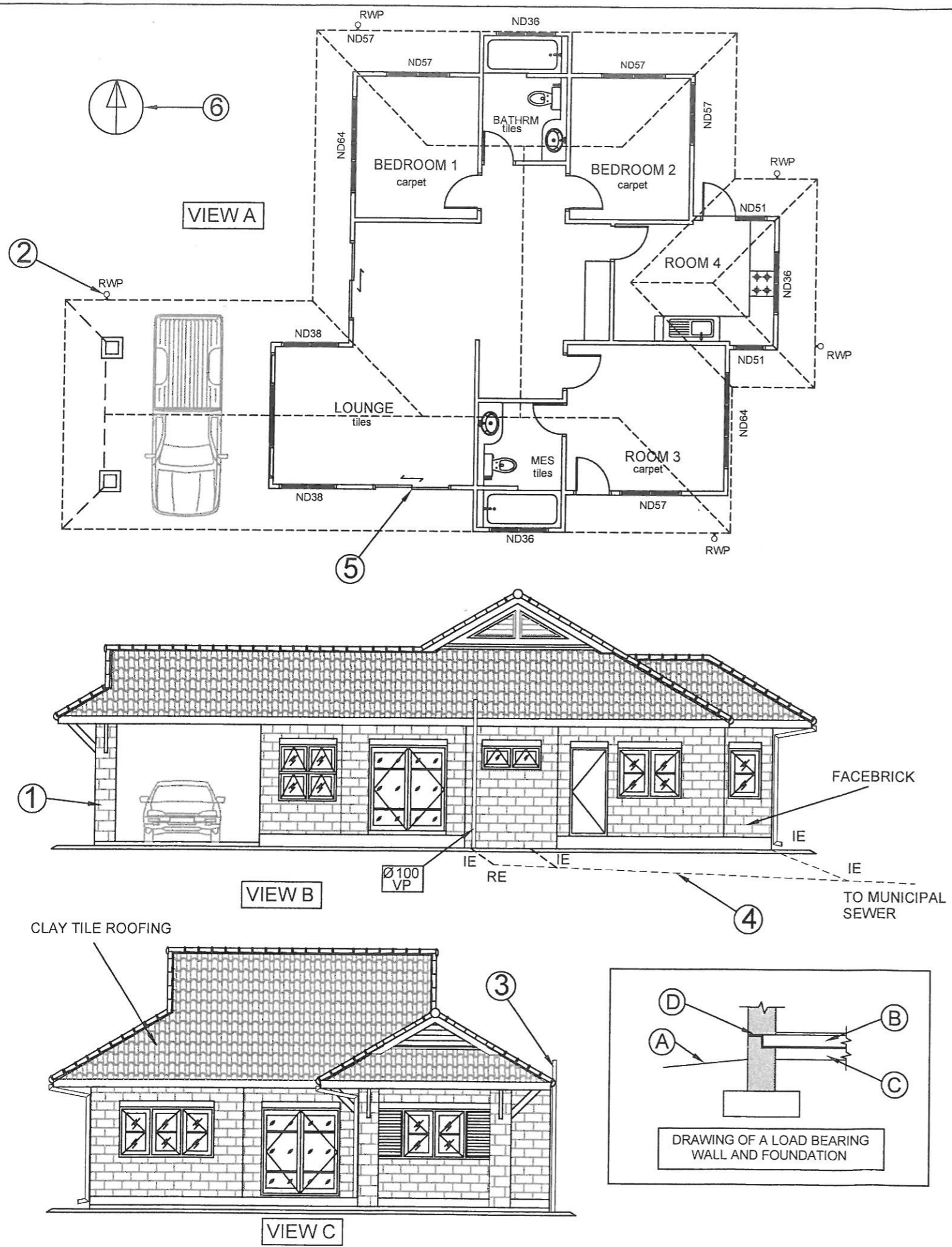
1.1 What type of civil drawing is shown by VIEW A?		1				
1.2 What elevation is VIEW C?		1				
1.3 What would be the room designation of ROOM 3?		1				
1.4 How many bathrooms does this house have?		1				
1.5 How many Inspection Eyes are shown in VIEW B?		1				
1.6 What does the abbreviation RE stand for?		1				
1.7 What floor finish would be appropriate for ROOM 4?		1				
1.8 What type of sewer system serves this dwelling?		1				
1.9 What is the feature at 1 called?		1				
1.10 What is the feature at 2 called?		1				
1.11 What is the feature at 3 called?		1				
1.12 What is the feature at 4 called?		1				
1.13 What is the feature at 5 called?		1				
1.14 What is the feature at 6 called?		1				
1.15 How many panes of glass do each of the ND64 windows have?		1				
1.16 With reference to the drawing of the load-bearing wall and foundation, indicate which feature is represented by the corresponding letter.	A B C D	4				
1.17 What type of finish will be used for the outside walls of this house?		1				
1.18 In the space below, draw, in NEAT freehand, the PLAN VIEW and ELEVATION VIEW of the SABS convention for a shower.	<table border="1" style="width: 100%;"> <tr> <th style="width: 50%;">PLAN VIEW</th> <th style="width: 50%;">ELEVATION VIEW</th> </tr> <tr> <td style="height: 100px;"></td> <td style="height: 100px;"></td> </tr> </table>	PLAN VIEW	ELEVATION VIEW			2
PLAN VIEW	ELEVATION VIEW					
1.19 Insert the following electrical detail into ROOM 3 and the adjacent bathroom shown in VIEW A (Use the correct SABS conventions):	<ul style="list-style-type: none"> <li>▶ A THREE, 40 watt fluorescent tube light fitting in the middle of ROOM 3</li> <li>▶ A single wall mounted light outside the external door</li> <li>▶ A single light in the center of the MES</li> <li>▶ One three pole switch situated appropriately for the three lights</li> <li>▶ A switched socket outlet on the internal wall in ROOM 3</li> </ul>	4				

26 MARKS

EXAMINATION NUMBER

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ANSWER SHEET 1



**QUESTION 2**

**TRANSITION DEVELOPMENT**

The figure shows the Front View, Top View and Left View of an AIR CONDITIONING VENT in First Angle orthographic projection.

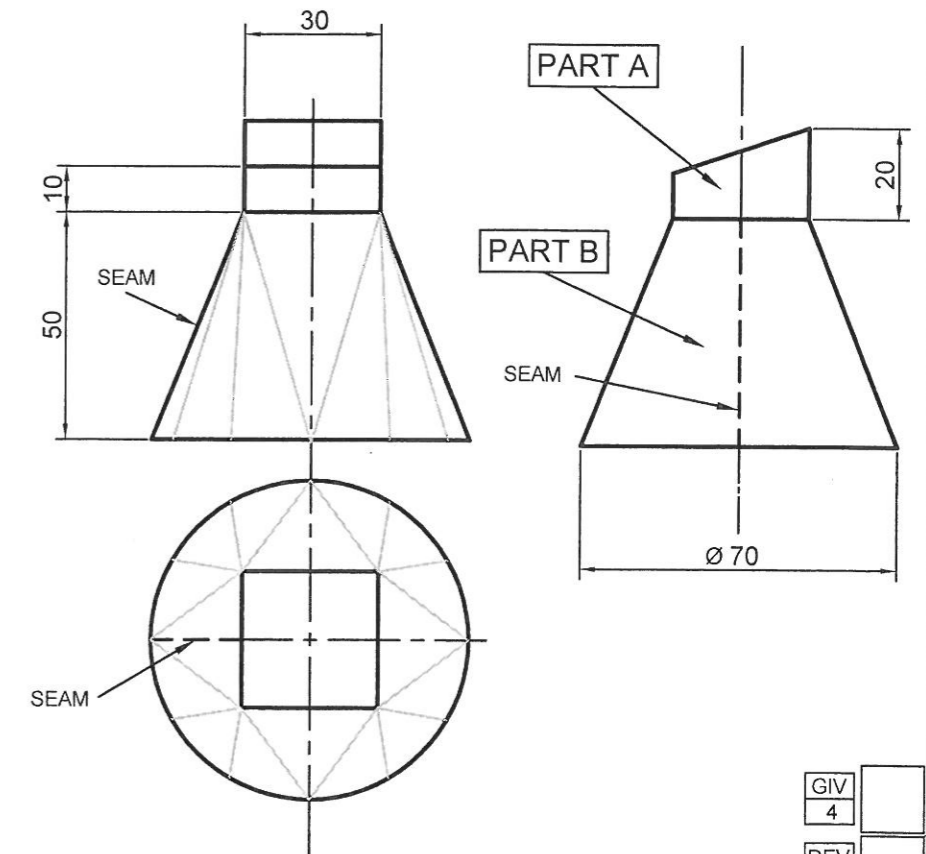
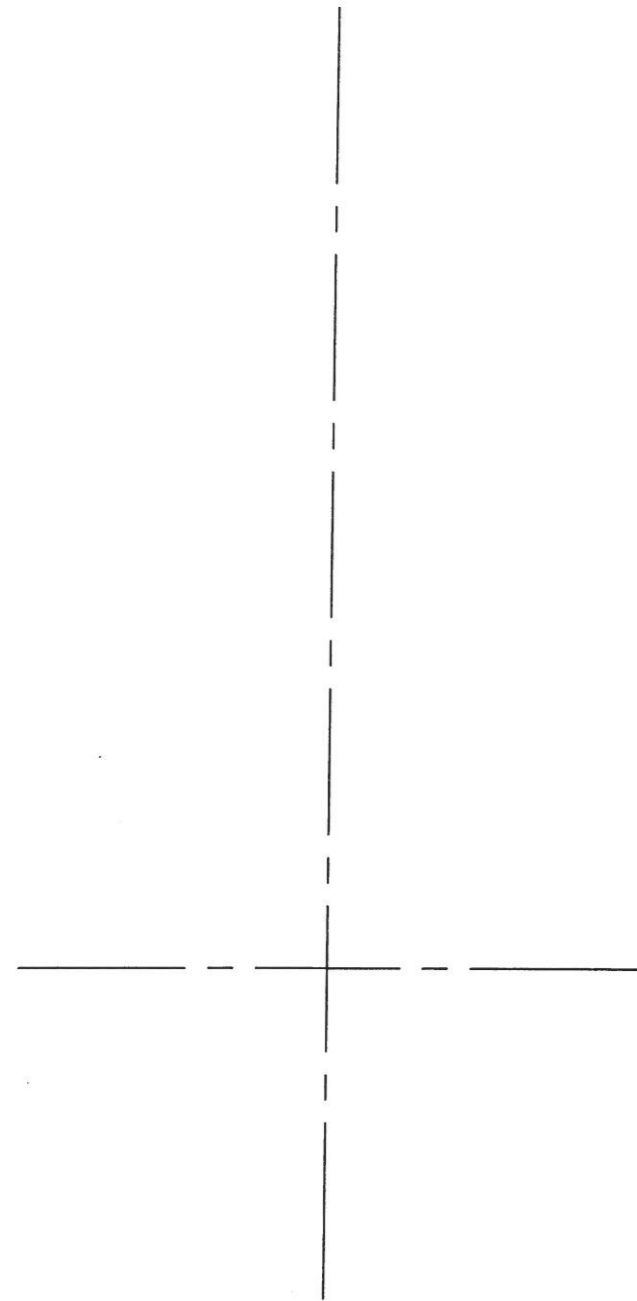
*Draw the following:*

- 2.1 Copy the given FRONT view and TOP view only, positioning them appropriately on the given centre lines
- 2.2 Draw the development of the SQUARE DUCTING (PART A)
- 2.3 Using triangulation, develop the transition piece (PART B)
- 2.4 Show all construction

**ASSESSMENT CRITERIA**

You will be assessed on your ability to do the following:

- redraw the given front and top views only 4
- develop the square duct 7
- find the necessary true lengths 4
- develop the transition piece 20



GIV	
4	
DEV	
7	
T/L	
4	
DEV	
20	

**35 MARKS**

EXAMINATION NUMBER

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ANSWER SHEET 2

**QUESTION 3**

**TWO POINT PERSPECTIVE**

The figure shows the three views of a dwelling with a double garage. Draw a neat two-point perspective view of the dwelling and garage.

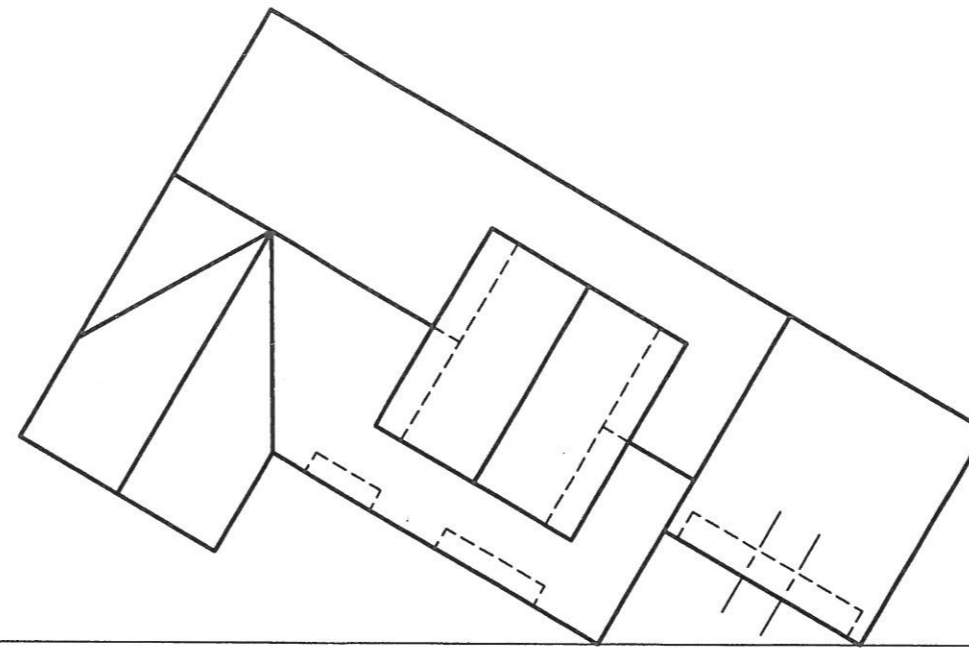
- PP - Picture Plane
- HL - Horizon Line
- GL - Ground Line
- SP - Station Point

Neatly label the vanishing points RVP and LVP.  
SHOW NO HIDDEN DETAIL.

**ASSESSMENT CRITERIA**

You will be assessed on your ability to do the following:

- determine and label the vanishing points 2
- project from the front or side view 1
- project to the station and vanishing points 3
- determine the two point perspective view 30

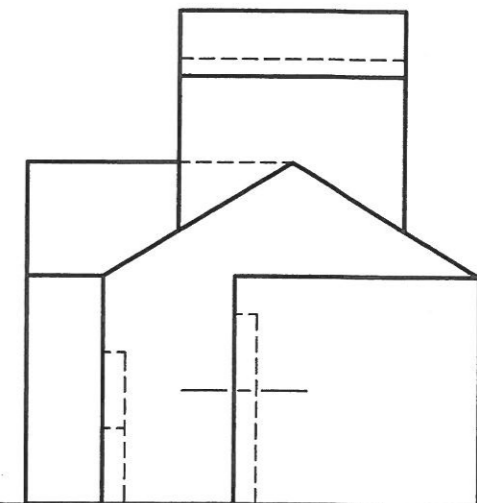
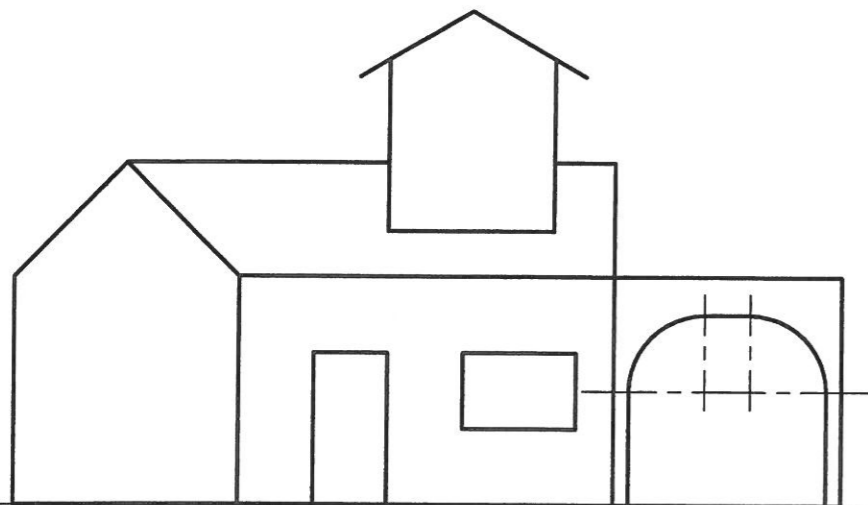


PP

PP

HL

HL



GL

GL

SP

PTS  
25

PTS  
5

VPS  
2

CON  
4

**36 MARKS**

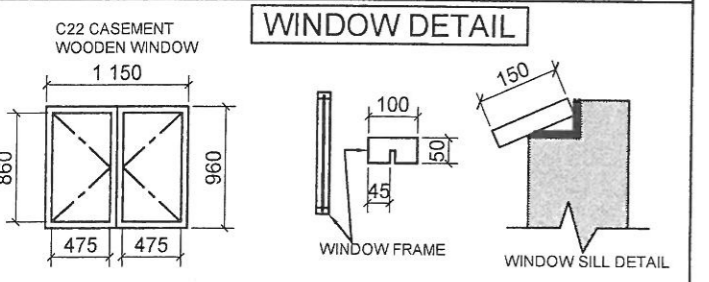
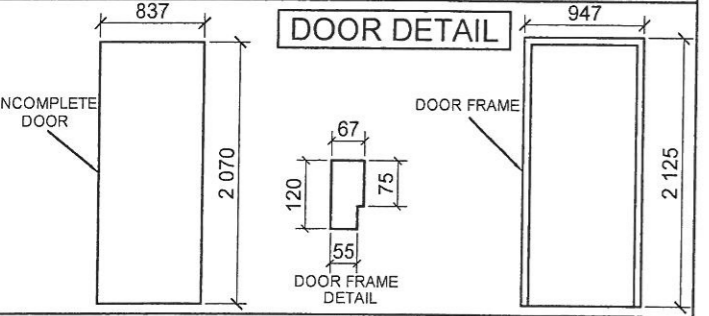
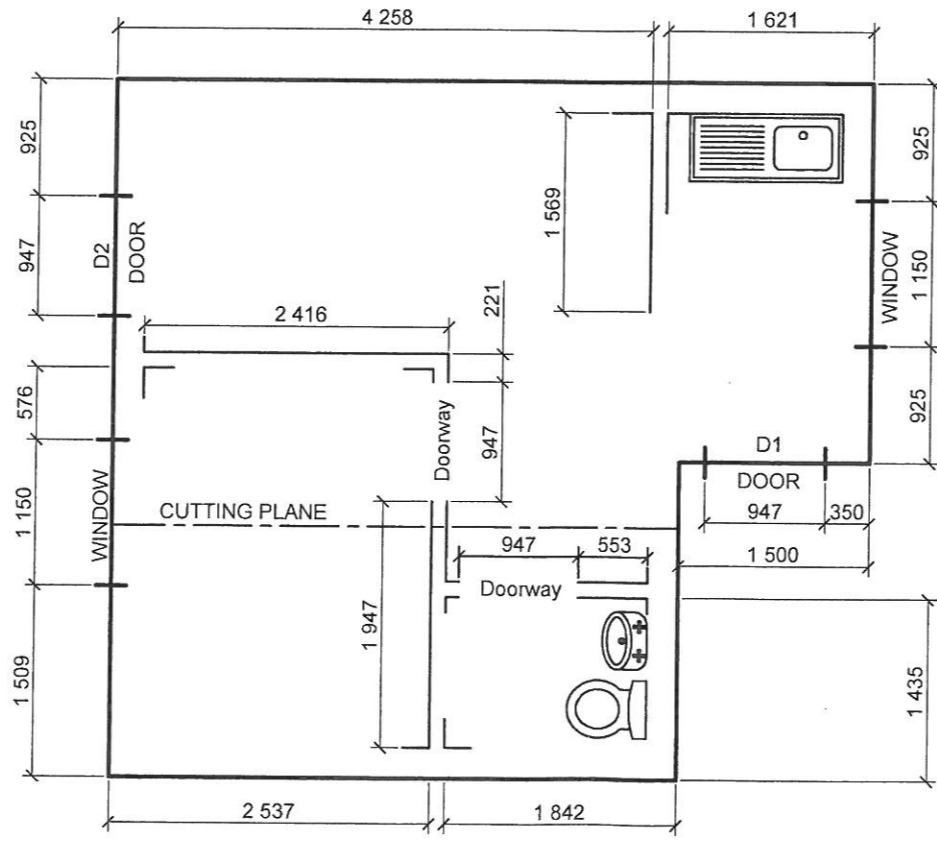
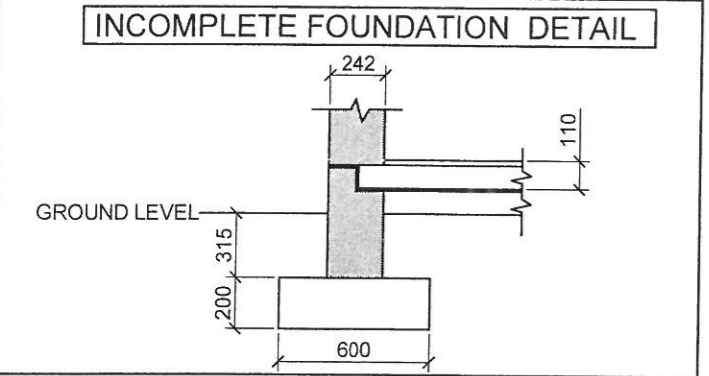
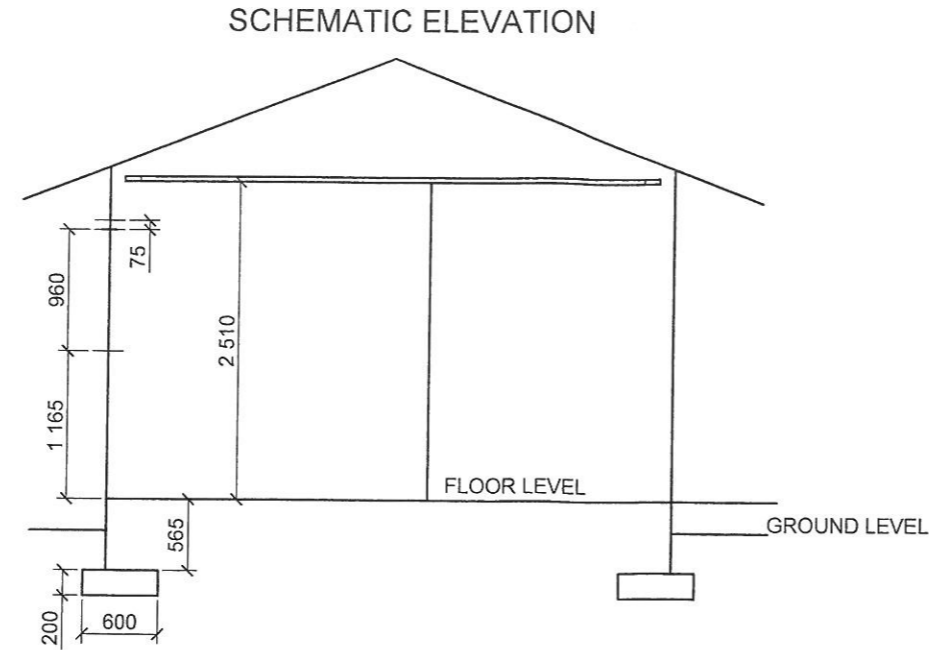
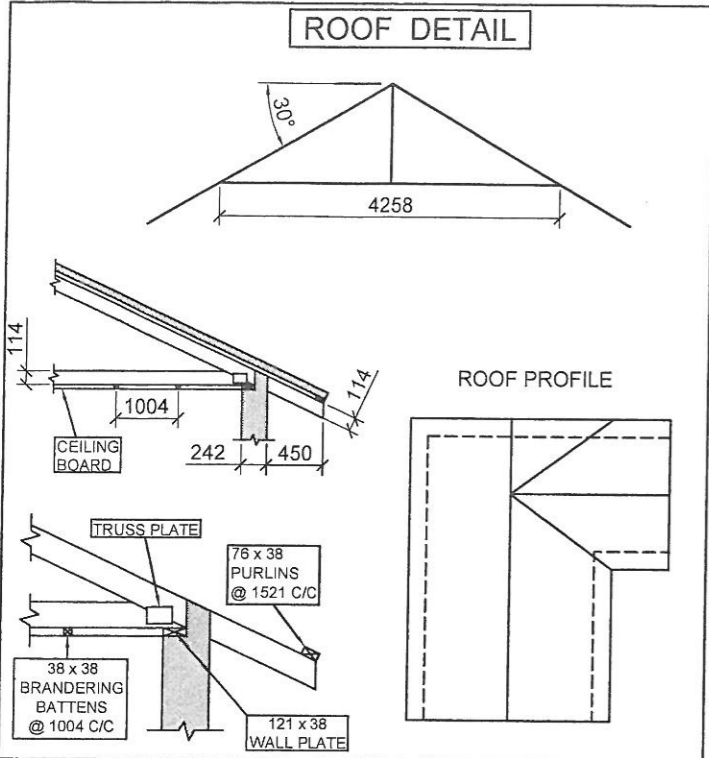
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ANSWER SHEET 3

QUESTION 4

CIVIL DRAWING



PLUMBING FIXTURES LEGEND

PLAN	FIXTURES	PLAN	FIXTURES
	CLOSE COUPLE WATER CLOSET		SINGLE KITCHEN SINK (stainless steel)
	WASH BASIN		

Answer this question on ANSWER SHEET 4.  
Use a scale of 1:50.  
All drawings must comply with SABS 0143.

The following is given:

- An incomplete schematic floor plan of a **RURAL CLINIC**
  - ▶ window and door positions
  - ▶ perimeter dimensions and cutting plane A-A
- An incomplete schematic elevation
  - ▶ door position, ceiling height, ground level and floor level
- Door and door frame detail
- Incomplete foundation detail
- Roof detail, including purlin, batten and truss detail
- Plumbing fixtures legend
- Window, window frame and window sill detail

Draw the following:

- the **complete floor plan**
- the **complete sectional elevation**, including the rest of the elevation that is not sectioned. (Include all outside roof and door detail showing door panels of your choice.)

FLOOR PLAN INSTRUCTIONS

- Hatch all the external and internal walls
- Insert all window and EXTERNAL door details and label the cutting plane (Show all door detail at D1 and D2 only)
- Label the floor plan and print the scale
- Insert the following plumbing detail according to the legend given:
  - ▶ A water closet (toilet) and a wash basin in the toilet (Position suitably)
  - ▶ A single steel sink in the kitchenette

SECTIONAL ELEVATION INSTRUCTIONS

- Complete the foundation details
- Insert all floor slab details
  - ▶ use 10 mm screed
  - ▶ use 150 mm compacted hardcore filling
- Label the ground level and damp proof course
- Draw in the sectional window in the space indicated
  - ▶ use ONE, 242 x 75 concrete lintel above the window
  - ▶ use 150 x 50 quarry tile window sill
  - ▶ show the window frame detail and label the damp proof course
- Complete the roof details
  - ▶ draw the roof truss
  - ▶ use 114 x 38 rafters and 100 x 100 truss plates for the truss
  - ▶ use SIX, 76 x 38 purlins spaced at 1 521 centres
  - ▶ use TWO, 121 x 38 wall plates
  - ▶ use THREE, 38 x 38 battens spaced at 1004 centres
  - ▶ use asbestos sheeting for the roof and a 30° pitch
  - ▶ use 9 mm Gypsum ceiling boards
- Complete all hatching detail and label the sectional elevation
- Draw the rest of the elevation that is not sectioned showing suitable door panels, of your choice, for the closed door D1
- Do not show plumbing on this elevation.**

EXAMINATION NUMBER

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**QUESTION 4**

CIVIL  
DRAWING

**Assessment Criteria**

**Sectional Elevation**

1	Ceiling Battens	3	
2	Wall Plates	2	
3	Ceiling Board	1	
4	Truss Plates	4	
5	Roof Truss	5	
6	Purlins	6	
7	Roof	1	
8	Walls	5	
9	Window	6	
10	Floor & Foundation	6	
11	DPC	2	
12	Labels	2	
13	Hatching	11	
14	External Door	5	
15	Elevation Roof	2	
16	Elevation	2	
17	Internal Wall	2	

**Floor Plan**

18	Walls	9	
19	Doors	6	
20	Windows	6	
21	Cutting Plane	2	
22	Labels	2	
23	Hatching	9	
24	Plumbing Fixtures	4	

<b>TOTAL</b>		103	
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103 MARKS

EXAMINATION NUMBER

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ANSWER SHEET 4