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MARKING GUIDELINES

NATIONAL SENIOR CERTIFICATE EXAMINATION

2020

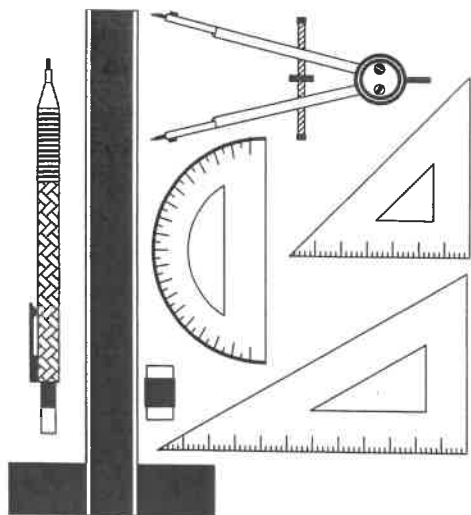
ENGINEERING GRAPHICS AND DESIGN

PAPER 1

MARKS: 200
TIME: 3 HOURS

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 restapled in numerical order, even questions that have not been answered.
6. **All construction work** must be shown.
7. Print your **examination number** neatly on each page.
8. Use only the **answer sheets** provided.
9. Your drawings should reflect **neatness** and **accuracy**.
10. All dimensions or detail not given must be **assumed** in **good proportion**.
11. Your drawings should comply with SANS 10143.



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QUESTION	SECTION	MARK	MODERATED	MAXIMUM	CODE
1	CIVIL ANALYTICAL			20	
2	INTERPENETRATION & DEVELOPMENT			40	
3	TWO-POINT PERSPECTIVE			40	
4	CIVIL DRAWING			100	
	TOTAL			200	

CHECKED BY

EXAMINATION NUMBER

QUESTION 1
CIVIL
ANALYTICAL

STUDY THE ADJACENT DRAWING AND ANSWER THE QUESTIONS THAT FOLLOW:

1.1 What elevation is VIEW B?	SOUTH ELEVATION	1
1.2 What type of cover is used for the roof?	METAL SHEETING	1
1.3 How many built-in cupboards are there in this dwelling?	4	1
1.4 How many panes of glass are used in a single ND74 window?	6	1
1.5 What is the diameter of the ventilation pipe?	75 mm	1
1.6 What is the feature at 1 called?	GULLY	1
1.7 What is the feature at 2 called? (No abbreviations)	RAIN WATER DOWN PIPE	1
1.8 What is the feature at 3 called?	SHOWER	1
1.9 What is the feature at 4 called?	SEWER LINE	1
1.10 What is indicated at feature 5?	SEPTIC TANK	1
1.11 What does the abbreviation 'RE' stand for?	RODDING EYE	1
1.12 What is the feature at 6 called? (No abbreviations)	SMOKE DETECTOR	1
1.13 How many windows would you see in the WEST elevation?	2	1
1.14 When walking UP the ramp, in which direction would you be moving?	EAST	1
1.15 What is the room designation of ROOM 8?	BATHROOM / ENSUITE	1
1.16 Using the dimension at 8, determine the scale of this drawing.	1 : 250	1
1.17 What should the dimension at X be? (In millimetres)	2000	1
1.18 In which room would you be standing, if you were looking out of the window indicated at 7?	MAIN / MASTER BEDROOM	1

1.19 If the dimensions of VERANDAH 1 are 4000 x 12000, determine the area of VERANDAH 1.

Give your answer in metres squared (m²).

$$\begin{aligned} \text{Area} &= \text{length} \times \text{breadth} \\ &= 4 \text{ m} \times 12 \text{ m} \\ &= 48 \text{ m}^2 \end{aligned}$$

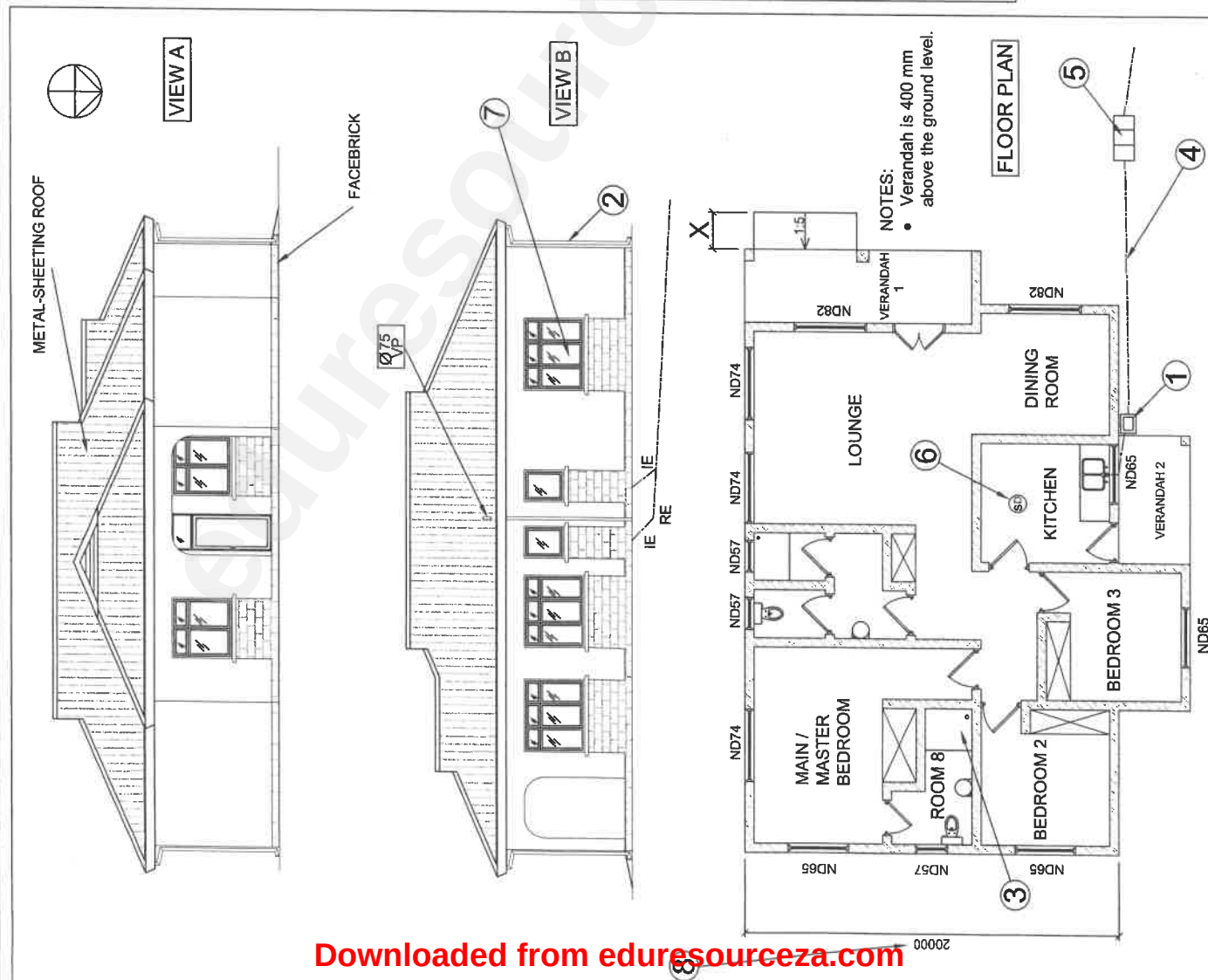
Answer: 48 m²

20 MARKS

EXAMINATION NUMBER

ANSWER SHEET 1

PLEASE TURN OVER



QUESTION 2
INTERPENETRATION
& DEVELOPMENT

The drawings below show the COMPLETE Top and Left View as well as the INCOMPLETE Front View of a **CYLINDRICAL PIPE** which has been joined together with an **EQUILATERAL TRIANGULAR DUCT** and drawn in First-angle Orthographic Projection. An Auxiliary View of the triangular duct is also shown in the Top and Front Views.

Draw the following:

- 2.1 the complete Front View showing the curve of interpenetration. **Show all hidden detail.**
- 2.2 the development of the triangular duct only, clearly showing the curve of interpenetration.

Show all construction.
Do not draw the Left view.

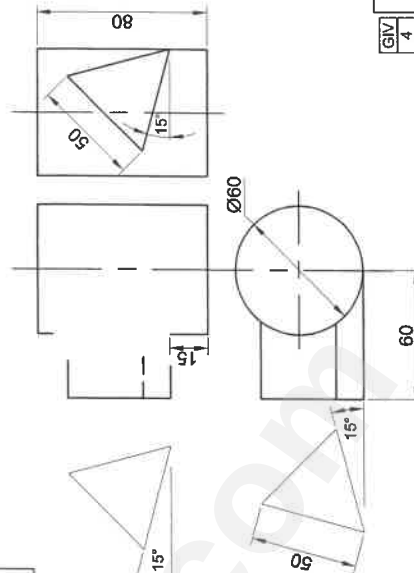
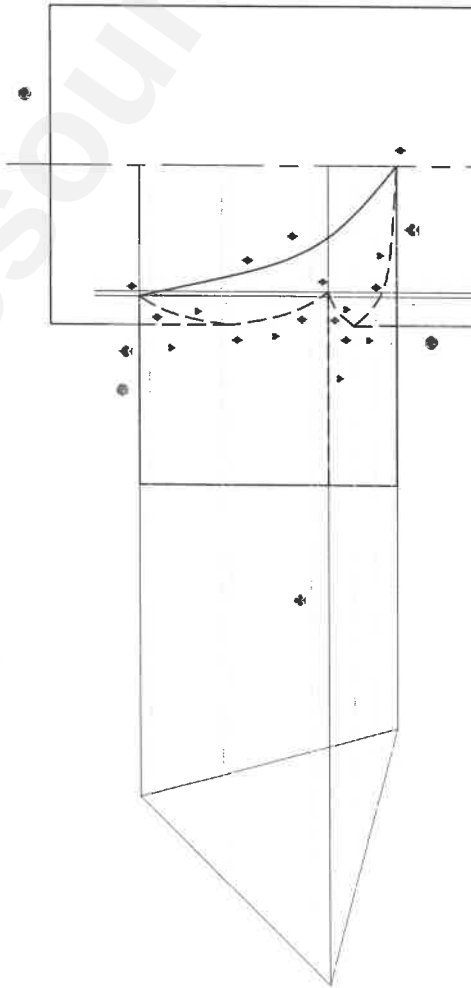
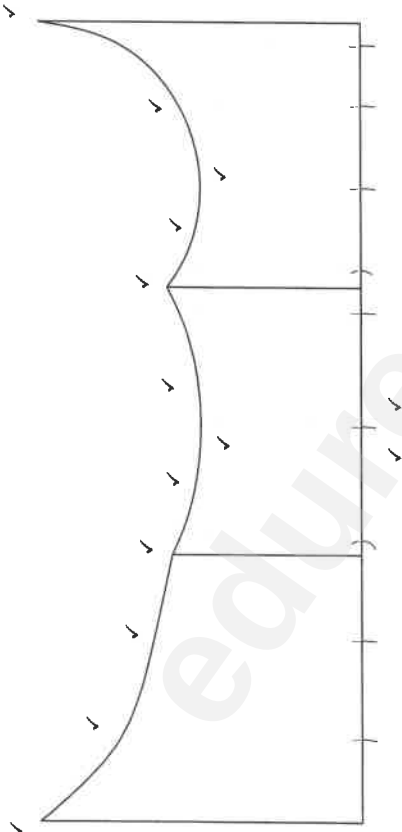
The complete Top View, incomplete Front View and two Auxiliary Views have already been drawn in position.

ASSESSMENT CRITERIA

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

- draw and complete the Front View
- show necessary construction
- draw the development of the triangular duct

Given	•	= 4
Front View:		
Hidden Detail	•	= 7
Interpen	•	= 11
Tri outer lines	•	= 2
Construct	•	= 2
Development	✓	= 14
		30



GIV	4
FV	20
CON	2
DEV	14

40 MARKS

EXAMINATION NUMBER

ANSWER SHEET 2

QUESTION 3
TWO-POINT
PERSPECTIVE

The figures show the three views of an outside theatre with a semi-circular stage and a covered seating area. Draw a neat two-point perspective view of the outside theatre.

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

Neatly label the vanishing points RVP and LVP.

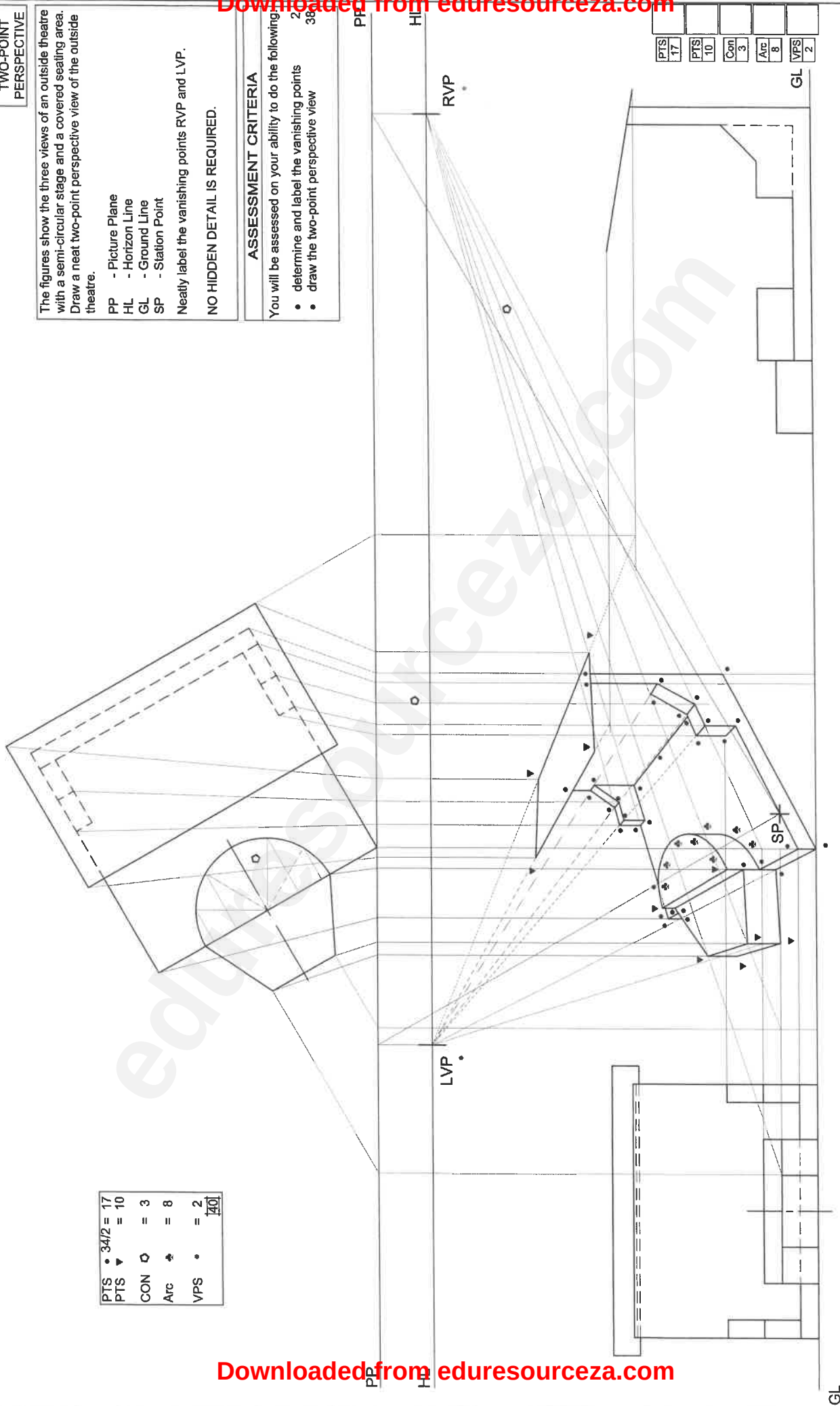
NO HIDDEN DETAIL IS REQUIRED.

ASSESSMENT CRITERIA

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

- determine and label the vanishing points
- draw the two-point perspective view

22
38



PTS	•	34/2	=	17
PTS	▼		=	10
CON	◊		=	3
Arc	♣		=	8
VPS	•		=	2
40				

PTS	17								
PTS	10								
Con	3								
Arc	8								
VPS	2								

40 MARKS

EXAMINATION NUMBER

ANSWER SHEET 3

PLEASE TURN OVER

Assessment Criteria

Sectional Elevation

1	Ceiling Battens	2
2	Wall Plates	2
3	Ceiling Board	1
4	Truss Plates	4
5	Roof Truss	5
6	Purlins	4
7	Roof	1
8	Sectioned Walls	4
9	Sectioned Door	4
10	Floor & Foundation	6
11	DPG	2
12	Hatching	9
13	External Window	5
14	External Walls	3
15	Fascia Boards	4
16	Roof Detail	7
17	Finished Floor Level	2
18	Labels	2

Subtotal	67
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Floor Plan

19	Walls	7
20	Hatching	5
21	Windows	4
22	Door	4
23	Step	3
24	Electrical	4
25	Labels	4
26	Cutting Plane	2

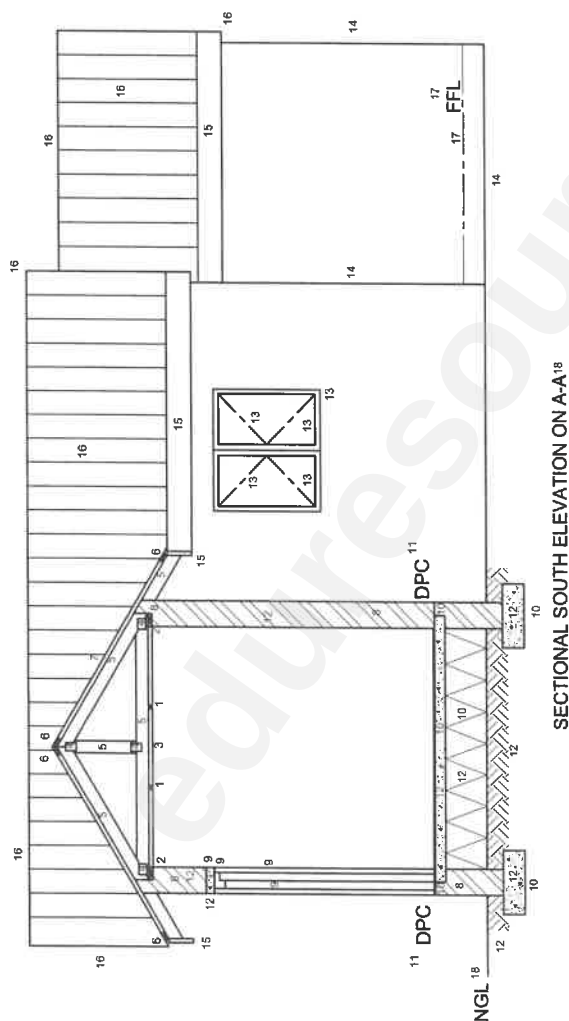
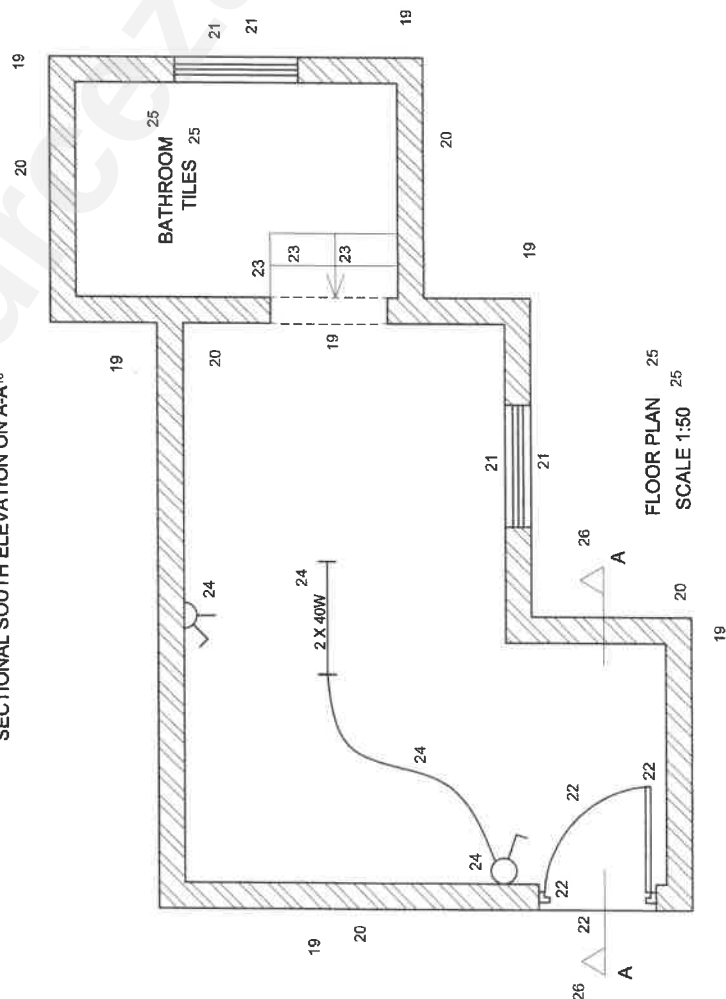
Subtotal	33
TOTAL	100

100 MARKS

EXAMINATION NUMBER

ANSWER SHEET 4

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SECTIONAL SOUTH ELEVATION ON A-A¹⁸

FLOOR PLAN 25
SCALE 1:50 25

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