



## MARKING GUIDELINES

NATIONAL SENIOR CERTIFICATE EXAMINATION

2022

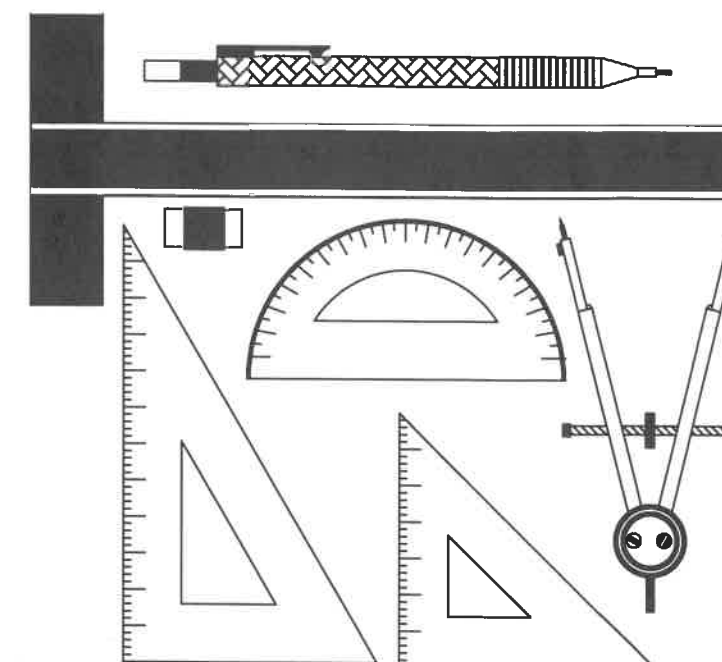
# ENGINEERING GRAPHICS AND DESIGN

## 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

[illegible]



QUESTION 2

INTERPENETRATION  
& DEVELOPMENT

The drawings below show the INCOMPLETE Front View, COMPLETE Top View and Left View of a horizontal right TRIANGULAR pipe joined together with a vertical right regular PENTAGONAL duct.

Draw the following:

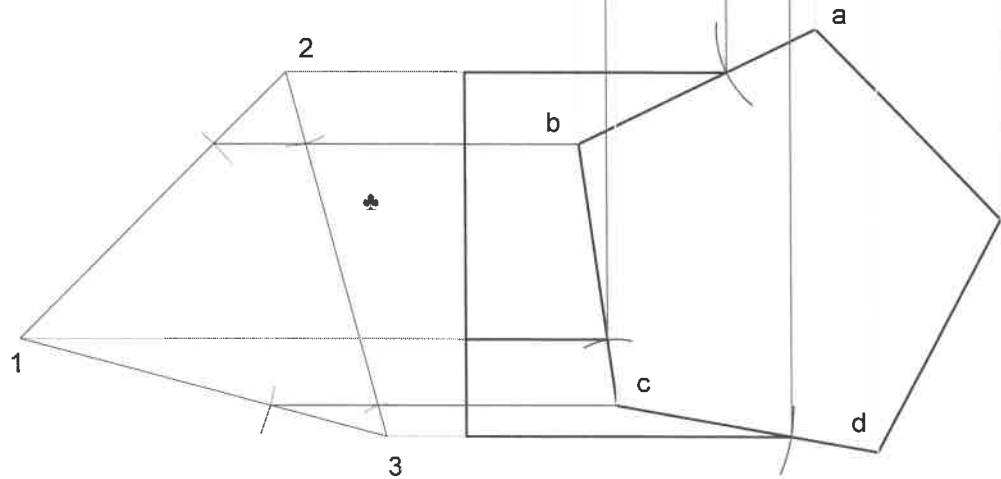
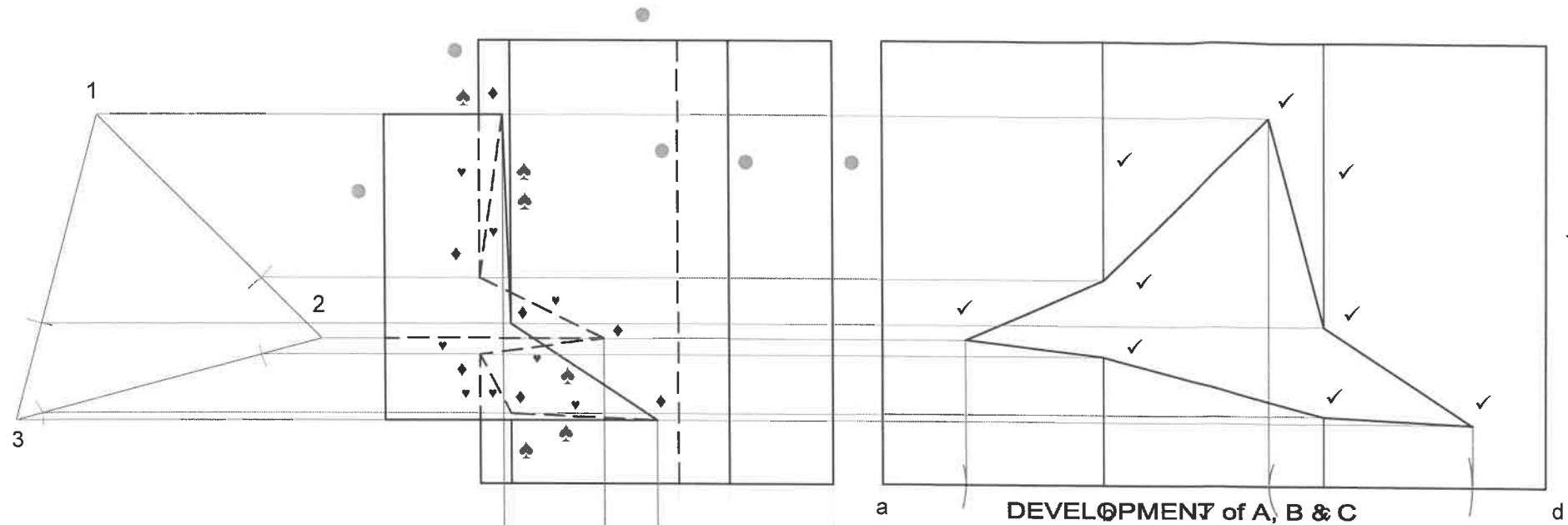
- 2.1 the complete Front View clearly showing the line of interpenetration formed between the two solids.
- 2.2 the surface development of the 3 rectangular panels of the pentagonal duct which shows the lines of interpenetration. These rectangular panels have been indicated by A, B & C below.

Show all hidden detail.  
Show all construction.  
Do not draw the left view.

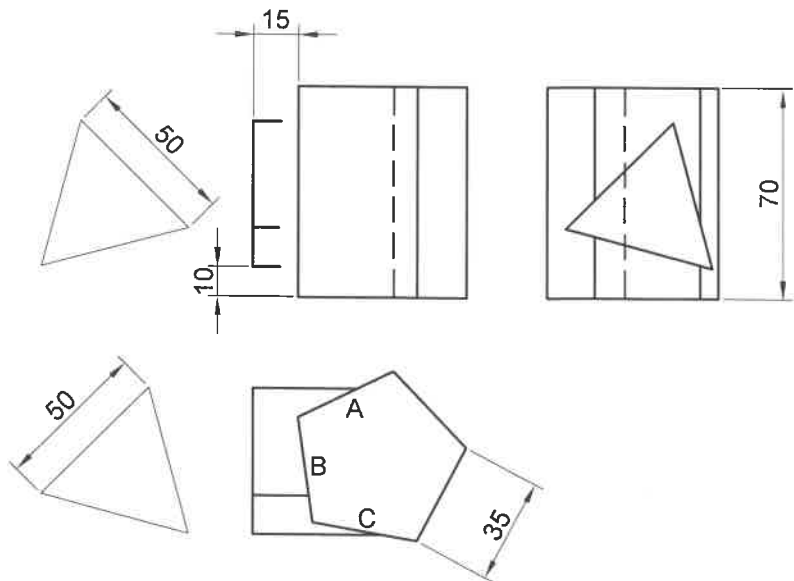
ASSESSMENT CRITERIA

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

- |  |    |
|--|----|
| • draw the given incomplete Front View | 6  |
| • complete the Front View              | 21 |
| • show necessary construction          | 2  |
| • draw the development                 | 11 |



Front View:		27
Given	●	= 6
Hidden Detail	▼	= 8
Interpen	◆	= 7
Solid Lines	♠	= 6
Construct	♣	= 2
Development	✓	= 11
		40



FV	27
CON	2
DEV	11

40 MARKS

EXAMINATION NUMBER

ANSWER SHEET 2

QUESTION 3

TWO-POINT  
PERSPECTIVE

The figures show the three views of a partly covered verandah, a pool surface at ground level, a fire pit, a braai and a doorway into an existing dwelling.  
Draw a neat two-point perspective view of the verandah, pool surface, fire pit, braai and doorway.

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

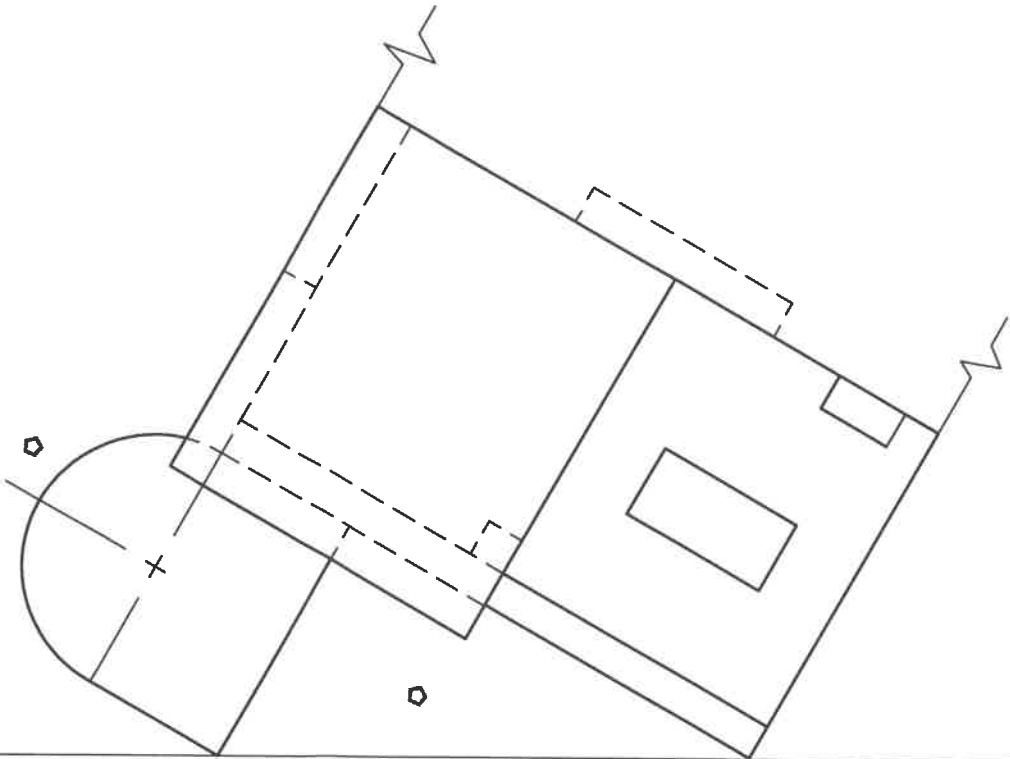
Neatly label the vanishing points RVP and LVP.  
Do not show any depth in the pool.  
NO HIDDEN DETAIL IS REQUIRED.

ASSESSMENT CRITERIA

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

- |  |    |
|--|----|
| • determine and label the vanishing points | 2  |
| • draw the two-point perspective view      | 38 |

PTS	•	44/2 = 22
PTS	▼	= 7
CON	⬢	= 3
Arc	♣	= 6
VPS	•	= 2
40		



PP

HL

LVP

RVP

GL

SP

PTS	
22	
PTS	
7	
Con	
3	
Arc	
6	
VPS	
2	

40 MARKS

EXAMINATION NUMBER

ANSWER SHEET 3

QUESTION 4

CIVIL  
DRAWING

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 Window	5	
10	Floor & Foundation	6	
11	DPC & NGL	2	
12	Hatching	9	
13	External Walls	2	
14	Roof & Roof Detail	3	
15	Internal Detail	3	
16	Step	3	
17	Labels	2	

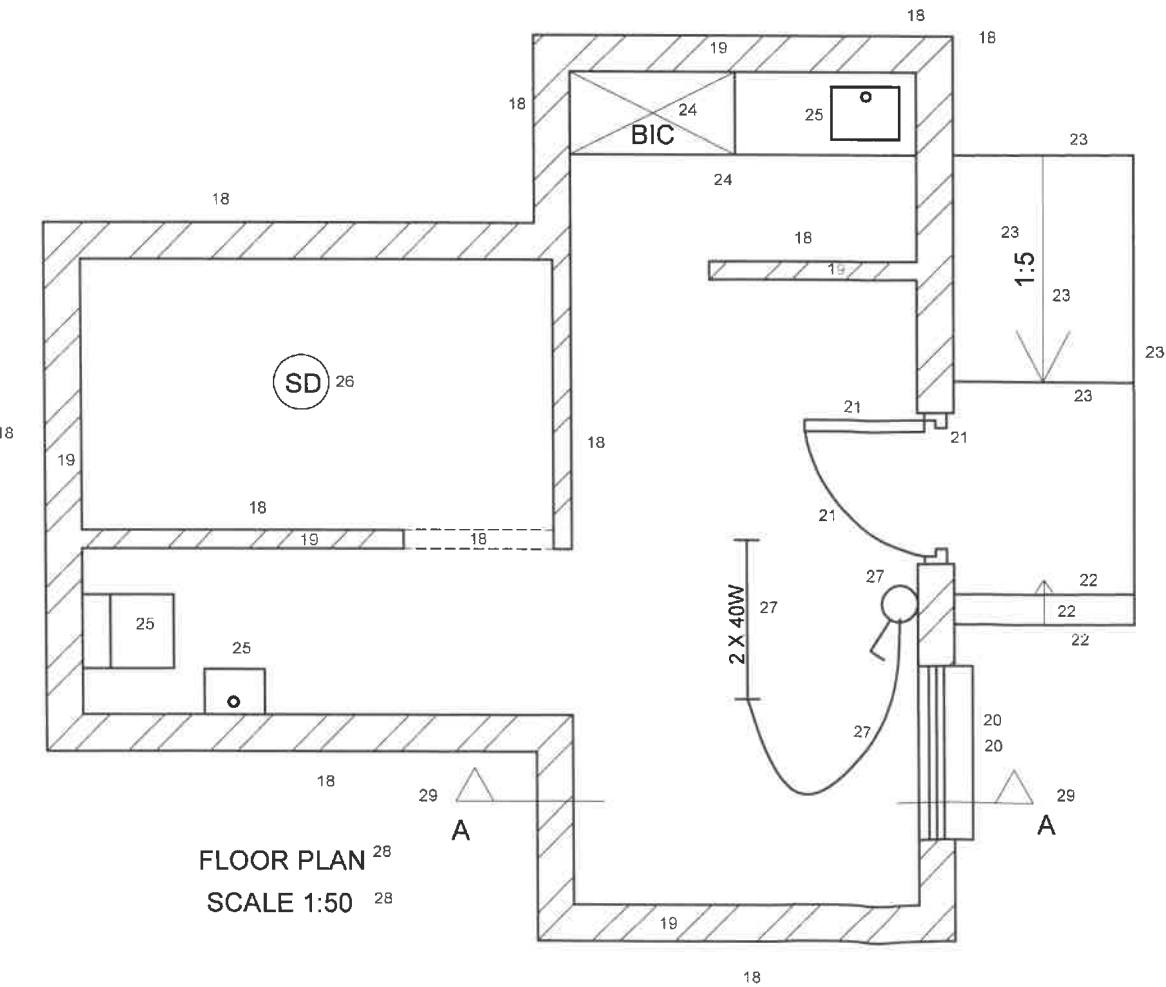
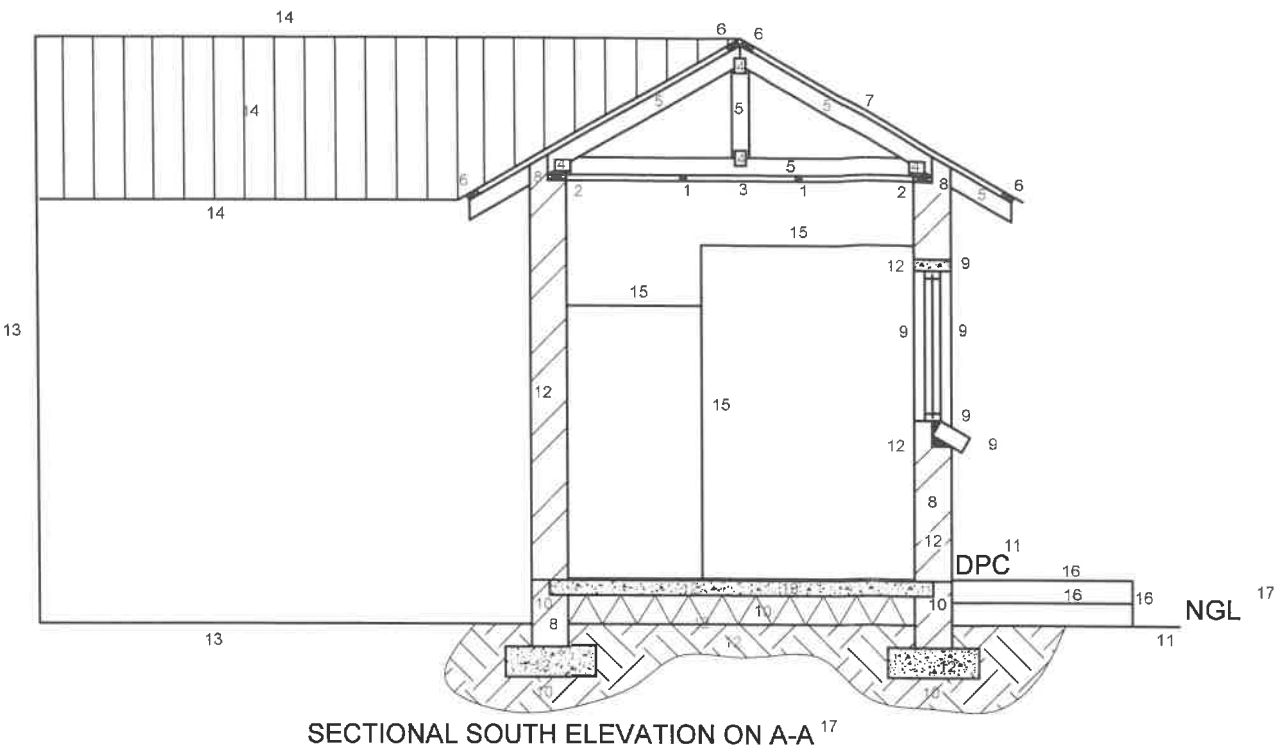
Subtotal	58	
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Floor Plan

18	Walls	11	
19	Hatching	5	
20	Window	2	
21	Door	3	
22	Step	3	
23	Ramp	5	
24	Built-in-Cupboard	2	
25	Plumbing Fixtures	3	
26	Smoke Detector	1	
27	Electrical	3	
28	Labels	2	
29	Cutting Plane	2	

Subtotal	42	
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TOTAL	100	
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