



basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

**NATIONAL
SENIOR CERTIFICATE**

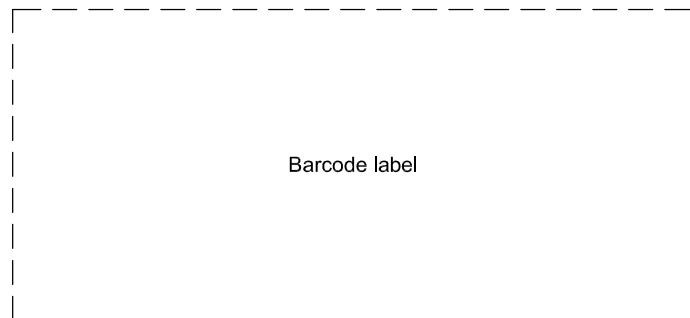
GRADE 12

ENGINEERING GRAPHICS AND DESIGN P1
NOVEMBER 2025

MARKS: 100

TIME: 3 hours

This question paper consists of 6 pages.



Barcode label

DO NOT FOLD THE QUESTION PAPER IN HALF.

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 prepared using pencil and 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



QUESTION 2: INTERPENETRATION AND DEVELOPMENT...

Given:

- The top view and incomplete front view of a right regular hexagonal prism that passes through a right regular pentagonal prism. The axes of both solids lie in a common vertical plane.
- Auxiliary views of the hexagonal prism

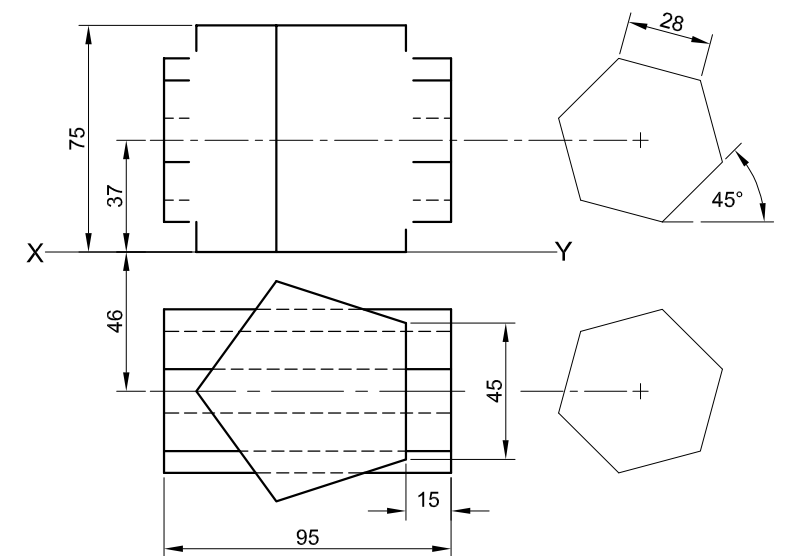
Instructions:

Draw, to scale 1 : 1, the following views of the TWO solids:

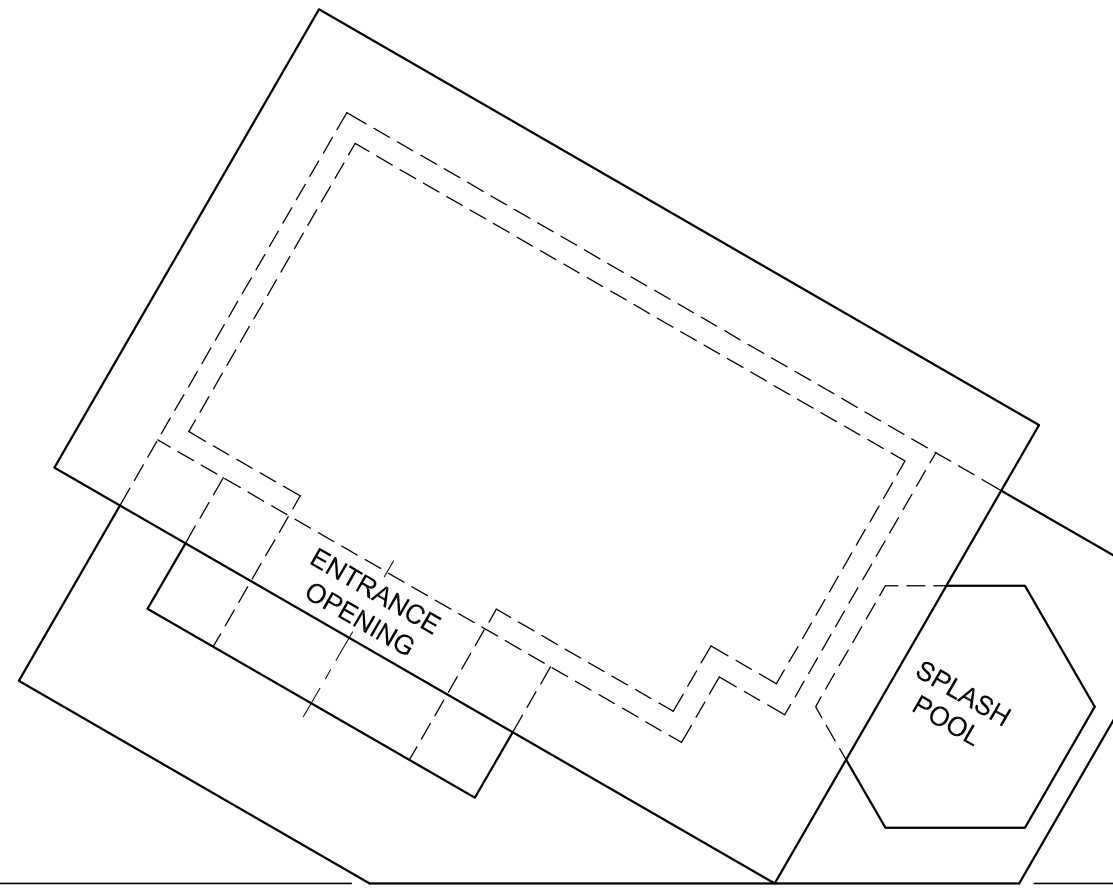
- 2.1 The given top view
- 2.2 The right view
- 2.3 The complete front view, clearly showing the curves of interpenetration

- Planning is essential.
- Show ALL hidden detail.
- Show ALL construction.

[39]



ASSESSMENT CRITERIA				
1	TOP VIEW	13		
2	FRONT VIEW	18		
3	RIGHT VIEW	8		
PENALTIES (-)				
TOTAL		39		
EXAMINATION NUMBER				
EXAMINATION NUMBER				3



QUESTION 3: PERSPECTIVE

Given:

Three views of a poolhouse with a splash pool and the information needed to draw a two-point perspective drawing

PP – Picture plane

HL – Horizon line

GL – Ground line

SP – Station point

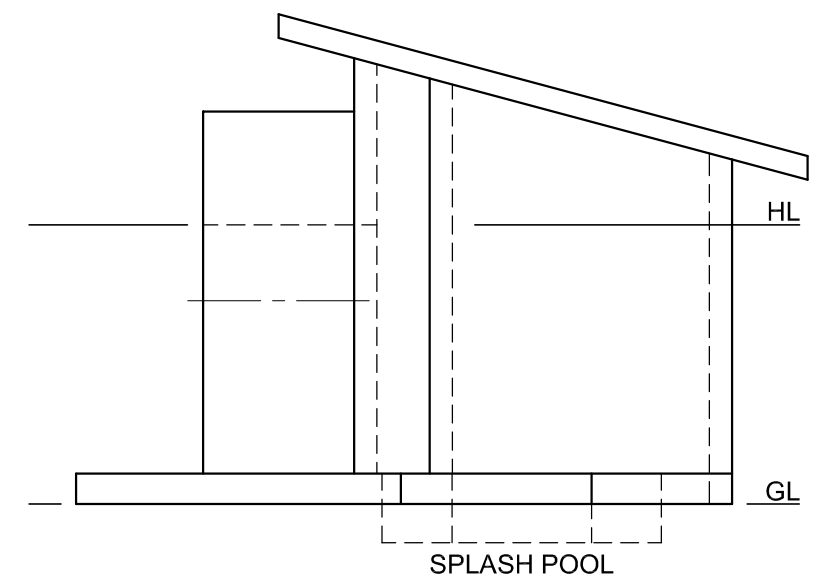
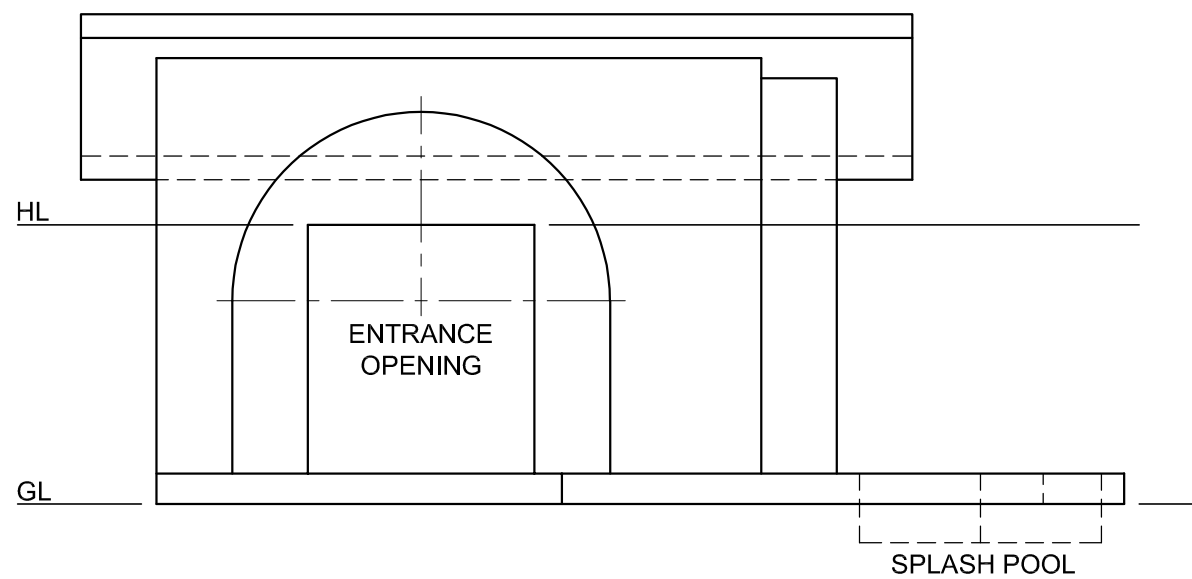
Instructions:

Complete the perspective drawing.

- Align the drawing sheet with the ground line (GL).
- Determine and label the vanishing points.
- Show ALL construction.
- Show depth at the entrance opening.
- Show interior detail as seen through the entrance opening.
- NO hidden detail is required. **[41]**

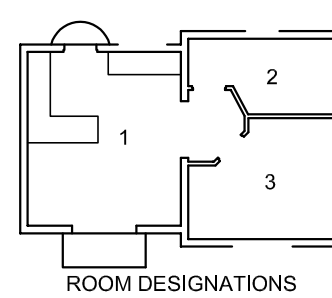
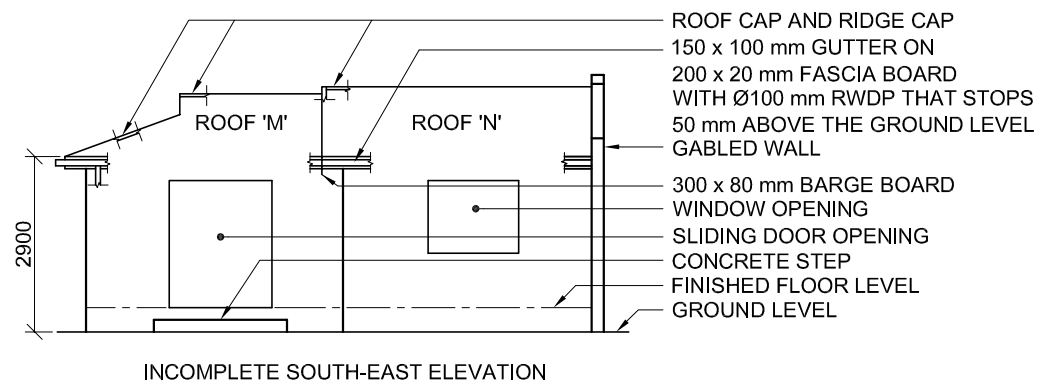
PP

ASSESSMENT CRITERIA				
1	CONSTRUCTION	6		
2	WALLS + PATIO	14		
3	OPENING + POOL	7		
4	ROOF	6 ½		
5	ARC + CONSTRUCTION	7 ½		
PENALTIES (-)				
TOTAL		41		



SP

EXAMINATION NUMBER	
EXAMINATION NUMBER	4



- FLOOR FINISHES**
- 1. LIVING AREA: TILE
 - 2. BATHROOM: TILE
 - 3. BEDROOM: CARPET

QUESTION 4: CIVIL DRAWING

Given:

- The incomplete south-east elevation of a **new house**, showing the walls, the window and door openings, step, roof, gabled wall and labels
- The incomplete floor plan showing the walls, roof line, steps, positions of the doors, windows, fixtures and electrical layout
- An incomplete schematic diagram of a roof truss for roof 'M' and roof notes
- The incomplete gable wall detail
- The incomplete foundation, step and external wall detail
- Room designations and floor finishes
- A door and window schedule
- A table of roof components
- A table of electrical symbols
- A fixture schedule
- The incomplete floor plan and position of the ground level of the south-east elevation of the **new house**, drawn to scale 1 : 50, and the incomplete foundation and break line for the detailed section, drawn to scale 1 : 20, on page 6

Instructions:

Answer this question on page 6.

4.1 Using the given incomplete floor plan and ground level, draw, to scale 1 : 50, the following views of the **new house**:

4.1.1 THE COMPLETE FLOOR PLAN

Add the following features to the drawing:

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

4.1.2 THE COMPLETE SOUTH-EAST ELEVATION

Show the following features on the drawing:

- The walls, window, sliding door and step detail
- The roof detail including fascia boards, barge board, gutters and rainwater downpipe
- The finished floor level

4.2 Using the incomplete foundation and break line on page 6, 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, step, external wall and door detail
- The roof detail including the fascia board and gutter
- The wall, barge board and gable wall detail to the right (north-east) of cutting plane A-A
- ALL hatching detail. **ONLY** the substructure hatching may be drawn in neat freehand.

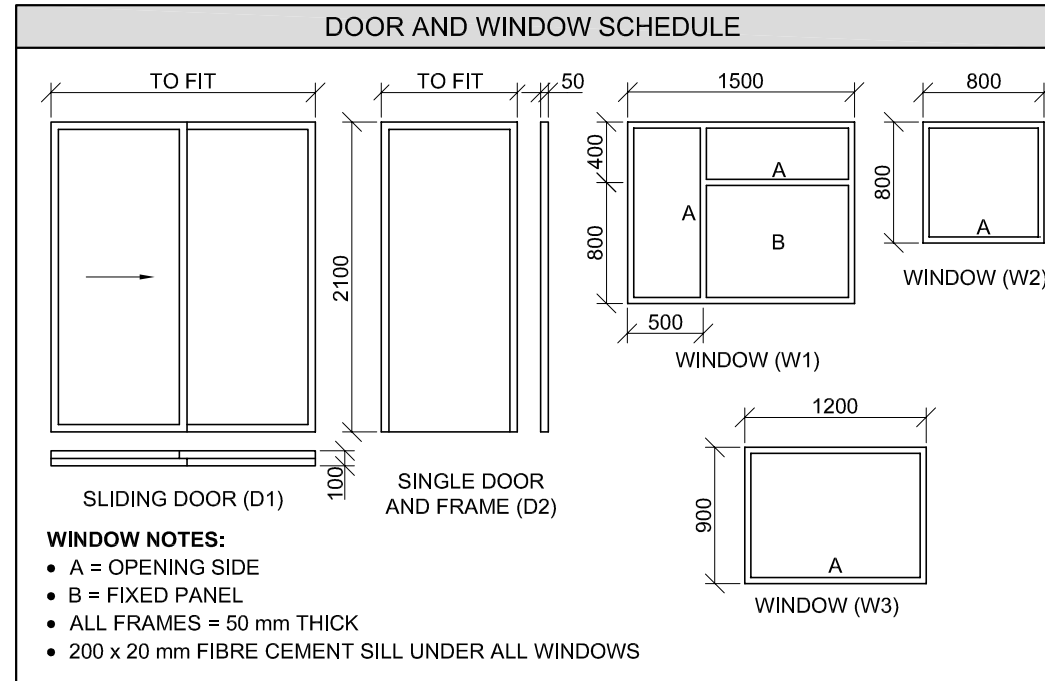
Label the following:

- The south-east elevation
- The floor finishes
- Ground level, finished floor level, damp-proof course and rainwater downpipes (use the correct abbreviations and show them on ALL relevant views)

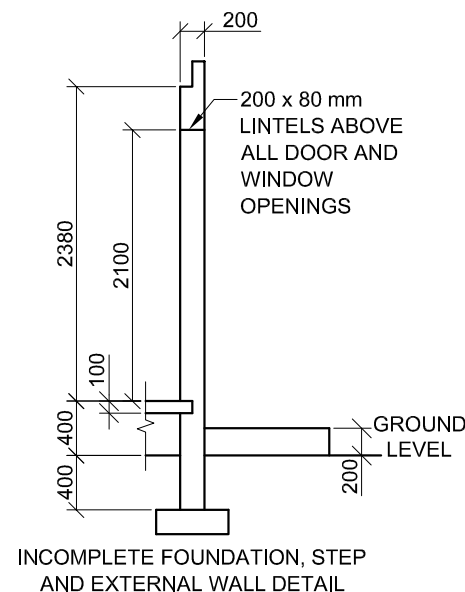
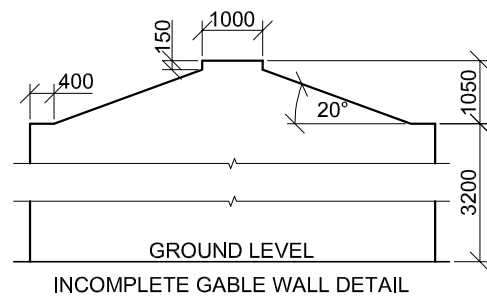
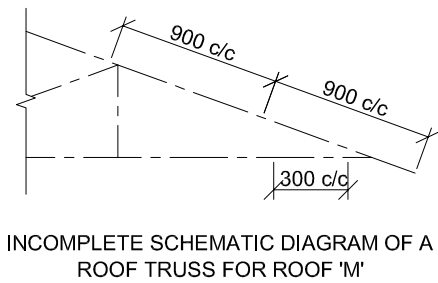
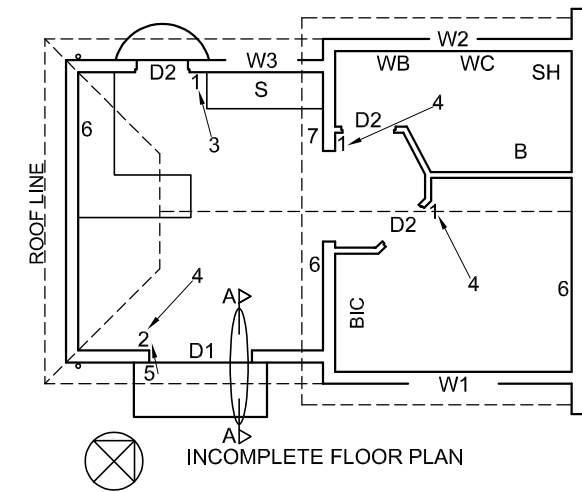
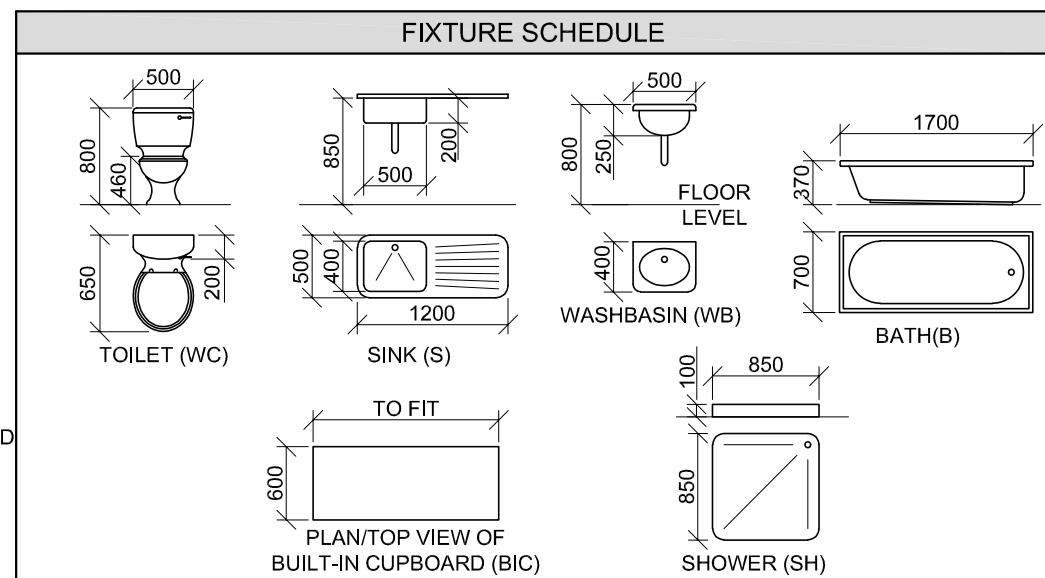
NOTE:

ALL drawings must comply with the **guidelines** and **graphical symbols** as contained in **SANS 10143**. [90]

- FEATURES**
- D1 SLIDING DOOR
 - D2 DOOR
 - W1 WINDOW
 - W2 WINDOW
 - W3 WINDOW
- FIXTURES**
- S SINK
 - WB WASHBASIN
 - WC TOILET
 - SH SHOWER
 - B BATH
 - BIC BUILT-IN CUPBOARD
- ELECTRICAL FITTINGS**
- 1. ONE-WAY SWITCH - SINGLE-POLE
 - 2. ONE-WAY SWITCH - DOUBLE-POLE
 - 3. FLUORESCENT LIGHT 3 x 40 W
 - 4. CEILING LIGHT
 - 5. WALL-MOUNTED LIGHT
 - 6. SWITCHED SOCKET OUTLET
 - 7. DISTRIBUTION BOARD
- NOTE:**
THE ARROW SHOWS THE LIGHT CONNECTION TO THE SWITCH.

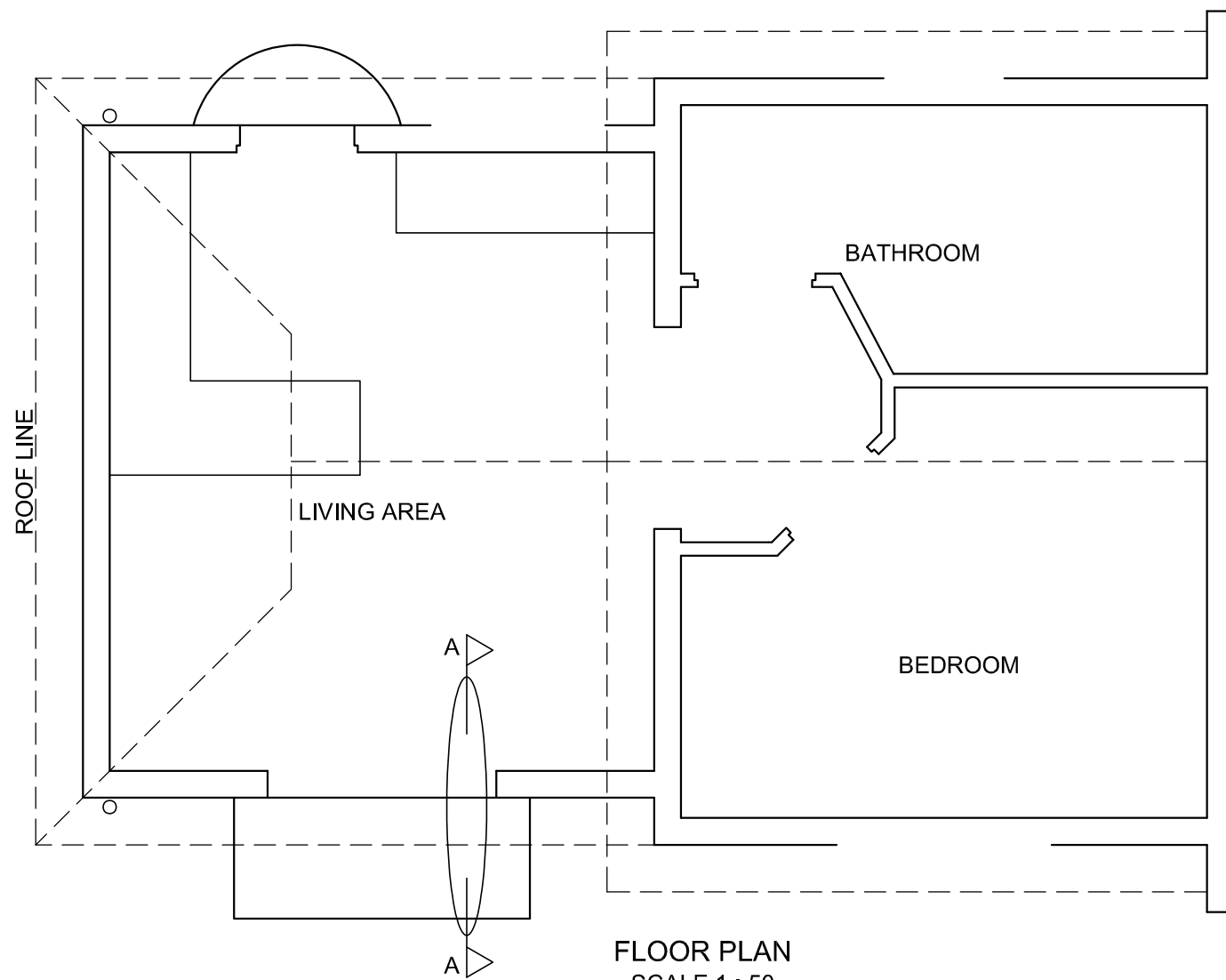


ROOF COMPONENTS		ELECTRICAL SYMBOLS	
	ROOF CAP AND RIDGE CAP		
	300 x 80 mm BARGE BOARD		
	200 x 20 mm FASCIA BOARD		
	150 x 100 mm GUTTER		
	80 x 50 mm PURLIN		



- ROOF NOTES:**
- 20° ROOF PITCH
 - 120 x 40 mm ROOF TRUSSES ON 120 x 40 mm WALL PLATES
 - 350 mm ROOF OVERHANG TO END OF ROOF TRUSS
 - 40 mm CORRUGATED ROOF SHEET ON 80 x 50 mm PURLINS @ 900 mm c/c
 - 200 x 20 mm FASCIA BOARDS WITH 150 x 100 mm GUTTERS ON ALL SIDES
 - 300 x 80 mm BARGE BOARDS SHAPED TO FIT ON THE END OF ROOF 'N', 150 mm PAST FASCIA BOARDS
 - 10 mm CEILING BOARDS ON 40 x 40 mm BRANDING STRIPS @ 300 mm c/c

GL



FLOOR PLAN
SCALE 1 : 50



SECTION A-A
SCALE 1 : 20

MARK ALLOCATION FOR SECTION OF ROOF		FOR OFFICIAL USE ONLY	
A		INCORRECT SCALE(S) USED	
B		NON-ALIGNMENT OF VIEWS	
C		VIEW(S) ROTATED	
D		SECTION VIEWED INCORRECTLY	
E		INCORRECT LETTERING	
F			
G			
H			
J			
K			
TOTAL		TOTAL	

ASSESSMENT CRITERIA				
FLOOR PLAN				
		POSSIBLE	OBTAINED	SIGN MODERATED
1	DOORS + WINDOWS	11		
2	FIXTURES	10 1/2		
3	ELECTRICAL	9 1/2		
4	LABELS	2 1/2		
5	HATCHING	3		
SUBTOTAL		36 1/2		
SOUTH-EAST ELEVATION				
1	ROOF + RWDP	8 1/2		
2	WALLS + STEPS	6		
3	DOOR + WINDOW	8 1/2		
4	LABELS	1		
SUBTOTAL		24		
DETAILED SECTION				
1	ROOF DETAIL	12 1/2		
2	SLAB + WALLS + STEP	8 1/2		
3	DOOR + LINTEL	2		
4	HATCHING	5 1/2		
5	LABELS	1		
SUBTOTAL		29 1/2		
TOTAL		90		
PENALTIES (-)				
GRAND TOTAL				
EXAMINATION NUMBER				
EXAMINATION NUMBER				