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basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

SENIOR CERTIFICATE EXAMINATIONS/ NATIONAL SENIOR CERTIFICATE EXAMINATIONS

ENGINEERING GRAPHICS AND DESIGN P1

MAY/JUNE 2024

MARKS: 100

TIME: 3 hours

This question paper consists of 6 pages.

Barcode label

DO NOT FOLD THE QUESTION PAPER IN HALF.

Confidential

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



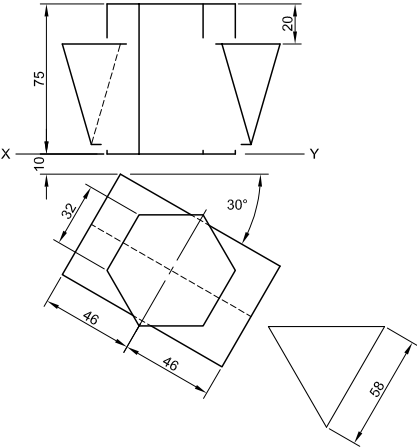


QUESTION 2: INTERPENETRATION

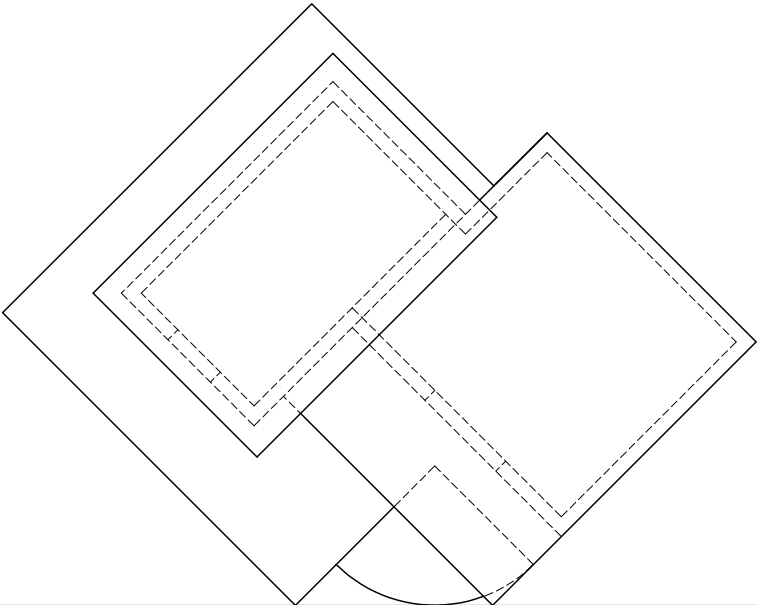
- Given:**
- The top view and incomplete front view of a right equilateral triangular prism that passes through a right regular hexagonal prism. The axes of both solids lie in a common vertical plane.
 - An auxiliary view of the triangular prism

- Instructions:**
- Draw, to scale 1 : 1, the following views of the interpenetrating solids:
- 2.1 The given top view
 - 2.2 The complete front view, clearly showing both curves of interpenetration
 - 2.3 The complete right view, clearly showing both curves of interpenetration
- Planning is essential.
 - Show ALL hidden detail.
 - Show ALL construction.

[36]



ASSESSMENT CRITERIA					
1	TOP VIEW	10			
2	FRONT VIEW	14			
3	RIGHT VIEW	12			
PENALTIES (-)					
TOTAL		36			
EXAMINATION NUMBER					
EXAMINATION NUMBER					3



QUESTION 3: PERSPECTIVE

Given:
Three views of a building 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 door and window.
 - NO interior detail is required.
- [39]

ASSESSMENT CRITERIA					
1	CONSTRUCTION	6			
2	WALL + BASE + STAIRS	12 ¹ / ₂			
3	WINDOW + DOOR	6			
4	ROOF	9			
5	ARC	5 ¹ / ₂			
PENALTIES (-)					
TOTAL		39			

PP

PP

HL

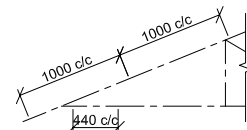
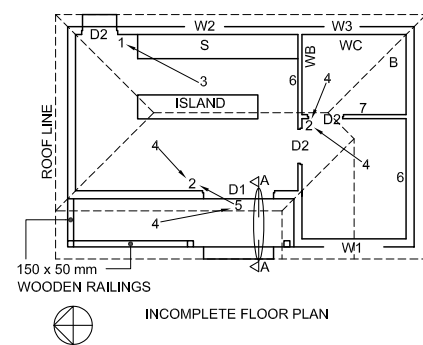
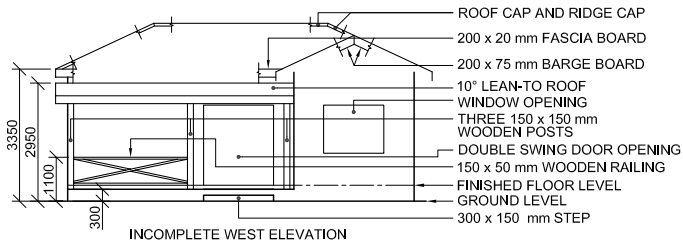
HL

GL

GL

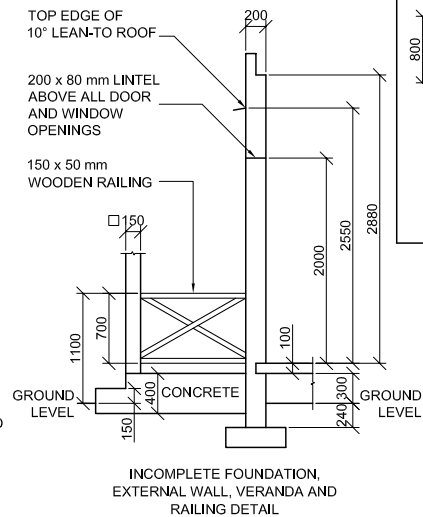
SP





ROOF NOTES:

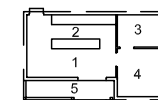
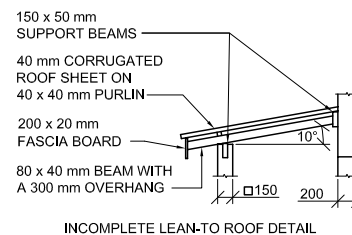
- 25° ROOF PITCH
- 120 x 40 mm ROOF TRUSSES ON 80 x 50 mm WALL PLATES
- 300 mm ROOF OVERHANG TO END OF ROOF TRUSS
- 40 mm CORRUGATED ROOF SHEET ON 80 x 50 mm PURLINS @ 1000 mm c/c
- 200 x 20 mm FASCIA BOARDS ON ALL SIDES
- 200 x 75 mm BARGE BOARDS ON GABLED ENDS 250 mm PAST FASCIA BOARDS
- 10 mm CEILING BOARDS ON 40 x 40 mm BRANDING STRIPS @ 440 mm c/c



DOOR AND WINDOW SCHEDULE			
TO FIT		TO FIT	1500
DOUBLE SWING DOOR AND FRAME (D1)		DOOR AND FRAME (D2)	750
2000		2000	1200
WINDOW NOTES:		WINDOW (W1)	
• A = OPENING SIDE		800	
• B = FIXED PANEL		WINDOW (W2)	
• ALL FRAMES = 50 mm THICK		800	
• 150 x 150 x 20 mm CERAMIC TILE SILL UNDER ALL WINDOWS		WINDOW (W3)	

ROOF COMPONENTS		ELECTRICAL SYMBOLS	
	200 x 20 mm FASCIA BOARD		
	80 x 50 mm PURLINS		
	200 x 75 mm BARGE BOARD		
	ROOF CAP AND RIDGE CAP		

FIXTURES			
WASH-BASIN (WB)	TOILET (WC)	BATH (B)	SINK (S)



ROOM DESIGNATIONS

FLOOR FINISHES

- 1. LIVING AREA - VINYL
- 2. KITCHEN - TILES
- 3. BATHROOM - TILES
- 4. BEDROOM - CARPET
- 5. VERANDA - TILES

QUESTION 4: CIVIL DRAWING

Given:

- The incomplete west elevation of a **new house**, showing the walls, step, the double swing door and window openings, the roof, labels, veranda and railing
- The incomplete floor plan showing the walls, steps, veranda, positions of the doors, windows and fixtures, and the electrical layout
- An incomplete schematic diagram of a roof truss at cutting plane A-A and roof notes
- The incomplete foundation, external wall, veranda and railing detail
- A door and window schedule
- A table of roof components
- A table of electrical symbols
- A table of fixtures
- Room designations and floor finishes
- Incomplete lean-to roof detail
- The incomplete floor plan and position of the ground level of the **new house**, drawn to scale 1 : 50, and the incomplete foundation and break lines 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 position of the 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 WEST ELEVATION

Show the following features on the drawing:

- The outside walls, step, window and double swing door detail (in the closed position)
- The roof detail, including the fascia board and barge boards
- The veranda, railing, posts and lean-to roof detail
- The finished floor level

- 4.2 Using the incomplete foundation and break lines, draw, to scale 1 : 20, the **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:

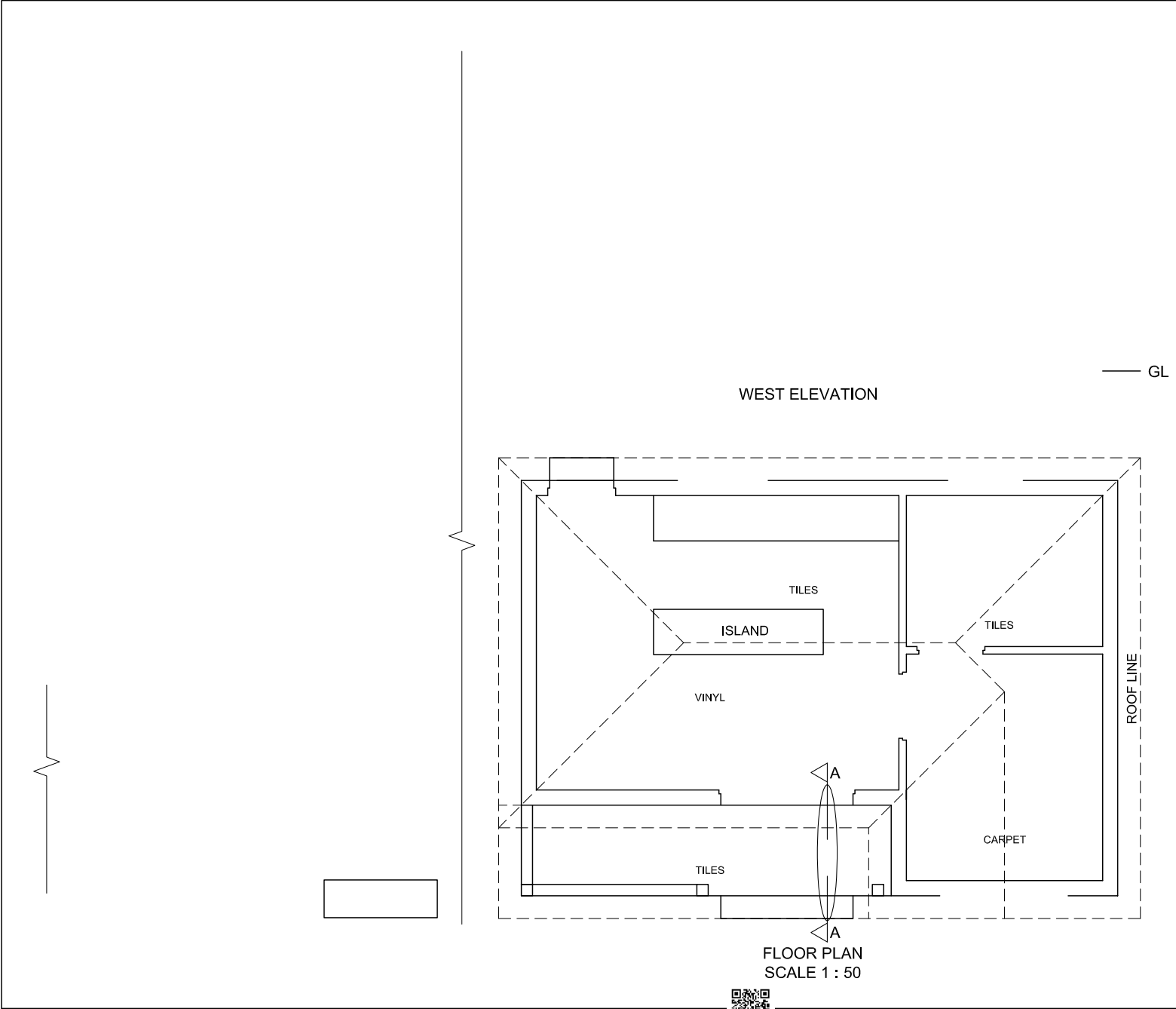
- The complete foundation, external wall and door detail
- The roof detail, including the fascia board
- The veranda and lean-to roof detail
- The post and railing, as well as the fascia board to the left (north) of cutting plane A-A
- ALL hatching detail. ONLY the substructure hatching may be drawn in neat freehand.

Label the following:

- The room designations
- Ground level, finished floor level and damp-proof course (use the correct abbreviations and show it on ALL relevant views)

NOTE: ALL drawings must comply with the **guidelines** and **graphical symbols** as contained in the **SANS 10143**. [95]





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		NOT USING BREAK LINES			
G					
H					
J					
TOTAL		TOTAL			
ASSESSMENT CRITERIA					
FLOOR PLAN					
		POSSIBLE	OBTAINED	SIGN	MODERATED
1	DOORS + WINDOWS	11			
2	FIXTURES	8½			
3	ELECTRICAL	9½			
4	HATCHING	4			
5	LABELS	2½			
SUBTOTAL		35½			
WEST ELEVATION					
1	ROOF + LEAN-TO	8½			
2	WALLS + POSTS + VERANDA	5			
3	DOORS + WINDOW	6½			
4	STEP + FFL + RAILING	4½			
5	LABELS	½			
SUBTOTAL		25			
DETAILED SECTION					
1	ROOF DETAIL	15			
2	SLAB + WALL + STEPS + POST	10			
3	HATCHING	5½			
4	RAILING	3			
5	LABELS	1			
SUBTOTAL		34½			
TOTAL		95			
PENALTIES (-)					
GRAND TOTAL					
EXAMINATION NUMBER					
EXAMINATION NUMBER					6