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basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL
SENIOR CERTIFICATE

GRADE 12

ENGINEERING GRAPHICS AND DESIGN P1

EXEMPLAR 2014

MARKS: 100

TIME: 3 hours

This question paper consists of 6 pages.

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 completed using 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 must be re-stapled in numerical sequence, irrespective of whether the question was attempted.
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			½	SIGN	MODERATED			½
1									
2									
3									
4									
TOTAL									
	2	0	0			2	0	0	

FINAL CONVERTED MARK	CHECKED BY
100	

COMPLETE THE FOLLOWING:
CENTRE NUMBER
CENTRE NUMBER
EXAMINATION NUMBER
EXAMINATION NUMBER





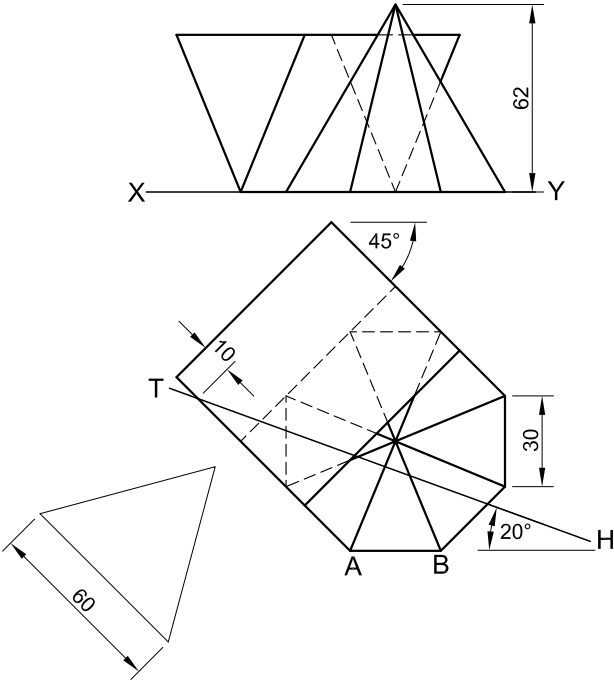
QUESTION 2: SOLID GEOMETRY

- Given:**
- The front view and the top view of a right equilateral triangular prism and a right regular octagonal pyramid
 - The auxiliary view of the triangular prism
 - The position of base edge 'A-B' on the answer sheet

Specifications:
One face of the triangular prism is in contact with one face of the octagonal pyramid. Both solids are cut by a cutting plane HT.

- Instructions:**
Draw, to scale 1 : 1, the following views of the TWO solids:
- 2.1 The given top view
 - 2.2 A sectional front view on cutting plane HT
 - 2.3 The true shape of the cut surfaces

- Show ALL necessary construction and projection.
- Show ALL hidden detail. [38]



A ————— B

ASSESSMENT CRITERIA					
1	GIVEN TOP VIEW	7			
2	FRONT VIEW	21			
3	TRUE SHAPE	10			
TOTAL		38			
EXAMINATION NUMBER					
EXAMINATION NUMBER					3



QUESTION 3: PERSPECTIVE

Given:
Three views of a braai area and 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.
- Determine and label the vanishing points.
- Show ALL necessary construction.
- NO hidden detail is required.

[40]

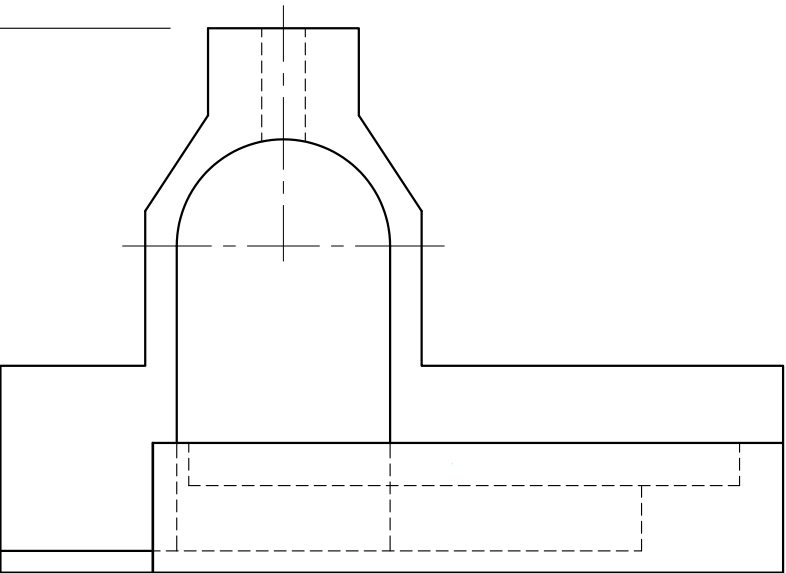
ASSESSMENT CRITERIA					
1	CONSTRUCTION + VPs	7			
2	BRAAI	14½			
3	SEATING	13			
4	SEMI-CIRCLE	5½			
TOTAL		40			

PP

HL

GL

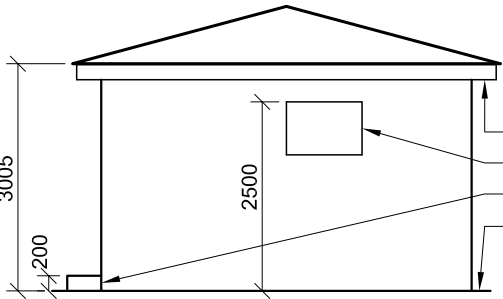
SP



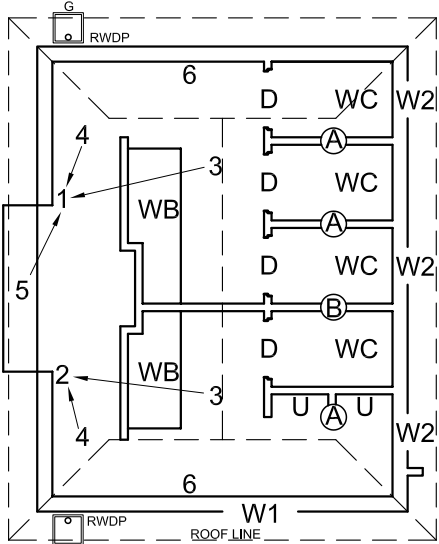
EXAMINATION NUMBER

EXAMINATION NUMBER

4

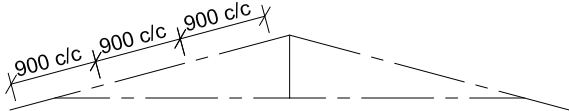


INCOMPLETE WEST ELEVATION



INCOMPLETE FLOOR PLAN

ROOF NOTES:
ROOF PITCH 15° WITH 200 x 20 mm FASCIA BOARD ON ALL SIDES
ROOF COVER 15 mm FIBRE CEMENT SHEET ON 75 x 50 mm PURLINS @ 900 mm c/c
115 x 38 mm ROOF TRUSS ON 115 x 38 mm WALL PLATES
PLASTER CEILING BOARD ON 38 x 38 mm BRANDERING STRIPS @ 700 mm c/c
100 x 100 mm GUTTER ON ALL SIDES



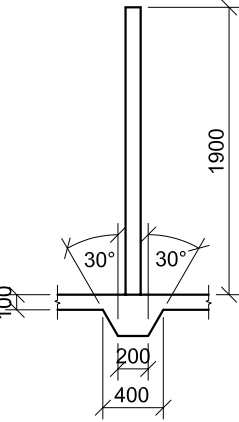
SCHEMATIC DIAGRAM OF A ROOF TRUSS

FEATURES
D DOOR
W1 WINDOW
W2 WINDOW

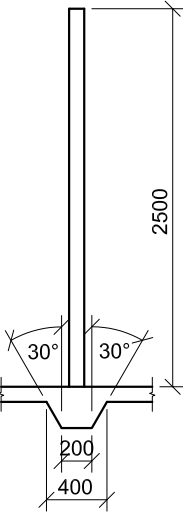
FIXTURES
WC TOILET
WB WASH BASIN
U URINAL

ELECTRICAL FITTINGS:
1. LIGHT SWITCH THREE-POLE
2. LIGHT SWITCH DOUBLE-POLE
3. FLUORESCENT LIGHT 3 X 40 W
4. CEILING LIGHT
5. WALL MOUNTED LIGHT
6. SWITCHED SOCKET OUTLET

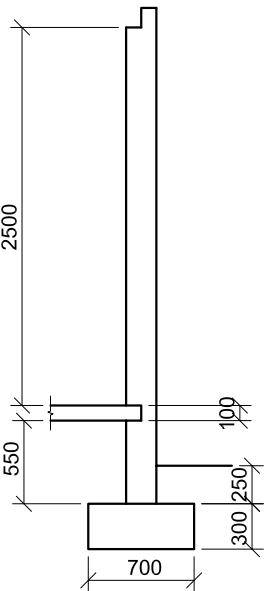
NOTE:
THE ARROW SHOWS THE LIGHT CONNECTION TO THE SWITCH



WALL A
INCOMPLETE FOOTING, SLAB AND WALL DETAIL OF THE INTERNAL WALLS BETWEEN THE CUBICLES AND THE URINALS

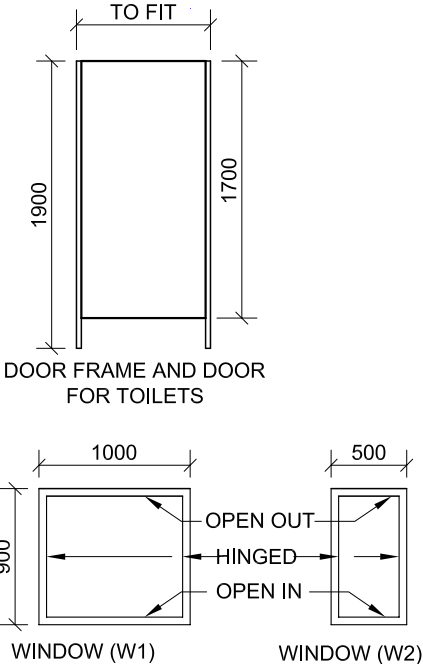


WALL B
INCOMPLETE FOOTING, SLAB AND INTERNAL WALL DETAIL



INCOMPLETE FOUNDATION, SLAB AND EXTERNAL WALL DETAIL

DOOR AND WINDOW SCHEDULE



DOOR FRAME AND DOOR FOR TOILETS

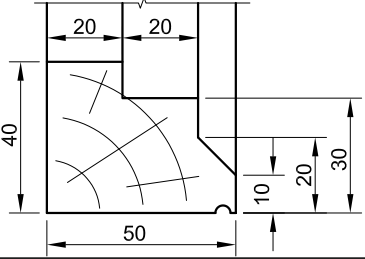
WINDOW (W1) WINDOW (W2)

NOTES:
150 x 20 FIBRE CEMENT SILL UNDER ALL WINDOWS

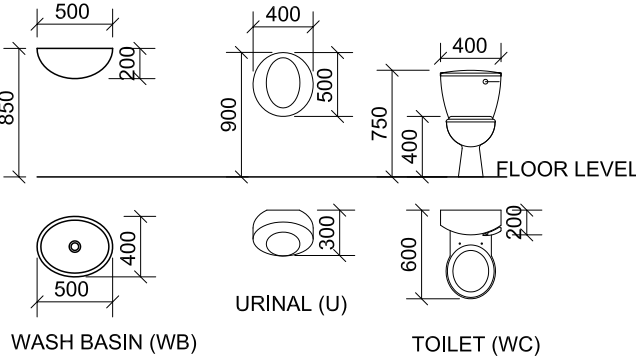
ROOF COMPONENTS

	ROOF CAP
	115 x 38 WALL PLATE
	75 x 50 PURLINS

WINDOW FRAME PROFILE

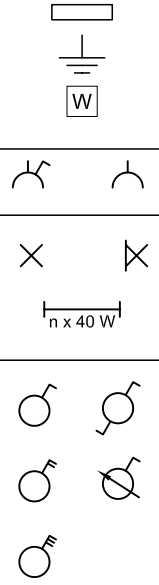


FIXTURES

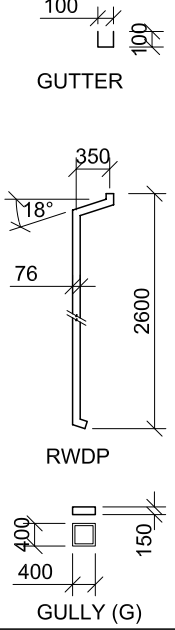


WASH BASIN (WB) URINAL (U) TOILET (WC)

ELECTRICAL SYMBOLS



RAINWATER ITEMS



GUTTER

RWDP

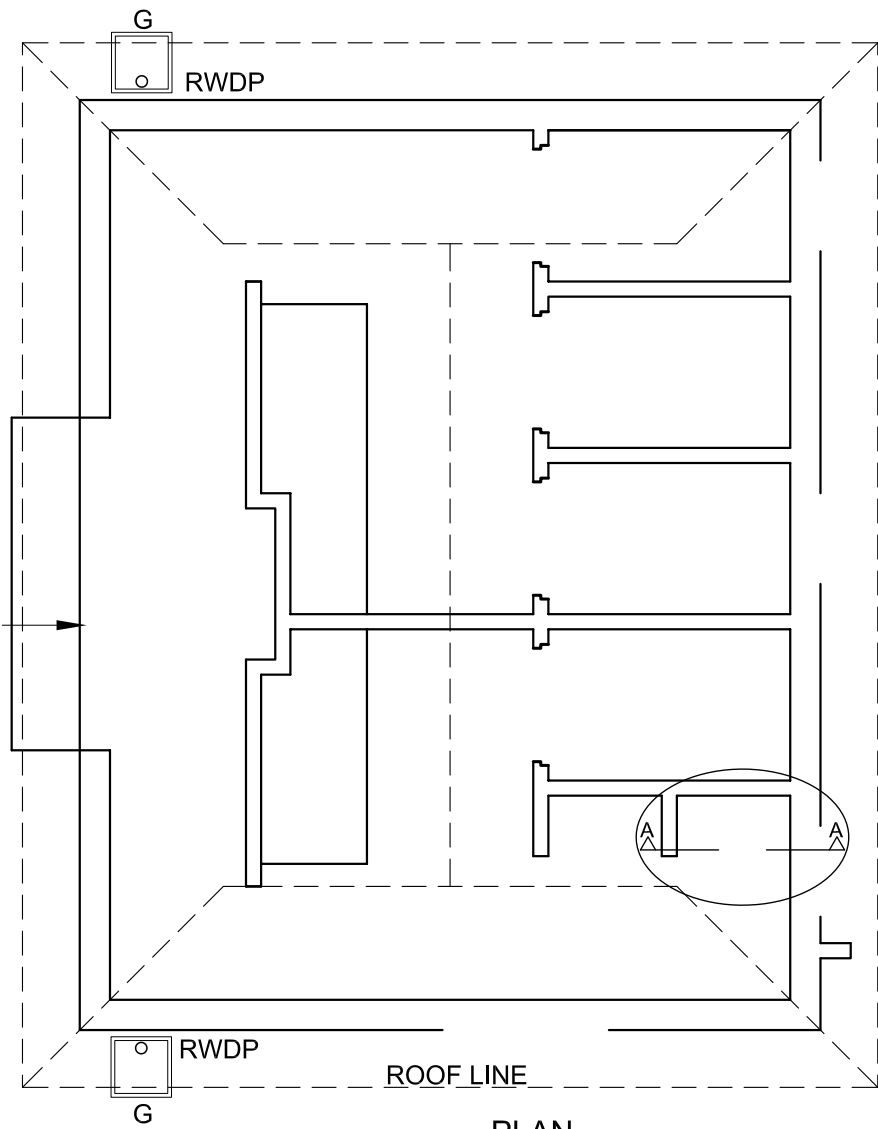
GULLY (G)

QUESTION 4: CIVIL DRAWING

- Given:**
- The incomplete west elevation of a new **public toilets**, showing the walls, the roof and notes
 - The incomplete floor plan showing the walls, position of the doors and windows, fixtures and electrical layout
 - Roof notes and a schematic diagram of a roof truss
 - The incomplete foundation/footing, slab and wall detail of the three walls to be used in the construction of the new **public toilets**
 - A door and window schedule
 - A table of roof components
 - A table of the wooden window frame profile
 - A table of fixtures
 - A table of electrical symbols
 - A table of rainwater items
 - The incomplete plan of the new **public toilets**, drawn to scale 1 : 50, on page 6

- Instructions:**
Answer this question on page 6.
- 4.1 Using the given incomplete floor plan, draw, in first-angle orthographic projection and to scale 1 : 50, the following views of the new **public toilets**:
- 4.1.1 **THE COMPLETE FLOOR PLAN**
Add the following features to the drawing:
- ALL the doors and the window
 - ALL fixtures as indicated by abbreviations
 - The electrical layout as indicated by numbers
 - ALL hatching detail
- 4.1.2 **THE WEST ELEVATION**
Show the following features on the drawing:
- The outside walls and window detail
 - The roof detail including the fascia board, gutter, rainwater down pipe and gully
 - The finished floor level
- 4.2 Draw, to scale 1 : 20, a **DETAILED SECTION** on cutting plane A-A of the area in the ellipse shown on the floor plan on page 6.
- Show the following features on the drawing:**
- The complete foundation and external wall detail
 - The complete footing and wall A detail
 - The roof detail
 - The window detail with a double lintel
 - ALL features to the east of the cutting plane A-A
 - ALL hatching detail. ONLY the substructure hatching may be drawn in freehand.

- Label the following:**
- The west elevation
 - The room designations and floor finish (tiles)
 - Using correct abbreviations, label the following features in the correct view: ground level, finished floor level and damp-proof course.
- NOTE:**
- ALL drawings must comply with the **guidelines** and **graphic symbols** contained in the **SANS 10143**. [92]



PLAN
SCALE 1 : 50

DETAILED SECTION
SCALE 1 : 20

ASSESSMENT CRITERIA					
PLAN					
		POSSIBLE	OBTAINED	SIGN	MODERATE
1	DOORS + WINDOWS	12			
2	ELECTRICAL	7			
3	FIXTURES	8			
4	HATCHING	4			
5	LABELS	1			
SUBTOTAL		32			
WEST ELEVATION					
1	ROOF	6			
2	WALLS + RWDP + FFL + G + STEP	5			
3	WINDOW	5			
4	LABELS	2			
SUBTOTAL		18			
DETAILED DRAWING					
1	ROOF	13			
2	WINDOW + SILL	8½			
3	FOUNDATIONS + WALLS + SLAB	10½			
4	HATCHING	5			
5	URINAL + LABELS	5			
SUBTOTAL		42			
PENALTIES (-)					
TOTAL		92			
EXAMINATION NUMBER					
EXAMINATION NUMBER					6