



basic education

Department:  
Basic Education  
REPUBLIC OF SOUTH AFRICA

NATIONAL  
SENIOR CERTIFICATE

GRADE 12

ENGINEERING GRAPHICS AND DESIGN P1

NOVEMBER 2010

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 stated otherwise.
4. ALL drawings must be drawn to scale 1 : 1, unless stated otherwise.
5. ALL the questions must be answered on the QUESTION PAPER as instructed.
6. ALL the pages must be restapled in numerical sequence, irrespective of whether the question was attempted.
7. Time management is essential in order to complete all the questions.
8. Print your examination number in the block provided on every page.
9. Any details or dimensions not given, must be assumed in good proportion.
10. ALL answers must be drawn accurately and neatly.

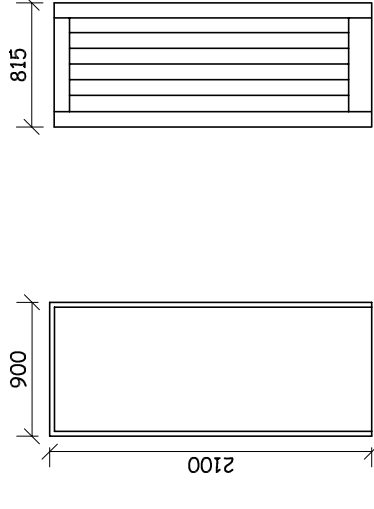
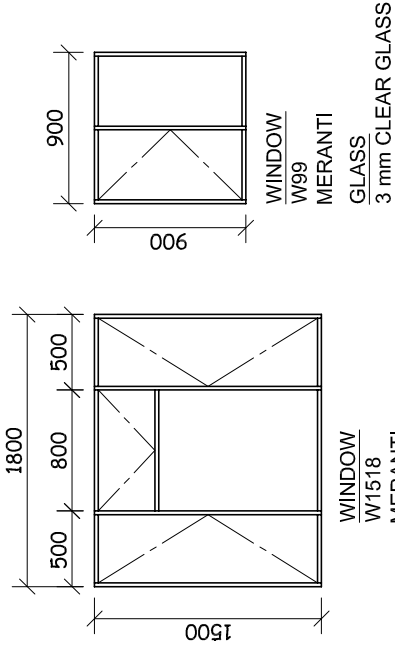
FOR OFFICIAL USE ONLY						
QUESTION	MARKS OBTAINED	½	SIGN	MODERATED	½	SIGN
1						
2						
3						
4						
TOTAL						
	2	0	0		2	0
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FINAL CONVERTED MARK	CHECKED BY
100	

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



































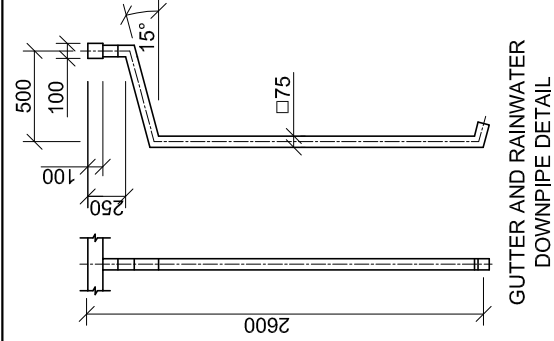
# DOOR AND WINDOW SCHEDULE



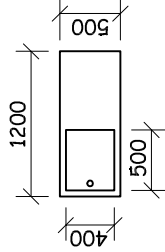
DOOR FRAME  
76 x 44 mm MERANTI

DOOR  
EXTERIOR MERANTI

ELECTRICAL SYMBOLS	LIGHTS	SWITCHES
	 OR 	 F 
	 OR 	 F 
	 OR 	 F 
	 OR 	 F 
SOCKET OUTLET		DISTRIBUTION BOARD
 		 
 		 
 		 
 		 



### DOWNPIPE DETAIL



## SINK DETAIL

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## QUESTION 4: CIVIL DRAWING

**Given:**

- The incomplete west elevation of a new **granny flat** showing the outlines of the walls and roof, as well as the position of the kitchen's waste-water disposal system
- The incomplete floor plan of the new **granny flat** showing the outside lines of the exterior walls, the centre lines of the interior walls, the position of all the features, relevant notes and dimensions
- A door and window schedule
- A table of electrical symbols
- A detailed drawing of the gutter and the rainwater downpipe
- A detailed drawing of the sink

### Instructions:

- Answer this question on page 6.
- Draw, to scale 1 : 50 and the given specifications:

#### 4.1 The complete floor plan

#### 4.2 The complete west elevation

- ALL drawings must comply with the guidelines contained in the SABS 0143.

### SPECIFICATIONS:

## THE FLOOR PLAN

**Show the following features on the drawing:**

- ALL the walls with hatching detail
- The doors, step and windows
- The conventions of ALL the bathroom fixtures as indicated with numbers on the incomplete floor plan
- ALL the electrical features as indicated with numbers on the incomplete floor plan. The light in the living area and the fluorescent tubes in the kitchen must be connected to the two-pole light switch.
- The work top and the sink detail
- The waste-water disposal system for the kitchen
- The roof line

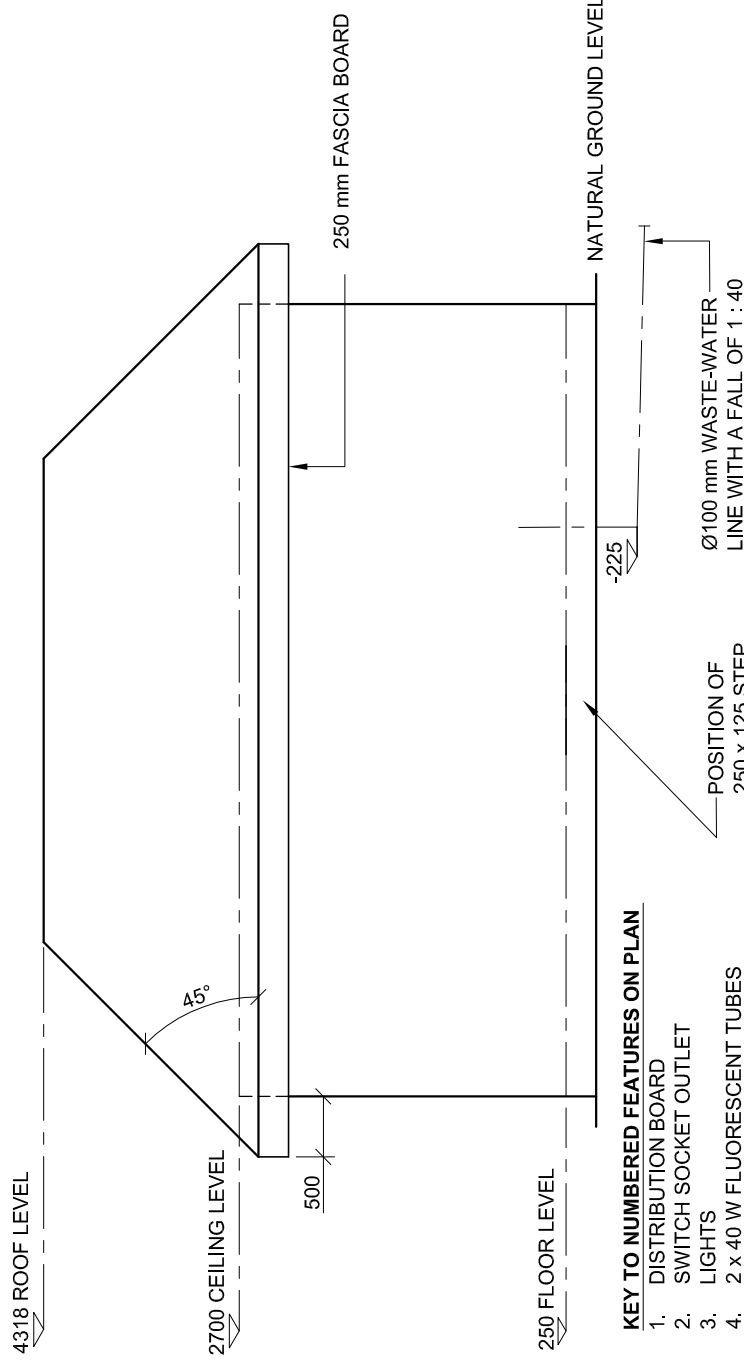
## THE WEST ELEVATION

**Show the following features on the drawing:**

- The outlines of the walls and roof
- The door, step and window
- The finished floor level
- The gutter
- Rainwater downpipes
- The waste-water disposal system for the kitchen

**Label the following:**

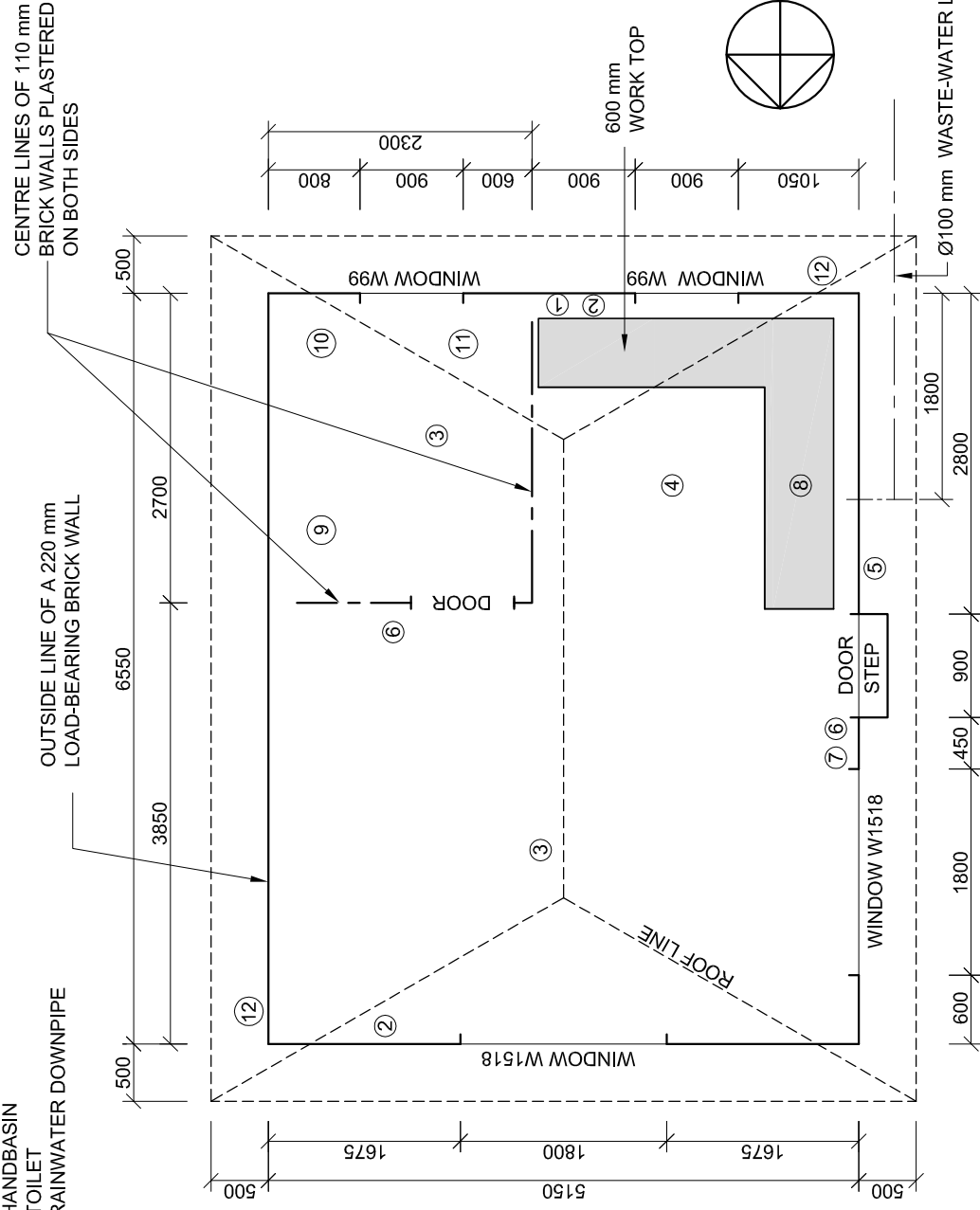
- The floor plan, including the scale
- The west elevation
- Using the correct abbreviations, label the following features on the correct view: finished floor level, sink, the fall of the waste-water line, inspection eye, bathroom designation and floor finish (ceramic tiles).



**WEST ELEVATION**

- ## KEY TO NUMBERED FEATURES ON PLAN

- |     |                            |
|-----|----------------------------|
| 1.  | DISTRIBUTION BOARD         |
| 2.  | SWITCH SOCKET OUTLET       |
| 3.  | LIGHTS                     |
| 4.  | 2 x 40 W FLUORESCENT TUBES |
| 5.  | OUTSIDE LIGHT              |
| 6.  | ONE-POLE LIGHT SWITCH      |
| 7.  | TWO-POLE LIGHT SWITCH      |
| 8.  | SINK                       |
| 9.  | SHOWER                     |
| 10. | HANDBASIN                  |
| 11. | TOILET                     |
| 12. | RAINWATER DOWNPIPE         |



# FLOOR PLAN





QUESTION 3: PERSPECTIVE

Given:

Three views of a clubhouse and the information needed to draw a two-point perspective drawing

PP - Picture plane

HL - Horizon line

GL - Ground line

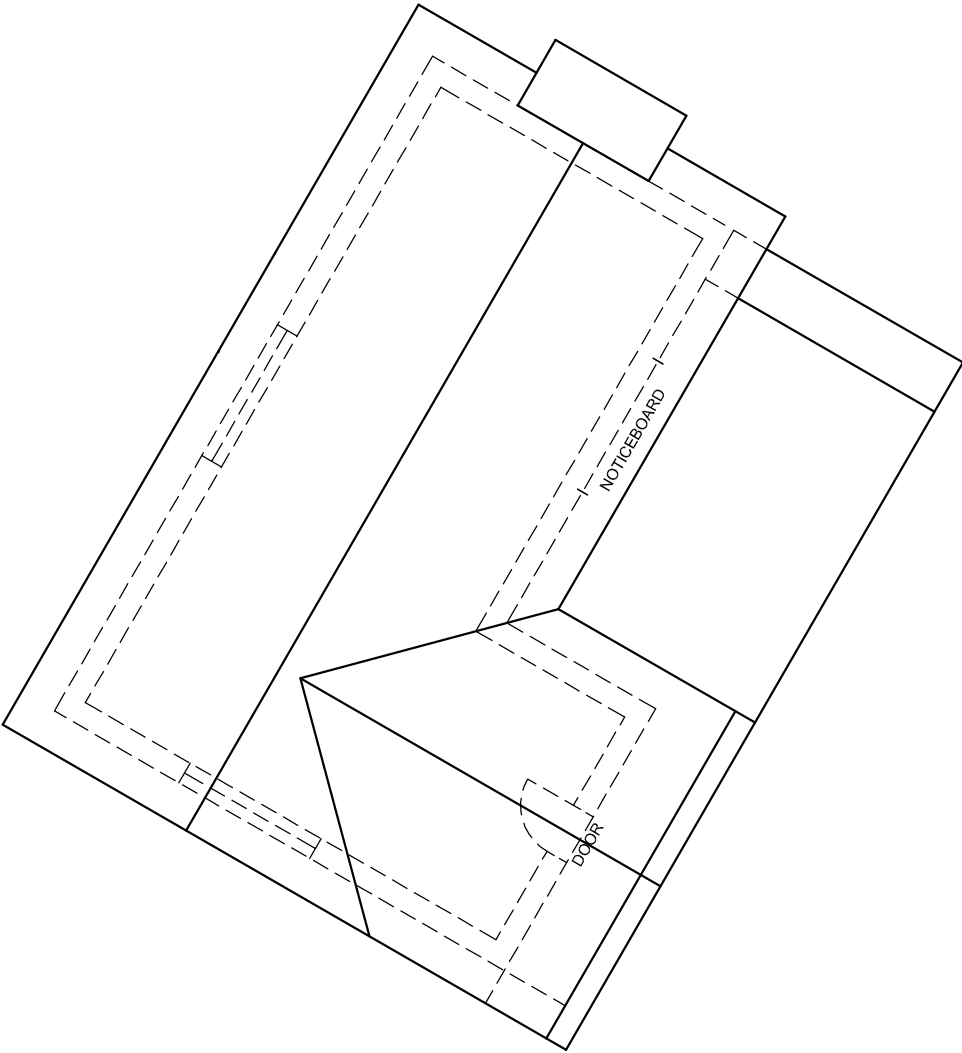
SP - Station point

Instructions:

Complete the perspective drawing.

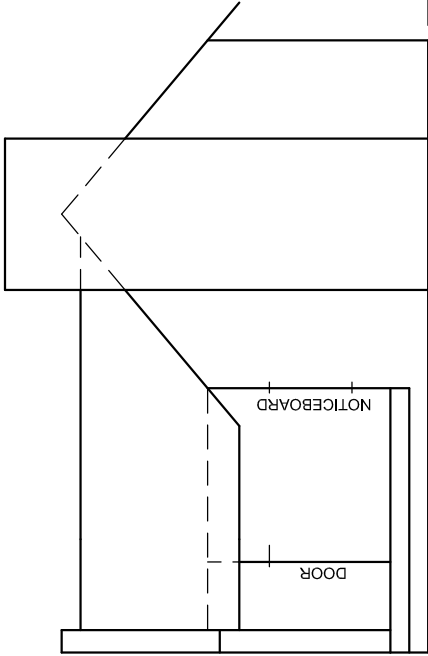
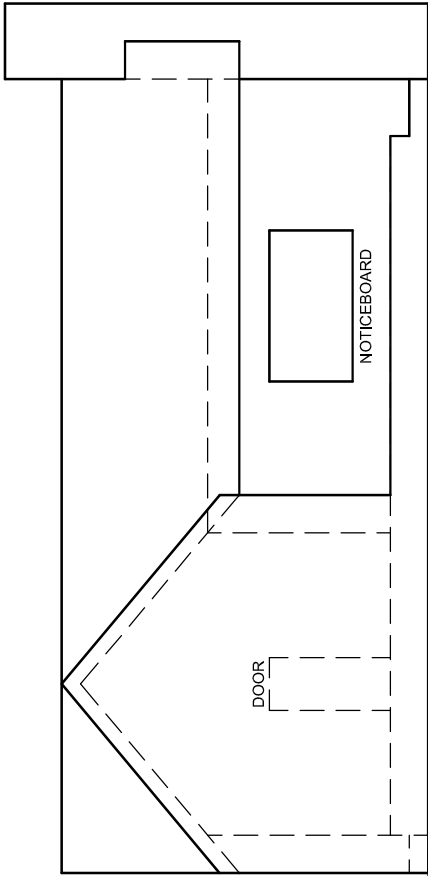
- Align the drawing sheet with the horizon line (HL).
- Locate and label the vanishing points.
- Show ALL necessary construction.
- NO hidden detail is required.

[36]



PP

HL



GL



ASSESSMENT CRITERIA				
1. CONSTRUCTION + VPs	7			
2. ROOF	8½			
3. WALLS + WINDOW	15½			
4. CHIMNEY	5			
TOTAL	36			
EXAMINATION NUMBER				
EXAMINATION NUMBER				4





QUESTION 2: DEVELOPMENT

A company that installs extraction systems has designed an extraction unit for the kitchen of a restaurant. The unit consists of a transition piece (A), a cylindrical pipe (B) and a conical funnel (C).

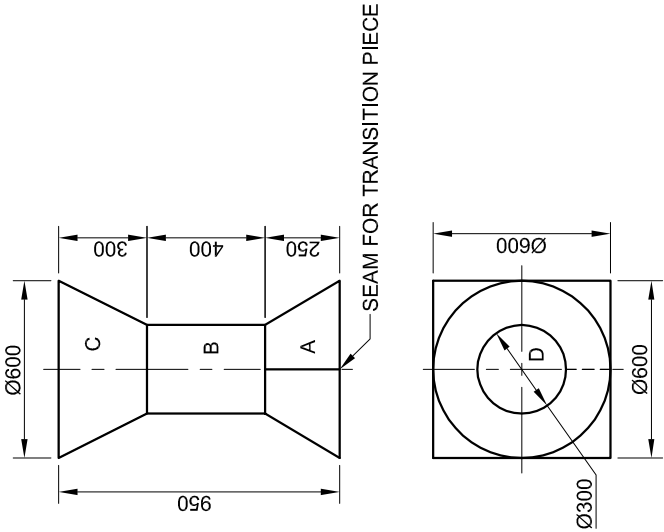
Given:

- The front view and top view of the extraction unit
- Centre point (D) as the reference point on the drawing sheet

Instructions:

- 2.1 Draw, to scale 1 : 10, the given views of the extraction unit using point (D) as the reference point.
- 2.2 Develop the surface of the transition piece (A).
- 2.3 Develop the surface of the cylindrical pipe (B).
- 2.4 Develop the surface of the conical funnel (C).
- Show ALL necessary construction and calculations.

[37]



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ASSESSMENT CRITERIA			
1. GIVEN	8		
2. TRUE LENGHTS	4		
3. DEVELOPMENT A	14		
4. DEVELOPMENT B	4		
5. DEVELOPMENT C	7		
TOTAL	37		
EXAMINATION NUMBER			
EXAMINATION NUMBER		3	







ASSESSMENT CRITERIA				
WEST ELEVATION				
	POSSIBLE	OBTAINED	SIGN	MODERATE
1. ROOF + FASCIA	5			
2. GUTTER + RWDp	6			
3. WALLS + FFL	3½			
4. WINDOWS + DOOR + STEP	13½			
5. WASTE-WATER	2			
6. LABELS	4			
SUBTOTAL	34			
FLOOR PLAN				
1. ROOF	4½			
2. WALLS	6½			
3. WINDOW + DOOR + STEP	16			
4. KITCHEN + BATHROOM	11½			
5. ELECTRIC	12			
6. WASTE-WATER	2			
7. HATCHING	4½			
8. LABELS	6			
SUBTOTAL	63			
TOTAL	97			

EXAMINATION NUMBER	
EXAMINATION NUMBER	6

