

### sic education ba

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

- This question paper consists of FOUR questions. Answer ALL the questions. - 0, w, 4, rv, o,
- ALL drawings are in first-angle orthographic projection, unless stated otherwise.
- - ALL drawings must be drawn to scale 1:1, unless stated otherwise.
    ALL the questions must be answered on the QUESTION PAPER as instructed.
    ALL the pages must be restapled in numerical sequence, irrespective of whether the question was attempted.
- - Time management is essential in order to complete all the questions.
     Print your examination number in the block provided on every page.
     Any details or dimensions not given, must be assumed in good proportion.
     ALL answers must be drawn accurately and neatly.

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QUESTION	MARK	MARKS OBTAINED	INED	1/2	SIGN	MO	MODERATED	ED	1/2	SIGN	
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CHECKED BY	
FINAL CONVERTED MARK	100

COMPLETE THE FOLLOWING:
CENTRE NUMBER
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### NATURAL GROUND LEVEL CENTRE LINES OF 110 mm BRICK WALLS PLASTERED ON BOTH SIDES 250 mm FASCIA BOARD 200 Ø100 mm WASTE-WATER — LINE WITH A FALL OF 1:40 2700 OUTSIDE LINE OF A 220 mm LOAD-BEARING BRICK WALL -225 **WEST ELEVATION** -POSITION OF 250 x 125 STEP 6550 3850 KEY TO NUMBERED FEATURES ON PLAN 1. DISTRIBUTION BOARD 2. SWITCH SOCKET OUTLET 2 x 40 FLUORESCENT TUBES OUTSIDE LIGHT ONE-POLE LIGHT SWITCH TWO-POLE LIGHT SWITCH RAINWATER DOWNPIPE 12 2700 CEILING LEVEL SHOWER HANDBASIN TOILET 250 FLOOR LEVEL 200 4318 ROOF LEVEL LIGHTS SIN 009 WINDOW W99 MERANTI GLASS 3 mm CLEAR GLASS DOOR EXTERIOR MERANTI 8 DOOR AND WINDOV 815 SCHEDULE 006 WINDOW W1518 MERANTI GLASS 3 mm CLEAR GLASS 200 DOOR FRAME 76 x 44 mm MERANTI 1800 800 906 200 5100 48 1200

## **QUESTION 4: CIVIL DRAWING**

- showing the outlines of the walls and roof, as well as the The incomplete west elevation of a new granny flat 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
- gutter and the rainwater A detailed drawing of the downpipe
  - A detailed drawing of the sink

### Instructions:

- Answer this question on page 6.
- Draw, to scale 1 : 50 and the given specifications:
  - 4.2 The complete west elevation 4.1 The complete floor plan
- 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

2300

006

66M MODNIM

 $\Xi$ 

DOOR

<u>ල</u>

WINDOW W1518

1800

0919

⊒75

5000

-()

SOCKET OUTLET

n X 40 W

DISTRIBUTION BOAR

**6** 

**⊘** 

9**2**91

100

100

**ELECTRICAL SYMBOLS** 

A or X

A SAO

520

200

<u>\_</u>20/

<u>ල</u>

008

(2)

(6)

# Show the following features on the drawing:

The door, step and window

The outlines of the walls and roof

009

- The finished floor level
- The gutter
- Rainwater downpipes

600 mm WORK TOP

006

(I) (Z)

The waste-water disposal system for the kitchen

### Label the following:

006

MINDOW W99

4

ANIJ 400A

9**2**91

GUTTER AND RAINWATER DOWNPIPE DETAIL

- The floor plan, including the scale
- The west elevation

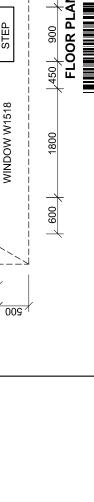
1020

@

(O)

(7)

features on the correct view: finished floor level, sink, the fall of the waste-water line, inspection eye, bathroom [97] Using the correct abbreviations, label the following designation and floor finish (ceramic tiles).



009′

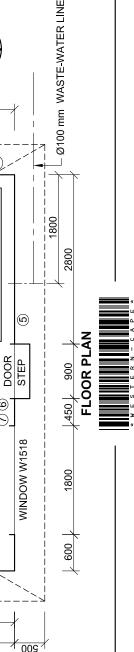
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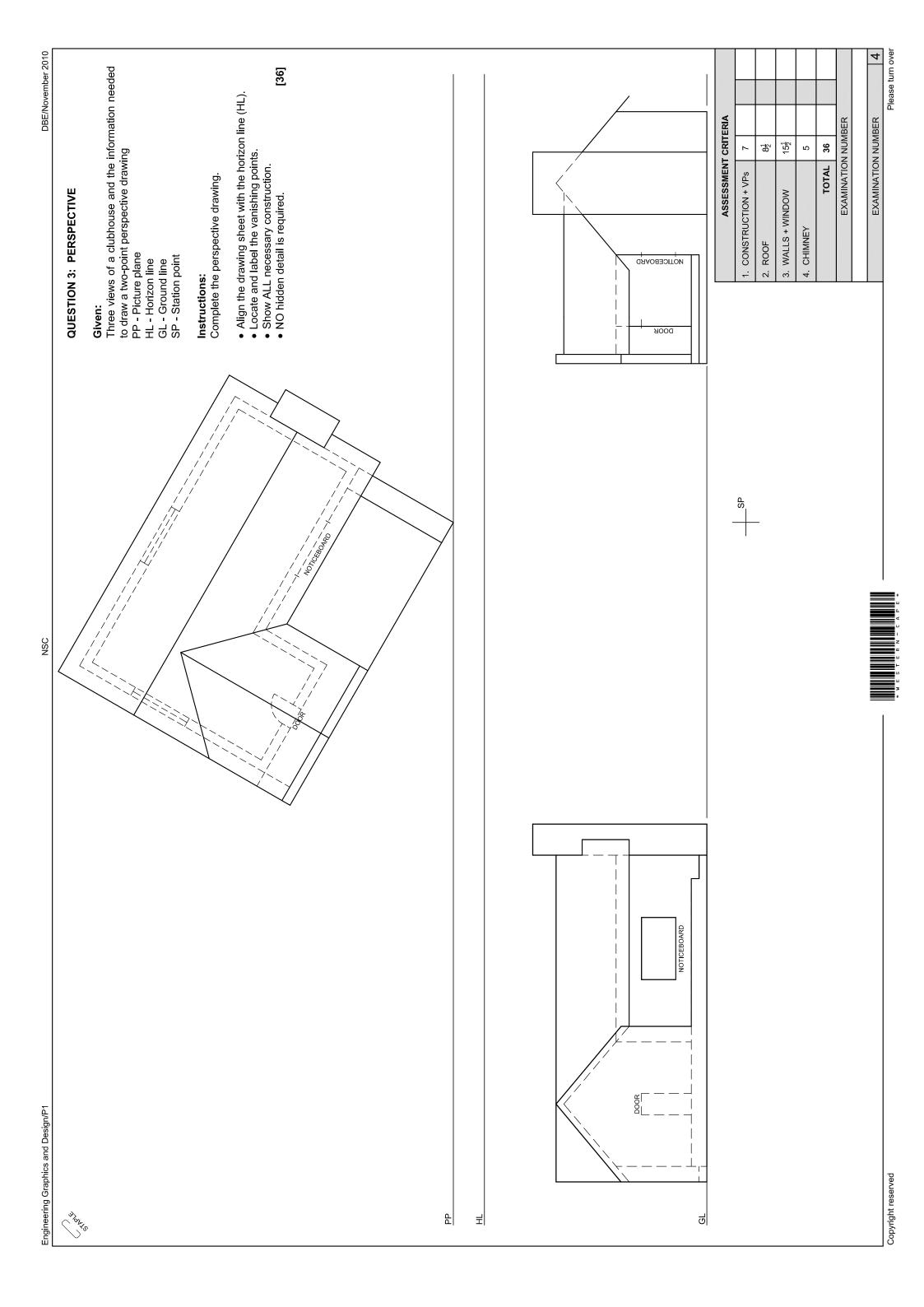
1200

SINK DETAIL

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500





NSC Engineering Graphics and Design/P1



## QUESTION 2: DEVELOPMENT

DBE/November 2010

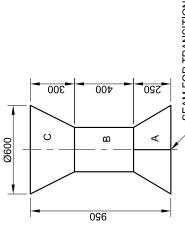
A company that installs extraction systems has designed an extraction unit for the kitchen of a restaurant. The unit consists of a transition piece (A), a cylindrical pipe (B) and a conical funnel (C).

### 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]



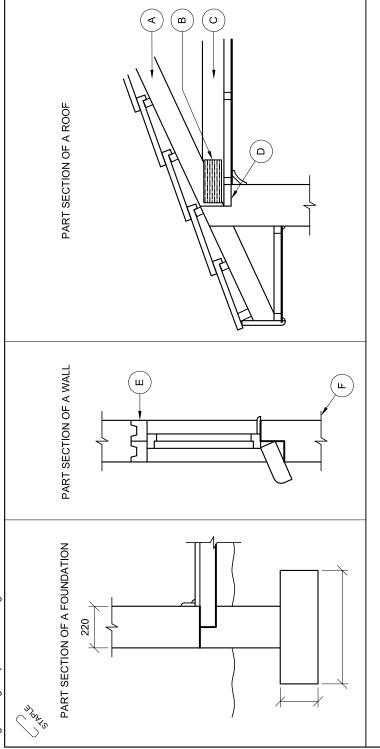
-SEAM FOR TRANSITION PIECE

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	a	009Ø
	Ø300	

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CRITE	80	4	14	4	7	37	NUMI	
ASSESSMENT CRITERIA	1. GIVEN	2. TRUE LENGHTS	3. DEVELOPMENT A	4. DEVELOPMENT B	5. DEVELOPMENT C	TOTAL	EXAMINATION NUMBER	

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QUESTION 1: ANALYTICAL (CIVIL)	<b>Given:</b> The part sections of a foundation, a wall and a roof, as well as a floor plan of a proposed new public toilet and a table of questions. The drawings are not to scale and no hatching detail is shown.	Instructions: Complete the table below by neatly answering the questions, which all refer to the accompanying drawings and the title block.  [30]
ANSWER 13		

	QUESTIONS	ANSWERS	
_	Label and indicate the Natural Ground Level on the part section of the foundation.	21	-IOI
7	Label and indicate, on the part sections of the foundation and the wall, all the places where damp-proof course must be used.	7	_
		A.	
		B.	
n.	Name parts A, b, C and D on the part section of the roof.	-	
		D.	
4	What type of roof covering is shown on the part section of the roof?	-	
2	Name part E on the part section of the wall.	_	_
9	What is the function of part E on the part section of the wall?		_
7	What is the function of line F on the part section of the wall?		_
∞	What does the double line at G on the outside wall indicate?		_
6	Why is the area of the toilet marked H bigger than the area for the other two toilets?	1	_
10	How many rodding eyes are indicated on the floor plan?	-	_
7	What are the codes for the TWO types of windows to be used for the public toilet?	2	\ \ \
12	Determine the total area of the public toilet in square metres. Show ALL calculations.	4	4
13	In the space provided above (ANSWER 13), draw, in neat freehand, the front view of the SABS convention for a water closet (WC).	32	<b>←</b> Ĭ <u>Ö</u>
14	Draw, in neat freehand, ALL the hatching detail for the part section of the foundation.	9	
15	Insert the minimum dimensions of the foundation for a load-bearing wall on the part section of the foundation.	2	01
	TOTAL	30	0

HAND

PUBLIC TOILET TILED

WASTE

(0)

1824

2124

R.

Ш

9809

360

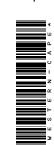
006

3642

2382

2124

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EXAMINATION NUMBER

**EXAMINATION NUMBER** 

R

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WALL-MOUNTED URINALS

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2912

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075

ND9/12

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1800

27 Ш

928

928

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1400

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FLOOR PLAN SCALE 1:50

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ASSESSMENT CRITERIA

WEST ELEVATION

SIGN

POSSIBLE OBTAINED

2

NSC

113 12 9 63 97 7  $4\frac{1}{2}$ TOTAL SUBTOTAL 6. WASTE-WATER 4. KITCHEN + BATHROOM 5. ELECTRIC 7. HATCHING 8. LABELS

FLOOR PLAN

34

SUBTOTAL

4

6. LABELS

 $13\frac{1}{2}$ 

4. WINDOWS + DOOR + STEP

7

5. WASTE-WATER

 $3\frac{1}{2}$ 

3. WALLS + FFL

9

2. GUTTER + RWDP 1. ROOF + FASCIA

61 62

1. ROOF

16

2. WALLS
3. WINDOW + DOOR +
STEP

EXAMINATION NUMBER

EXAMINATION NUMBER

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