PLEASE READ THE FOLLOWING INSTRUCTIONS CAREFULLY

1. This question paper consists of 6 pages including the cover page and 4 questions.
2. All questions must be answered.
3. Unless specified otherwise, all questions are in First Angle Orthographic Projection.
4. Unless specified otherwise, all questions are to be completed to a scale of 1:1.
5. All answer sheets must be re-stapled in numerical order, even questions that are not attempted/blank.
6. All construction work must be shown.
7. Print your examination number neatly on each page.
8. Use only the drawing sheets provided.
9. Your drawings should reflect neatness and accuracy.
10. All dimensions or detail not given may be assumed in good proportion.

NATIONAL SENIOR CERTIFICATE EXAMINATION

2015

ENGINEERING GRAPHICS AND DESIGN

PAPER 1

MARKS: 200
TIME: 3 HOURS

FOR OFFICIAL USE ONLY

<table>
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<th>QUESTION</th>
<th>SECTION</th>
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FINAL CONVERTED MARK

100

CHECKED BY

EXAMINATION NUMBER
STUDY THE ADJACENT DRAWING AND ANSWER THE QUESTIONS THAT FOLLOW:

1.1 What type of civil drawing is shown by the adjacent drawing?
1.2 Which elevation of the dwelling faces Protea Street?
1.3 What colour must the proposed new buildings be in this drawing?
1.4 How many inspection eyes are there on this property?
1.5 Which of the labelled corners is the highest on this property?
1.6 On which property are the proposed building additions?
1.7 What is the feature at 1 called? (No abbreviations)
1.8 What is the feature at 2 called? (No abbreviations)
1.9 What is the feature at 3 called? (No abbreviations)
1.10 What is the feature at 4 called?
1.11 What is the feature at 5 called?
1.12 What is the feature at 6 called?
1.13 What is indicated by the dashed lines at feature ??
1.14 If the owners wanted to construct a brick wall along the Protea Street boundary, how close could this wall be to the street?
1.15 Would the given drawing be accepted by the town engineer as it is?
   Give a reason for your answer in 1.16:
   1
1.16 What is the depth of the municipal sewer connection?
1.17 In the space below determine the area of the existing dwelling in m².
   3

EXAMINATION NUMBER

PLEASE TURN OVER
The figure below shows the INCOMPLETE Front View and an INCOMPLETE Top View of a CIRCULAR PIPE penetrated by a SQUARE DUCT. An auxiliary view of the square duct is also given.

Draw the following:
2.1 the complete FRONT view clearly showing the curve of interpenetration. Show all hidden detail.
2.2 the complete TOP view.
2.3 the surface development of the square duct A. Show all construction.

ASSESSMENT CRITERIA
You will be assessed on your ability to do the following:
- draw the complete front view 16
- draw the complete top view 4
- show necessary centre lines and construction 6
- draw the surface development 11

ANSWER SHEET 2

EXAMINATION NUMBER

PLEASE TURN OVER
The figure shows the three views of a proposed addition to an existing dwelling. Draw a neat two-point perspective view of this addition.

PP - Picture Plane
HL - Horizon Line
GL - Ground Line
SP - Station Point

Show the wall thickness where applicable.
Neatly label the vanishing points RVP and LVP.
SHOW NO HIDDEN DETAIL.

ASSESSMENT CRITERIA
You will be assessed on your ability to do the following:
- determine and label the vanishing points 2 marks
- determine the two-point perspective view 39 marks

EXAMINATION NUMBER

PLEASE TURN OVER
Answer this question on ANSWER SHEET 4. Use a scale of 1:50.
All drawings must comply with SANS 10143.

The following is given:
- An incomplete schematic floor plan of an ABLUTION BLOCK
  - Window and door positions
  - Perimeter dimensions and cutting plane A-A
  - Plumbing fixtures and an external sewerage line
- An incomplete schematic elevation
  - Window position, ceiling height, ground level and floor level
- Window detail, door and door frame detail
- Incomplete foundation detail
- Roof detail, including parapet, batten and truss detail

Draw the following:
1) the complete floor plan
2) the complete sectional elevation, including the rest of the elevation that is not sectioned.

FLOOR PLAN INSTRUCTIONS
- Hatch all the external and internal walls
- Insert all window and EXTERNAL door details and label the cutting plane
- Draw the gully one brick course thick
- Label the floor plan and print the scale
- Insert the following electrical detail in the men's side of the ablation only:
  - A TWO, 40 watt fluorescent tube light fitting in the centre of the ablation
  - A single well mounted light outside the external door
  - One TWO pole switch for these two lights
- Insert the SANS plumbing symbols in the man's ablation for the following:
  - A water closet (toilet), wall-mounted urinal and two wash basins
  - Piping showing the toilet and urinal linking to the external sewerage line
  - Piping showing the 2 basins linking to the gully and from the gully to the external sewerage line

SECTIONAL ELEVATION INSTRUCTIONS
- Complete the foundation details
- Insert all floor slab details:
  - Use 10 mm screed
  - Use 150 mm compacted hardcore filling
  - Label the ground level. damp proof course and floor level
  - Draw in the sectional window in the space indicated
- Use ONE, 242 x 75 concrete lintel above the window
- Use 150 x 100 quarry tile window sill
- SHOW the window frame detail and label the damp proof course
- Complete and draw the roof details showing the truss.
  - The whole roof structure uses the following:
  - 114 x 38 rafters and 100 x 100 truss plates for the truss
  - FOUR 76 x 38 purlins spaced at 3.042 centres
  - TWO, 121 x 38 wall plates
  - THREE 38 x 38 ceiling battens spaced at 1004 centres
  - Steel sheeting for the roof and a 30° pitch
- 9 mm Gypsum ceiling boards
- Complete all hatching detail and label the sectional elevation
- Show the visible plumbing using SANS symbols for the toilet and urinal
- Draw the rest of the elevation that is not sectioned
  - Show the large board on the gable end
  - Show the entrance screeding walls and the concrete step
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SEWERAGE LINE ○