



**higher education  
& training**

Department:  
Higher Education and Training  
**REPUBLIC OF SOUTH AFRICA**

**T210(E)(M29)T**

**NATIONAL CERTIFICATE**

**BUILDING DRAWING N2**

**(8090012)**

**29 March 2019 (X-Paper)**

**09:00–13:00**

**REQUIREMENTS: ONE A2 drawing sheet.**

**Drawing instruments and calculators may be used.**

**This question paper consists of 5 pages.**

**DEPARTMENT OF HIGHER EDUCATION AND TRAINING**  
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NATIONAL CERTIFICATE  
BUILDING DRAWING N2  
TIME: 4 HOURS  
MARKS: 100

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**INSTRUCTIONS AND INFORMATION**

1. Answer ALL the questions.
  2. Read ALL the questions carefully.
  3. Number the answers according to the numbering system used in this question paper.
  4. Use BOTH sides of the drawing paper.
  5. ALL the drawings must be drawn to the required scale.
  6. ALL the drawings must be fully dimensioned and neatly finished off with descriptive titles and notes to conform with the SANS Recommended Practice for Building Drawings.
  7. A balanced layout must be maintained.
  8. Use your discretion where dimensions are not given.
  9. ALL work you do not want to be marked must be clearly crossed out.
  10. Work neatly.
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### QUESTION 1: BRICKWORK

Draw, to scale 1:10, the isometric views of a one-brick wall three courses high and the alternate plan course projected upwards. The wall is 990 mm long and is built in Flemish bond. Show a stopped end on both sides.

Label the queen closer and three-quarter bat and insert dimensions of the length and width of the wall.



[15]

### QUESTION 2: FOUNDATION AND FLOORS

A dwelling has two rooms separated by a half-brick wall, resting on a one-and-a-half brick foundation wall TEN courses high. Both rooms have suspended timber floors. The half-brick wall is plastered on both sides. Over site concrete is cast below both floors and rests on the concrete foundation.

Draw, to scale 1:10, a vertical section through the half-brick wall and clearly show the position of the following with labels:

- 700 mm x 230 mm concrete foundation
- 75 mm over site concrete resting on the concrete foundation
- One-and-half-brick foundation wall 750 mm high
- Half-brick wall
- 114 mm x 38 mm wall plates
- 114 mm x 38 mm floor joists
- 100 mm x 22 mm tongue and groove floor boards
- 19 mm plaster
- 76 mm x 22 mm skirting
- DPC
- Ant guard x 2
- Insert Dimensions for the following: concrete foundation and foundation wall height and width of half brick wall.



[25]

### QUESTION 3: ARCHES

Draw, to scale 1:10, the front elevation of a flat-gauged arch 300 mm deep with a span of 1 000 mm. Show ALL construction lines and surrounding brickwork built in English bond, with a stopped end 440 mm at the right-hand side of the opening. The skew backs are at angle of  $60^{\circ}$ . The Soffit to be arched to a rise of 1 mm per 100 mm of span width. Surrounding brickwork need not be shown on the left-hand side of the opening.


Label the skewback, intrados, extrados, stopped end and chamber; and include the dimensions of the opening and the Skewback angle.

[18]



### QUESTION 4: MASONRY

Draw, to scale 1:10, a vertical section through each of the following 300 mm copings resting on one-brick walls :

- 4.1 Saddle-back coping with the centre 100 mm thick and sides 75 mm thick
- 4.2  Segmental coping with the centre 100 mm thick and sides 75 mm thick
- 4.3 Feather-edge coping with one side 100 mm thick and the other 75 mm thick

Label and insert the given dimensions for each drawing.

[12]

### QUESTION 5: ROOF CONSTRUCTION AND ROOF COVERING

A dwelling that has one-brick thick external walls has a roof with a slope of  $45^{\circ}$  and the sprocket eaves with a slope of  $30^{\circ}$ . The roof has open eaves and is covered by Marseilles pattern tiles fixed on 50 mm x 50 mm battens spaced at 345 mm centre to centre. The roof has an overhang of 400 mm.

Draw, to scale 1:5, a vertical section through the roof eaves and show the position of the following with labels:

- Part of one-brick wall
- Beam filling
- 114 mm x 38 mm rafter
- 114 mm x 38 mm sprocket
- 114 mm x 75 mm wall plate
- 75 mm x 75 mm tilting fillet
- 50 mm x 50 mm battens
- 175 mm x 32 mm fascia board
- 420 mm x 250 mm Marseilles pattern tiles
- Dimensions of the batten spacing, overhang, roof and sprockets pitches.



[17]

**QUESTION 6: PLUMBING**

Draw, to scale 1:5, a vertical section through a 220 mm wide lead-lined valley gutter of a roof covered with corrugated iron sheeting. Show the positions of following with labels:

- 114 mm x 38 jack rafters
- 150 mm x 38 valley rafter
- 150 mm x 75 mm fillets
- 75 mm x 50 mm purlins
- 25 mm Boarding
- Corrugated iron sheet
- Lead lining
- Valley gutter
- Insert the Dimension of the gutter width

**[13]****TOTAL: 100**