



higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

**T70(E)(N28)T
NOVEMBER EXAMINATION
NATIONAL CERTIFICATE
BUILDING AND STRUCTURAL CONSTRUCTION N4**

(8060004)

**28 November 2016 (X-Paper)
09:00–13:00**

REQUIREMENT: One A2 drawing paper.

This question paper consists of 5 pages.

DEPARTMENT OF HIGHER EDUCATION AND TRAINING
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NATIONAL CERTIFICATE
BUILDING AND STRUCTURAL CONSTRUCTION N4
TIME: 4 HOURS
MARKS: 100

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. Write neatly and legibly.
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QUESTION 1

Draw to scale 1 : 10 a vertical section through a two-brick thick foundation wall that forms part of a basement.

The top surface of the foundation measures 1 645 mm below ground level with a 150 mm thick subconcrete floor resting on top of the foundation. The floor surface is steel floated with a 20 mm thick end cover (curved) at all wall perimeters.

The foundation wall is reduced by means of plinth brick to a 385 mm thick cavity wall from 3 courses above ground level. The outer skin of the wall is constructed of face brick from two courses below ground level.

The 150 mm x 38 mm joists of the suspended timber floor, with 150 mm x 22 mm tongue-and-groove joint floor boards, are supported by a seven-course high brick steeper wall, placed 55 mm from the inner face of the foundation wall. The basement is plastered on the inner wall surface.

[20]**QUESTION 2**

- 2.1 Describe or illustrate your understanding of the expression *racking back*. (4)
- 2.2 State FIVE uses of a concrete foundation in a building. (5)
- 2.3 Draw to scale 1 : 10, the isometric view of a one-and-a-half brick cavity wall with a half-brick outer skin and one-brick inner skin, built according to stretcher bond and one side with stopped end. Show four courses. (7)

[16]**QUESTION 3**

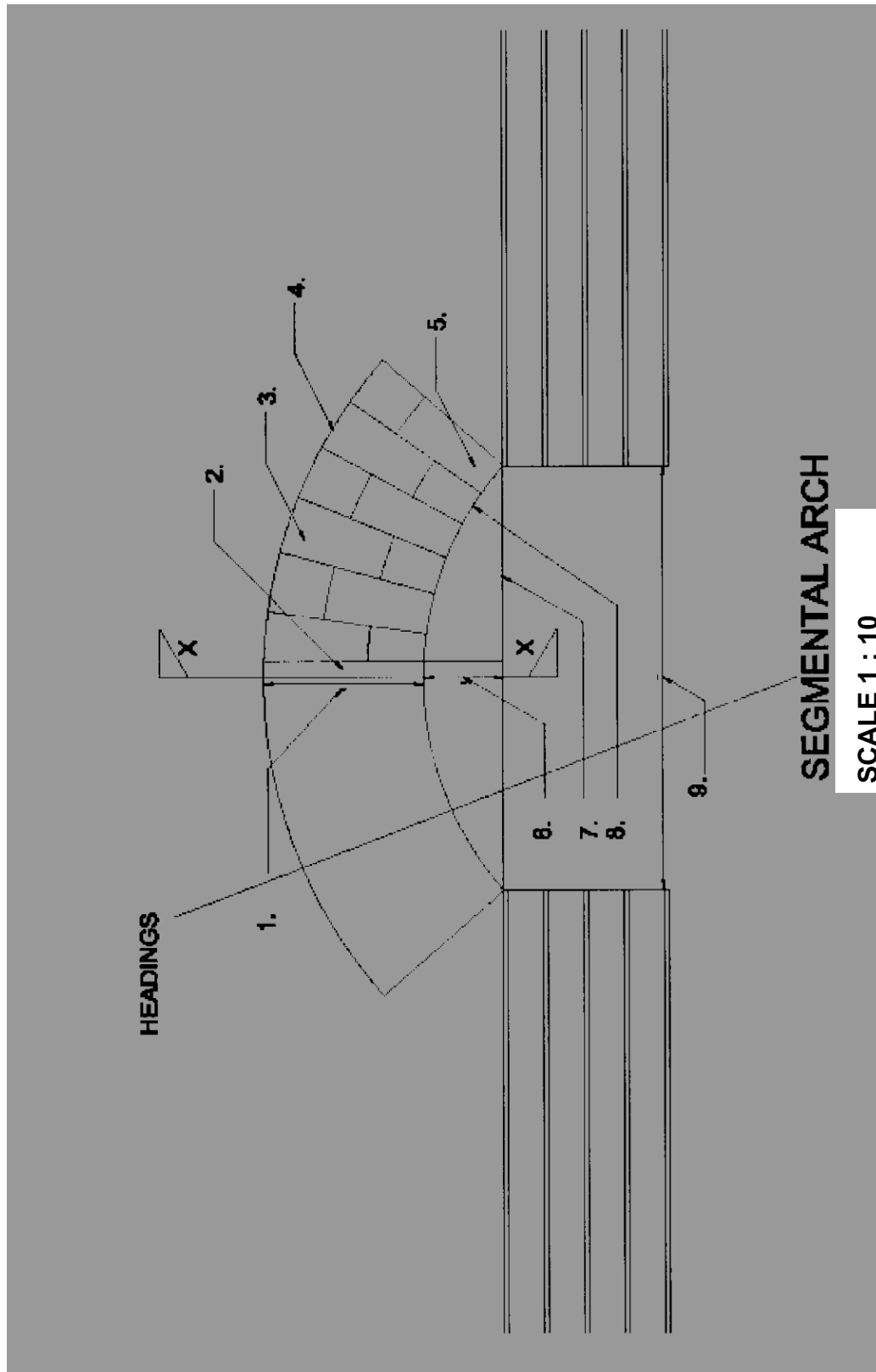
Draw to scale 1 : 5 the elevation of the foot of a 10 m span steel roof truss resting on a 380 mm cavity wall and the connecting details between the truss and the wall. The truss is constructed of 60 mm x 50 mm x 6 mm x 5,16 kg/m angle cleats and 12 mm thick gusset plate. Show the position of the holes to receive the M20 mild steel bolts.

The roof covering consists of 'big fix' corrugated iron sheeting and has a 75 mm overhang. The cleat rests on a 330 mm x 220 mm x 10 mm pressure plate and is joined to the wall by means of M16 x 80 Lewis bolts.

[20]

QUESTION 4

Label the parts indicated on the drawing below. Write only the answer next to the question number (1–9) in the ANSWER BOOK.



[9]

QUESTION 5

Draw to scale 1 : 1 a vertical section through the window, with 3 mm thick glass and show the complete detail at the glazing bar and prefabricated concrete lintel at the head and the position of the amp-proofing at the bottom of the frame. Only a part of the wall at the head and at the bottom of the window frame must be shown.

[15]

QUESTION 6

6.1 Draw to scale 1 : 10 the alternate plan courses of a two-brick thick right-angled corner built to English bond. The two walls, each provided with stopped ends must project 880 mm and 440 mm from the inner corner. Clearly show the arrangements of bricks at the stopped ends.

(10)

6.2 Draw to scale 1 : 5 a vertical section through a door opening with a double rebated steel door frame suitable for a one-brick wall showing all part names.

(10)

[20]

TOTAL: 100