



higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

T60(E)(N23)T

NOVEMBER EXAMINATION

NATIONAL CERTIFICATE

BUILDING AND CIVIL TECHNOLOGY N3

(11010273)

23 November 2016 (X-Paper)

09:00–12:00

This question paper consists of 7 pages.

**DEPARTMENT OF HIGHER EDUCATION AND TRAINING
REPUBLIC OF SOUTH AFRICA**

**NATIONAL CERTIFICATE
BUILDING AND CIVIL TECHNOLOGY N3**

TIME: 3 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

- 1.1 Complete the following sentences by filling in the missing word(s). Write only the word(s) next to the question number (1.1.1–1.1.8) in the ANSWER BOOK.
- 1.1.1 The timbering of trenches is referred to as ... in the concrete.
- 1.1.2 The ... are placed vertically against the face of the ground.
- 1.1.3 The horizontal timber members which are fixed across the vertical ones to support them are called ...
- 1.1.4 The other horizontal members which are placed across the trench are the ...
- 1.1.5 ... tighten or slacken the timbering.
- 1.1.6 Timbering in loose soil has no gaps between the sheeting and is thus called ...
- 1.1.7 For ... soil the sheeting is placed in a horizontal direction.
- 1.1.8 The purpose of timbering is to perform planking and ... (8 x 1) (8)
- 1.2 Give FOUR functions of the health and safety committee. (4)
- 1.3 What are FOUR residual unfair labour practices? (4)
- [16]**

QUESTION 2

- 2.1 Name FOUR methods for foundation checks. (4)
- 2.2 Draw a sketch to indicate the well points drilled into the ground strata. (4)
- 2.3 List FOUR types of foundations. (4)
- 2.4 Give FOUR reasons why underpinning could be necessary. (4)
- [16]**

QUESTION 3

3.1 Write down the following abbreviations in full:

3.1.1 FV

3.1.2 DG

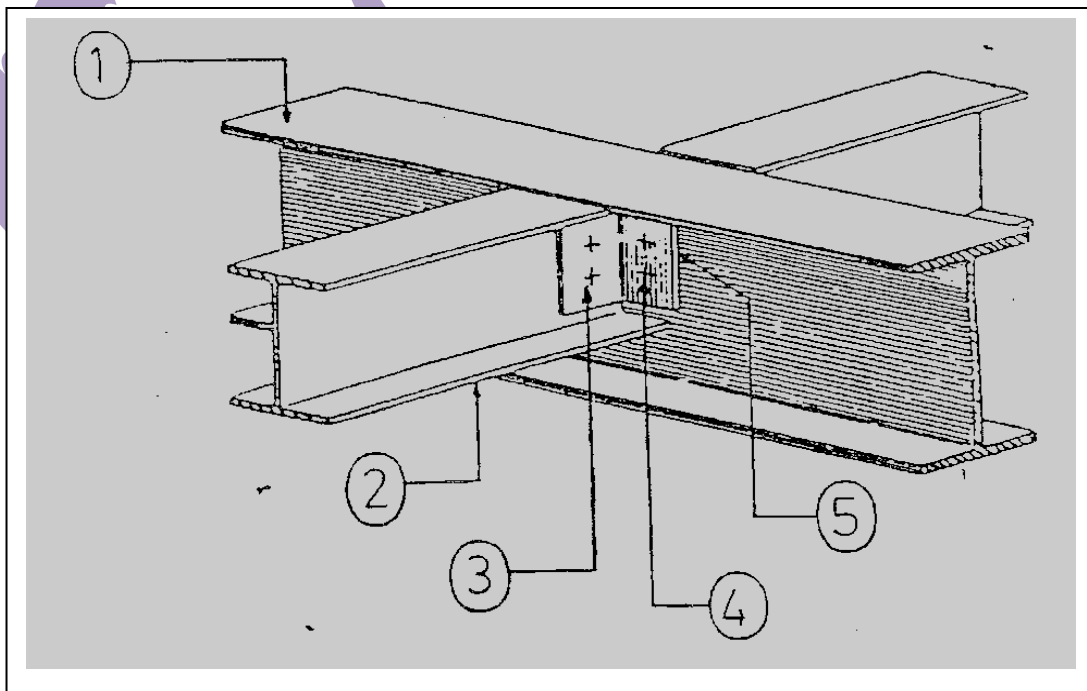
3.1.3 RE

3.1.4 GT

(4 x 1) (4)

3.2 The diagram below shows a structural steel beam-to-beam connection.

Identify the different parts. Write only the word(s) next to the number (1–5) in the ANSWER BOOK.



(5)

3.3 State FOUR disadvantages of knots timber.

(4)

3.4 State THREE advantages of painting on brickwork.

(3)

[16]

QUESTION 4

4.1 Briefly explain the following electrical devices used in buildings:

4.1.1 Electricity

4.1.2 Distribution board

4.1.3 Electrical wall plug

4.1.4 Main distribution box

4.1.5 Earth-leakage relay

(5 x 2) (10)

4.2 Write down what is meant by the following SABS grading symbols:

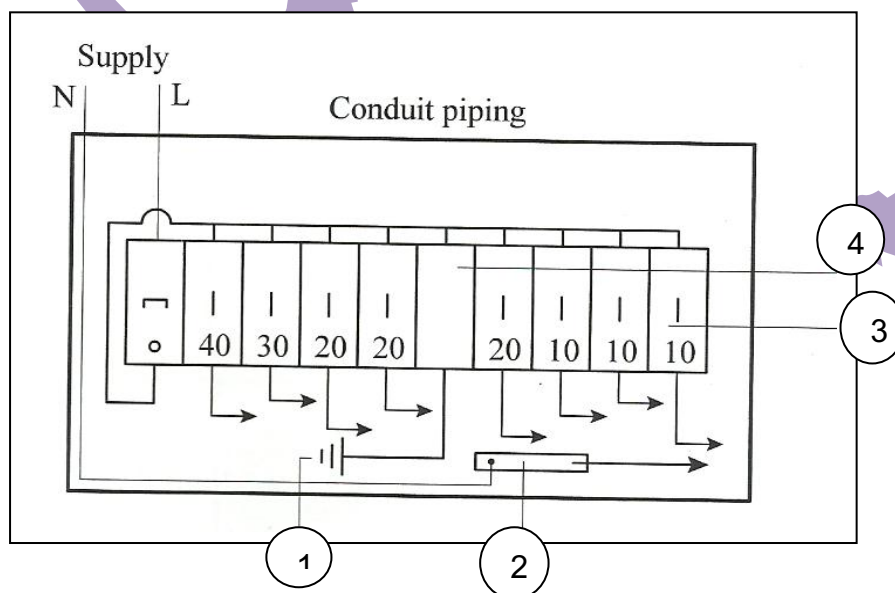
4.2.1 V5

4.2.2 M5

(2 x 1) (2)

4.3 The diagram below shows an internal distribution board.

Identify the different parts. Write only the word(s) next to the number (1–4) in the ANSWER BOOK.



(4)
[16]

QUESTION 5

5.1 Draw a vertical section through the top section of a wall panel and clearly show the following:

5.1.1 Ground

5.1.2 Dado rail

5.1.3 Cornice

5.1.4 Top rail

5.1.5 Quadrant

(8)

5.2 A wall in an office has been panelled with new timber. The panelling must be varnished.

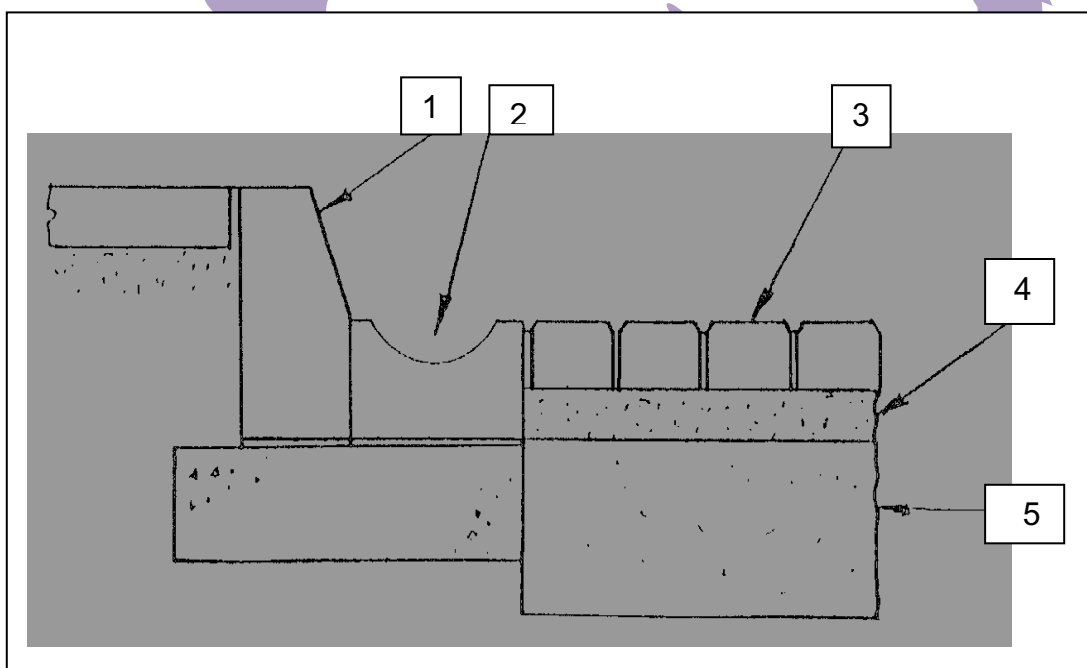
How will you go about preparing and varnishing the timber?

(8)
[16]

QUESTION 6

6.1 The diagram below shows a vertical section of a road.

Identify the different parts. Write only the word(s) next to the number (1–5) in the ANSWER BOOK.



(5)

- 6.2 A one-brick wall 25 m long and 3 m high has to be built. The wall has an opening of 2 m wide and 2 m high. The cost of labour is R300/ m².

NOTE: Half-brick walling (50 bricks/m²)
1 m³ of sand = 1 000 kg (tonne)

Calculate the following:

6.2.1 The area of the wall

6.2.2 The number of bricks required

6.2.3 The amount of sand required

6.2.4 The labour cost

(4 x 3) (12)

- 6.3 The road consists of different layers of different materials.

State THREE different layers of road.

(3)
[20]

TOTAL: 100