higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

ARCHITECTURAL GRAPHICS AND TECHNOLOGY

(Second paper)

NQF LEVEL 2

(12050622)

8 December 2020 (X-paper)
09:00–12:00

This question paper consists of 7 pages.

393Q2N2008

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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 Various options are given as possible answers to the following questions. Choose the answer and write only the letter (A–D) next to the question number (1.1.1–1.1.5) in the ANSWER BOOK.

1.1.1 A concrete mix consists of … with a strength of 10 MPa after 28 days.

A water, cement, sand and aggregate
B water, cement and sand
C cement, sand and aggregate §
D water, sand and aggregate

1.1.2 A soldier course can be laid … in relation to another course of bricks.

A only horizontally
B only perpendicularly
C horizontally or perpendicularly
D perpendicularly

1.1.3 Lasers are being used …

A less often to take measurements and to check levels.
B more often to take measurements only.
C more often to take measurements and to check levels. §
D more often to check levels only.

1.1.4 A precast commercial lintel over an opening wider than 3 m must be designed by a …

A draughtsperson.
B architect.
C geotech engineer.
D structural engineer.

1.1.5 The abbreviation DPC on a section drawing is used when identifying the …

A instruction 'Don't pour concrete.'
B site order 'Do place cover.'
C damp-proof course. §
D warning 'Don't put concrete.'

(5 × 1) (5)

1.2 Indicate whether the following statements are TRUE or FALSE by writing only 'True' or 'False' next to the question number (1.2.1–1.2.5) in the ANSWER BOOK.

1.2.1 The thickness of a strip foundation should be at least 200 mm.

1.2.2 A bed joint is a horizontal layer of mortar on which masonry units are placed.

1.2.3 A spirit level must never be hung onto a wall or kept in a toolbox after use.

1.2.4 The hollow recess found in a clay brick is known as the frog.

1.2.5 The underside of an arch is called the intrados.

(5 × 1) (5)

1.3 Complete the following sentences by choosing a word or words from the list below. Write only the answer next to the question number (1.3.1–1.3.5) in the ANSWER BOOK.

wythes; Egyptians; straight edge; English; Flemish; compaction; Greeks

1.3.1 … and consolidation are procedures applied to soil to reduce its volume by squeezing out the air and water molecules in it.

1.3.2 A collar joint is the vertical joint between masonry … or leaves of a double-leaf wall.

1.3.3 A … in the form of a steel strip is used to test the straight surface of a workpiece.

1.3.4 A/An … bond is achieved by laying the headers and stretchers in each single course alternatively to each other.

1.3.5 By 3000 BCE the … started making bricks in different colours.

(5 × 1) (5)

[15]

QUESTION 2: SIMPLE ARCHITECTURAL DRAWINGS AND SPECIFICATIONS

2.1 List FIVE things shown on a site plan. § (5)

2.2 Write each of the following abbreviations in full:

2.2.1 NGL

2.2.2 FFL

2.2.3 AB

2.2.4 OD

2.2.5 NTS

2.2.6 FI §

(6 × 1) (6)

2.3 List the FIVE documents needed for a construction project. (5)

[16]

QUESTION 3: TERMINOLOGY AND COMPONENTS OF THE CONSTRUCTION INDUSTRY

3.1 Write the abbreviation NBR in full. (1)

3.2 Explain the term *servitude*. (3)

3.3 Differentiate between *grey water* and *black* water. § (2 + 2) (4)

3.4 List THREE types of housing covered by SANS 10401. (3)

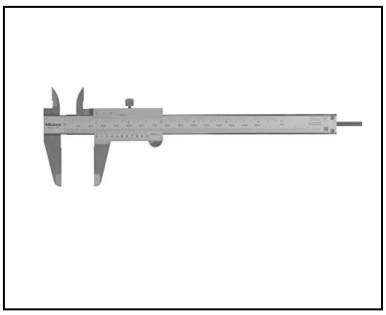
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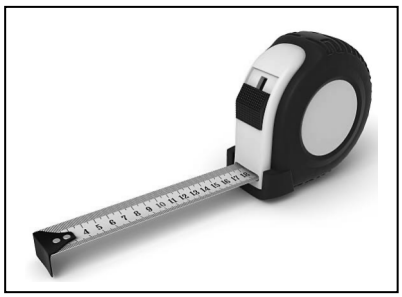
QUESTION 4: MEASURING, SETTING OUT AND LEVELLING

4. 1

A



C



§

B



D



Name the measuring equipment shown above by writing only the answer next to the letter (A–D) in the ANSWER BOOK. (4 × 1) (4)

4.2 Explain THREE limitations of using the 3-4-5 method to set out shapes. (3)

4.3 Explain FOUR possible deficiencies of a water level used for levelling. § (4)

4.4 State THREE ways to take care of and store a builder's line. (3)

4.5 Explain THREE instances where an aluminium staff is unsuitable for levelling. (3)

[17]

QUESTION 5: FOUNDATIONS

5.1 State FIVE functions of a foundation. (5)

5.2 Name FOUR types of poor soils. § (4)

5.3 Explain the implications of a foundation that is inadequate or not suited for the soil conditions of a rock surface. (3)

5.4 Explain TWO purposes of digging trenches and driving in steel pegs with a tilting level. (2 × 2) (4)

[16]

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QUESTION 6: BRICKWORK LINTELS AND ARCHES

6.1 List the FIVE standard wall thicknesses as specified in the national standards. (5)

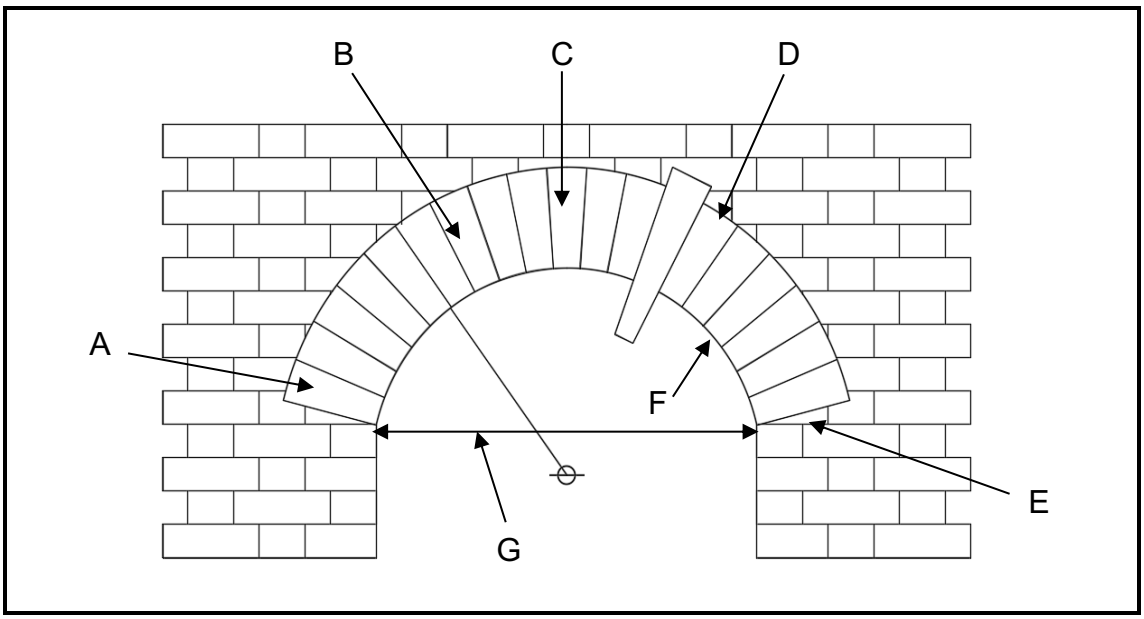
6.2 Explain why some terms are no longer valid and therefore excluded from the prescribed national standards. (6)

§

6.3 State the function of a lintel. (3)

6.4 List FOUR types of concrete lintels used in South Africa. (4)

6.5



Name the parts of the semicircular arch shown above by writing only the answer next to the letter (A–G) in the ANSWER BOOK. (7 × 1) (7)

§

[25]

TOTAL: 100

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