higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

ARCHITECTURAL GRAPHICS AND TECHNOLOGY
NQF LEVEL 2
(Second paper)

(12050622)

15 November 2022 (Y-paper)
13:00–16:00

Calculators may be used.

This question paper consists of 5 pages.

Copyright reserved

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. All drawings, including the candidate information, must be done in pencil.
5. All drawing work must comply with the relevant SANS (SABS) recommended codes.
6. Brick sizes should be taken as 220 × 110 × 75 mm.
7. All the abbreviations and symbols must comply with the latest National Building Regulations and all relevant SANS (SABS)-codes.
8. A balanced layout is very important, and candidates will be penalised for poor planning.

Copyright reserved

QUESTION 1

1.1 Indicate whether the following statements are TRUE or FALSE. Choose the answer and write only 'True' or 'False' next to the question number (1.1.1–1.1.10) in the ANSWER BOOK.

1.1.1 The terminology used in construction and building includes building line, servitude, agreement certificate, registered home builder, owner-builder, and national building regulations.

1.1.2 Successive intervals can be measured from a zero mark.

1.1.3 The setting out of instruments cannot be checked and adjusted for accuracy.

1.1.4 A right-angled corner can be set out using an optical square and a plumb bob.

1.1.5 Levels cannot be transferred, and height differences cannot be measured with a water level.

1.1.6 A level can be checked for accuracy by means of a two-peg test and a line of sight can be adjusted to be truly horizontal.

1.1.7 An optical theodolite is used to set out and measure vertical and horizontal angles.

1.1.8 It is not important to do a site soil classification or geotechnical investigation before building a house.

1.1.9 Bricks and blocks are identical masonry units.

1.1.10 A stretcher bond and an English bond look the same and are done in the same way.

(10 × 1) (10)

1.2 Write down the abbreviation for the following:

2.2.1 Cast Iron

2.2.2 Access Opening

2.2.3 Invert Level

2.2.4 Inspection Chamber

2.2.5 Stand Pipe

(5 × 1) (5)

[15]

QUESTION 2

Define the following terms used in construction and building:

2.1 Owner-builder

2.2 Registered home builder

2.3 Contractual agreement

2.4 Roof tiles

2.5 Truss

(5 × 2) **[10]**

QUESTION 3

3.1 Explain how to set up a theodolite correctly over a peg by using an optical plummet. (6)

3.2 Explain the correct care and storage of a spirit level. (4)

3.3 Explain the 3-4-5 method to set out shapes. (4)

3.4 Explain the concepts *levelling* and *benchmark*. (6)

[20]

QUESTION 4

4.1 Write down SIX concerns to take into consideration when choosing a foundation type. (6)

4.2 Describe the dangers of building a structure on non-compacted fill. (5)

4.3 Explain the importance of doing a site soil classification before building a house. (4)

4.4 Write down FIVE advantages of strip foundations. (5)

[20]

Copyright reserved

QUESTION 5

5.1 Give FIVE advantages of hollow masonry units. (5)

5.2 Explain the following terminology used in masonry:

5.2.1 Cross joint

5.2.2 Control joint

5.2.3 Quoins

5.2.4 Header course

5.2.5 Stretcher course

(5 × 2) (10)

5.3 Draw a cross-sectional view of a strip foundation footing with double-leaf brick work to a scale of 1:10. Use your own dimensions, which must comply with standards.

Clearly show the following detail on the drawing:

- Minimum depth of excavation
- Thickness of concrete foundation
- Width of concrete foundation
- Foundation brickwork including a face brick plinth
- Damp-proof course
- Damp-proof membrane
- Backfill including the compaction specifications
- Surface bed specifications
- Screed
- Minimum depth dimension between the NGL and DPC (20)

[35]

TOTAL: 100

Copyright reserved