higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

ARCHITECTURAL GRAPHICS AND TECHNOLOGY
(Second paper**)**
NQF LEVEL 3

(12050633)

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

REQUIREMENTS: A4 drawing sheets

Calculators may be used.

This question paper consists of 6 pages.

297Q2N2215

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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. Take brick sizes as 220 mm × 110 mm × 75 mm.
5. All drawing work must comply with the relevant SANS (SABS) recommended codes.
6. All abbreviations and symbols must comply with the latest National Building Regulations and all relevant SANS (SABS) codes.
7. A balanced layout is very important, and candidates will be penalised for poor planning.
8. Work neatly.

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QUESTION 1

1.1 Explain what is meant by *project activities*. (2)

1.2 Write down ONE advantage and ONE disadvantage of the following communication methods.

1.2.1 Meetings

1.2.2 Management reports

1.2.3 Budgets and cash flow statements

1.2.4 Project schedules

(4 × 2) (8)

[10]

QUESTION 2

2.1 Explain the meaning of a *bulk factor*. (4)

2.2 Calculate how many floors a building with a bulk factor of 8 and a permissible coverage of 50% on a 200 m² stand would have. (6)

2.3 Explain what a sewer connection is. (2)

2.4 Explain the difference between a centre line and a border line. (2)

[14]

QUESTION 3

3.1 How many minutes are there in 10 degrees and how many seconds are there in 20 minutes? (2)

3.2 Convert the following measurements into meters:

3.2.1 59 Cape feet (3)

3.2.2 229’8” English feet (2)

3.3 Describe why a detail drawing has to be made of a construction before it is erected. (3)

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3.4 Define the following terms:

3.4.1 Backfill

3.4.2 Battens

3.4.3 Surface bed

3.4.4 Under-tile plastic

3.4.5 Foundation brickwork

(5 × 1) (5)

3.5 An engineer must make sure that notes to drawings fully describe the construction methods and materials to be used. These notes should be grouped and not scattered all over. Write down TEN possible types of groups or areas that could be covered in notes to drawings. (10)

3.6 Draw a freehand sketch of a strip foundation with a double-leaf brickwork foundation wall in good proportion on an A4 sheet. The detail drawing must show the following:

- Strip foundation 600 mm × 200 mm
- DPC
- Brick force every 3 courses
- 25 mm Screed
- 75 mm Concrete slab
- 250 micron DPM
- Hardcore layer 150 mm
- Foundation wall (substructure)
- Dimension 150 mm minimum between NGL and DPC
- Dimension 450 mm minimum above strip foundation and NGL
- Plaster on interior wall (16)

[41]

QUESTION 4

4.1 Give the truss spacing and batten or purlin sizes for the following roof covers.

4.1.1 Natural slate

4.1.2 Metal-ribbed sheets

(2 × 2) (4)

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4.2 Give TWO advantages of the following roof types:

4.2.1 Gable-to-gable roof

4.2.2 Hip roof

4.2.3 Lean-to roof

4.2.4 Flat roof

4.2.5 Conical roof

(5 × 2) (10)

4.3 Explain the following terms:

4.3.1 Kingpost

4.3.2 Hip

4.3.3 Members

4.3.4 Dead load

4.3.5 Chord gable-to-gable roof

(5 × 1) (5)

4.4 Discuss the application of flashings under the National Building Regulations. (2)

4.5 Write down FOUR rules regarding rafter spans in the National Building Regulations. (4)

[25]

QUESTION 5

Indicate whether the following statements are TRUE or FALSE by writing only 'True' or 'False' next to the question number (5.1–5.10) in the ANSWER BOOK.

5.1 Flush doors are normally used for the outer doors of dwellings.

5.2 The primary function of an external door is to keep the elements out and make a building secure.

5.3 A window built in such a way that the sash can open out like a door, is referred to as a casement.

5.4 A door opening doesn't need to be wide enough to allow the easy passage of equipment and goods.

5.5 The sash of a tilt-and-turn window can be tilted into a room to allow for the cleaning of the exterior surface.

5.6 Laminated glass is not used to enhance safety and security or reduce noise in a room.

5.7 Glazing refers to the glass in a window or door panel.

5.8 A concrete lintel is also referred to as a header.

5.9 A transom is normally used for aesthetic purposes or when additional light is needed.

5.10 Doorframes are used for their aesthetic value to make openings look pretty.

(10 × 1) **[10]**

TOTAL: 100

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