higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

ARCHITECTURAL GRAPHICS AND TECHNOLOGY

NQF LEVEL 3

(Second paper)

(12050633)

24 November 2023 (Y-paper)
13:00–16:00

This question paper consists of 6 pages.

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DEPARTMENT OF HIGHER EDUCATION AND TRAINING
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ARCHITECTURAL GRAPHICS AND TECHNOLOGY
NQF LEVEL 3
(SECOND PAPER)
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. Start each question on a new page.
5. Take brick sizes as 220 × 110 × 75 mm.
6. All drawing work must comply with the relevant SANS (SABS) recommended codes.
7. All abbreviations and symbols must comply with the latest National Building Regulations and all relevant SANS (SABS) codes.
8. Make drawings, sketches and diagrams in pencil and use only a black or blue pen for other answers.
9. Write neatly and legibly.

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QUESTION 1

1.1 List, in sequence, the FIVE components of a general communication process. (5)

1.2 Give FIVE disadvantages if a project manager does not look at scope-of-work documents. (5)

1.3 Tabulate ONE advantage and ONE disadvantage of each of the following communication methods:

1.3.1 Pictures and drawings

1.3.2 Feedback and monitoring work

1.3.3 Management reports

(3 × 2) (6)
[16]

QUESTION 2

2.1 Explain the term *bulk factor* in a paragraph. (4)

2.2 Determine how many floors a building with a bulk factor of 8 would have if the permissible coverage is 50% on a stand of 200 m². (4)

2.3 Give TWO scales commonly used for a site plan. (2)

2.4 Create and complete a zoning regulation table with the following headings:

- Type of zone
- Building permitted

(4)
[14]

QUESTION 3

3.1 Indicate whether the following statements are TRUE or FALSE by writing only 'True' or 'False' next to the question number (3.1.1–3.1.10) in the ANSWER BOOK.

3.1.1 A surface bed is the concrete structure underneath the floor finish.

3.1.2 Wall plates are usually made of steel.

3.1.3 Superstructure brickwork includes the walls, windows and doors that form part of a house as well as the brickwork above the foundations.

3.1.4 Section drawings show where the house is cut in detail.

3.1.5 Foundation brickwork is not part of the building or wall that supports the superstructure.

3.1.6 Backfill is the replacement of earth into a trench or pier excavation around and against a basement foundation.

3.1.7 Design specifications for a waffle foundation depends on proper ground analyses.

3.1.8 A DPC is used under windowsills to protect walls against damp.

3.1.9 A soffit is the underside of the roof overhang.

3.1.10 Ceiling panels are nailed onto the brandering, which is nailed onto the tie beams.

(10 × 1) (10)

3.2 Explain the term *construction drawings* or *working drawings*. (10)

3.3 Give SEVEN examples of schedules used in a construction project. (7)

3.4 Explain the drawing notes *prime cost sums* and *provisional sums*. (3 + 3) (6)

[33]

QUESTION 4

4.1 Choose a term from COLUMN B that matches a description in COLUMN A. Write only the letter (A–E) next to the question number (4.1.1–4.1.5) in the ANSWER BOOK.

COLUMN A		COLUMN B	
4.1.1	Building ends in a sloped roof	A	chord
4.1.2	Truss end joint where the top and bottom chords connect	B	heel
4.1.3	Main member that forms the outline of a truss	C	joist
4.1.4	Beam that supports a floor or ceiling	D	mono-pitched truss
4.1.5	Truss with only one rafter slope	E	hip

(5 × 1) (5)

4.2 Roof designs are reliant on scientific calculations in some circumstances and regulations in other. This is done according to classification criteria.

4.2.1 Give the TWO criteria for roof design. (2)

4.2.2 Which THREE factors would influence roof design according to SANS10400? (3)

4.3 Tabulate TWO advantages and TWO disadvantages of bolted roof trusses.
(2 + 2) (4)

4.4 Give the centre-to-centre truss spacing in millimetres for each of the following types of roof covering:

4.4.1 Clay tiles

4.4.2 Metal tiles

4.4.3 IBR sheeting

(3 × 1) (3)

4.5 Describe each of the following types of trusses:

4.5.1 Cut-off (bobtail, stub-end) (2)

4.5.2 Piggyback (3)

4.5.3 Parallel chord (3)

[25]

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QUESTION 5

5.1 Explain each of the following door terms:

5.1.1 Mortise lock

5.1.2 Mullin

5.1.3 Panel

5.1.4 Top rail

(4 × 1) (4)

5.2 Draw, in good proportion, a freehand sketch of a timber doorframe and show the following on the drawing:

- Transom
- Head jamb
- Stile
- Fanlight
- Hoop-iron anchors
- Anchor pin

(6 + 2) (8)

[12]

TOTAL: 100

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