higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

ARCHITECTURAL GRAPHICS AND TECHNOLOGY

(First paper)

NQF LEVEL 3

(12050633)

09 November 2022 (Y-paper)
09:00–13:00

Calculators may be used.

This question paper consists of 5 pages.

183Q1N2209

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TIME: 4 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 drawing work must be done on computer. Candidate information must also be included.
5. All drawing work must comply with the relevant SANS (SABS) recommended codes.
6. The brick size should be taken as 220 mm × 110 mm × 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.
9. All drawings must be done on A4 sheets.
10. All drawings must be done on a computer with CAD software.
11. All computers have a PDF package for saving drawings on a flash drive or for printing.
12. Work neatly.

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QUESTION 1

As a draughtsperson, you are required to make, in good proportion, a CAD drawing of a single-wall foundation.

The drawing must clearly show the following:

- Strip Foundation 200 mm × 400 mm
- DPC (damp-proof course)
- 25 mm Screed
- 85 mm Concrete slab
- 150 mm Hardcore filling
- 250-micron DPM
- 6 Courses of double brick wall below the concrete slab
- Plaster 10 mm on both sides of the wall
- Skirting

Insert a suitable title and scale beneath the drawing. **[15]**

QUESTION 2

Use a scale of 1:10 to produce a detailed cross-sectional view of an eaves detail clearly showing the intersection between rafters and the top of the wall. Above all openings, a continuous ring beam is cast in the cavity of an expanded metal closure.

The detail drawing must show the following:

- Wall plate
- Double wedges to level the trusses on top of the wall plate
- Rafter at a pitch of 26º
- Purlins
- Concrete roof tiles
- Facia board
- Gutter
- Ceiling brandering
- Rhino board ceiling and cornice
- Insert dimensions, specifications, annotations and instructions on the drawing.

NOTE: For the purpose of this cavity, the brick size is: 220 mm × 110 mm × 75 mm.

Insert a suitable title and scale beneath the drawing. **[20]**

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QUESTION 3

Draw to a scale of 1:10 a cross section of a waffle raft foundation with an edge beam. The detailed scale drawing must clearly show the following:

- Depth of excavation
- Thickness of the concrete raft 150 mm
- DPC (damp-proof course)
- DPM (damp-proof membrane)
- Compaction fill 150 mm
- 25 mm screed
- The superstructure consists of cavity wall brickwork. The cavity is filled with concrete
- Wall ties every fourth course
- Weeping hole

Insert dimensions, specifications, annotations and instructions on the drawing.

NOTE: The brick size is 220 mm × 110 mm × 75 mm and the cavity between the external and internal walls is 50 mm.

Insert a suitable title and the scale beneath the drawing. **[20]**

QUESTION 4

4.1 Draw, in good proportion, a valley detail for a tiled roof. Insert a suitable title beneath the drawing.

Insert the following in the cross-sectional view:

- Jack rafter
- Tile fillet
- Splay cut tile
- Gutter bearer
- Gutter board
- Valley rafter (15)

4.2 Draw to a scale of 1:50 a Howe roof truss with a span of 8 m and a pitch of 23º. Insert suitable title and scale beneath the drawing.

Insert the following in the view:

- Effective span
- Clear span
- Heel
- Rafter
- Tie beam
- King post
- Web member
- Bay
- Nodes
- Apex

(15)
[30]

QUESTION 5

Draw, in good proportion, a vertical section of a typical modified BS window. Insert a suitable title beneath the drawing.

Insert the following in the section view:

- Putty
- Glass
- 95 mm × 75 mm head
- Plastic draught sealer
- 41 mm × 46 mm sash framing
- 134 mm × 70 mm sill

[15]

TOTAL: 100

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