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)

7 Maart 2018 (X-Paper)
09:00–13:00

REQUIREMENTS: **Cover Folder BOE 8/15**
Computer with a CAD program
A3 and A4 drawing paper

Calculators may be used.

This question paper consists of 5 pages.

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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 questions must be answered on the A4 drawing paper unless specified to use the A3 drawing paper.
5. Use only ONE side of the drawing paper to plot or print the drawings.
6. Each drawing must be plotted or printed on a separate DRAWING SHEET.
7. The QUESTION NUMBER must appear at the top LEFT-HAND corner of EACH sheet.
8. All drawing work must comply with the relevant SANS (SABS) recommended codes.
9. Brick sizes should be taken as 220 mm × 110 mm × 75 mm.
10. ALL abbreviations and symbols must comply with the latest National Building Regulations and all relevant SANS (SABS) codes.
11. A balanced layout is very important and candidates will be penalised for poor planning.
12. Work neatly.

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QUESTION 1: STRIP FOOTING FOUNDATIONS

Draw to scale 1 : 10 a strip footing foundation.

The drawing must show the following with labels:

- Concrete foundation 600 mm × 200 mm
- Brick footings, 435 mm below ground level
- Damp-proof course (DPC)
- 25 mm screed
- Concrete slab 150 mm above ground level
- Compacted hard core
- Ground level

Insert all the descriptions.

Print a suitable title and scale beneath the sectional view. **[10]**

QUESTION 2: CONSTRUCTION OF DRAWINGS

2.1 Use a scale of 1 : 100 to produce a floor plan layout (use your own discretion) on an A4 sheet of paper. Indicate the following on the drawing:

- A garage, 2 bedrooms, kitchen, dining/living room and a full bathroom
- All external, internal and wall dimensions
- Window codes
- Room titles
- Floor finishes
- Section arrows
- Title and scale
- True north (20)

2.2 Draw to a scale of 1 : 10 on a sheet of A4 paper a cross section through a waffle raft foundation with an edge thickening. The detailed scale drawing must clearly show the following:

- Depth of excavation
- Thickness of the concrete
- Foundation brickwork, including a face-brick plinth
- Damp-proof course
- Damp-proof membrane
- Backfill, including compaction specification
- Surface bed including specifications
- Start of the superstructure double-wall brickwork, plastered internally and externally
- Screed (15)

[35]

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QUESTION 3: ROOF STRUCTURES

3.1 Draw double line drawings in a good proportion, on an A4 page using CAD, for the following roof trusses:
(a) Fink truss
(b) Ridge truss
(c) Mono truss (10)

3.2 Draw a Howe roof truss to the scale of 1 : 50 at a span of 8 m with a pitch of 23°.

Insert the following terms on the view:

- Effective span
- Clear span
- Heel
- Rafter
- Tie beam
- King post
- Web member
- Bay
- Nodes
- Apex (15)

3.3 Draw in good proportion to fit an A4 paper on CAD a cross-sectional view of a ridge detail for a tiled roof.

Insert the following terms on the view:

- 38 × 38 batten
- 38 × 250 ridge board
- 60 × 60 wooden roll
- 38 × 152 rafter
- Sheet lead ridging
- Galvanised iron bale tack
- Roof tiles (10)

[35]

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QUESTION 4: WINDOWS AND DOORS

4.1 Draw a vertical sectioned detail of a timber casement window to fit an A4 sheet.

Insert the following terms on the view:

- 40 × 45 vent light framing
- Weathered transom
- 70 × 45 head
- 70 × 40 bottom rail
- 120 × 57 weathered hardwood sill
- 45 × 40 fixed light top rail and stiles (10)

4.2 Draw a purpose-made door with radial glazed top light to fit an A4 sheet using a scale of 1 : 50.

Insert the following terms on the view:

- Top rail
- Frieze rail
- Solid raised panels
- Intermediate rail
- Muntin
- Bottom rail
- Radial glazing bars (10)

[20]

TOTAL: 100

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