higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

ARCHITECTURAL GRAPHICS AND TECHNOLOGY

(First paper)

NQF LEVEL 4

(12050644)

18 November 2020 (X-paper)
09:00–13:00

REQUIREMENTS: A3 drawing sheets

This question paper consists of 6 pages and 6 diagram sheets.

015Q1N2018

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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, including candidate information, must be done in an approved CAD program.
5. Drawing work must comply with the relevant SANS (SABS) recommended codes.
6. Brick sizes should be taken as 220 mm × 110 mm × 75 mm.
7. Abbreviations and symbols must comply with the latest National Building Regulations and all relevant SANS (SABS) codes.
8. A balanced layout is important, and candidates will be penalised for poor planning.
9. Work neatly.

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QUESTION 1: STAIRCASE

Use a CAD program and draw, on an A3 drawing sheet, a detailed sectional view of a concrete escape staircase, showing at least EIGHT stairs.

Use scale 1:10.

The following annotations and dimensions must be clearly shown on the drawing:

- Riser: 160 mm maximum height
- Tread: minimum 265 mm + 50 mm going
- Concrete thickness: 250 mm
- 900 mm high handrail/balustrade with vertical balustrading min 120 mm spaces
- 100 mm newel post every 5th tread

Print a suitable title and scale beneath the sectional view.

(5 × 2) **[10]**

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QUESTION 2: BUILDING PLAN (FLOOR-PLAN LAYOUTS – LEVELS 1 AND 2)

DIAGRAM SHEET 1 and DIAGRAM SHEET 2 show conceptual architectural sketches with rough layouts of level 1 and level 2 of a double storey house. DIAGRAM SHEET 4 shows a site plan with additional key dimensions.

Use the information on the diagram sheets to make detailed drawings of the following on A3 drawing sheets using a CAD program. Clearly show the dimensions provided on the diagram sheets.

Use scale 1:100

2.1 Level 1 plan layout (DIAGRAM SHEET 1) (20)

2.2 Level 2 plan layout (DIAGRAM SHEET 2) (20)

SPECIFICATIONS

- Roof pitch: concrete roof over main structure. Waterproofing 3 degrees
- External walls: 280 mm cavity
- Internal walls 115 mm
- Garage fire wall: 230 mm
- Concrete floor level 1: 50 mm screed on 100 mm concrete on 250 mcm (μ) polythene DPM lapped and sealed with 50 mm blinding on 250 mm hardcore
- Concrete floor level 2: 250 mm reinforced concrete slab according to engineer's detail
- Windows and doors as shown on DIAGRAM SHEET 5.

Include the following:

- Room names and floor finishes of level 1 and level 2
- All dimensions of level 1 and level 2 according to the recommended code of drawing practice
- Symbols on all windows and doors as shown in rough layouts
- Section lines and direction of section arrows AA
- Suitable title and scale for both level 1 and level 2 plan layouts
- Suitable North point
- Kitchen sink and stove

[40]

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QUESTION 3: SECTION AA THROUGH DWELLING

Draw, on an A3 drawing sheet using scale 1:50, a section AA through the dwelling. Use the information on the attached DIAGRAM SHEET 6.

SPECIFICATIONS

- Roof pitch: concrete roof over main structure. Waterproofing 3 degrees
- 280 mm external cavity walls
- 115 mm internal walls
- 230 mm garage fire wall 230 mm
- 650 mm × 450 mm × 250 mm strip foundations
- Concrete floor level 1: 50 mm screed on 100 mm concrete on 250 mcm polythene DPM lapped and sealed, on 50 mm blinding on 250 mm hardcore
- Concrete floor level 2: 250 mm reinforced concrete slab to engineer's detail
- Windows and doors as on DIAGRAM SHEET 5

Indicate the following:

- Correct roof pitch, roof covering, rafters and heights
- Strip foundations
- Correct section through level 1 floor and level 2 concrete slab
- Floor-to-ceiling heights as on DIAGRAM SHEET 5
- All relevant section hatchings **[20]**

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QUESTION 4: ELEVATIONS

Draw, to scale 1:100 on an A3 drawing sheets, any TWO elevations choosing from the N (North), W (West), S (South) and (East) elevations.

DIAGRAM SHEET 3 (attached) gives an overview of the style of home and DIAGRAM SHEET 5 (attached) shows the type of windows and doors to be used.

Indicate the following on each elevation:

4.1 The correct heights of wall, roof and windows. (15)

4.2 Types of finishes and correct windows according to schedule indicated on DIAGRAM SHEET 5 (15)

[30]

TOTAL: 100

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