higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE

BUILDING DRAWING N1

(8090001)

30 July 2021 (X-paper)
09:00–13:00

REQUIREMENTS: ONE A2 drawing sheet

Drawing instruments may be used.

This question paper consists of 5 pages.

102Q1G2130

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DEPARTMENT OF HIGHER EDUCATION AND TRAINING
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE
BUILDING DRAWING N1
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. Draw all drawings to the required scale.
5. Use both sides of the A2 DRAWING SHEET.
6. Do all drawings, including the candidate's information, in pencil.
7. Do not use a pen.
8. All abbreviations and symbols must comply with the latest National Building Regulations and all relevant SANS (SABS) codes.
9. A balanced layout is very important. You will be penalised for poor planning.
10. All the drawings must be neat, reasonably large, in proportion and fully labelled in CAPITAL letters.
11. Use your own discretion where dimensions are not given.
12. Clearly cross out all work you do not want to be marked.
13. Provide an appropriate title and scale to all drawings.
14. Write neatly and legibly.

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QUESTION 1

Draw, not to scale, rectangle blocks and make neat sketches of the sectioning symbols used for each of the following building materials:

1.1 Sheet membrane

1.2 Concrete

1.3 Fibre board

1.4 Insulation

(4 × 4) **[16]**

QUESTION 2

A double casement window with a fanlight is constructed in a one-brick wall. The reinforced concrete lintel and soldier brick arch are fixed at the window opening to support the load above the window opening. The wall is plastered internally only.

Draw to scale 1:5 a vertical section through the wooden window opening and show the position of the concrete lintel and soldier brick arch.

Use the following specifications:

- 220 mm wall (show at least four courses above the lintel.)
- 19 mm plaster (interior only)
- 220 mm × 110 mm reinforced concrete lintel
- 220 mm × 110 mm × 76 mm soldier brick
- 110 mm × 75 mm frame head
- 50 mm × 50 mm top rail
- Putty on the exterior
- 3 mm glass

[20]

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QUESTION 3

An external door is 2 040 mm high, 820 mm wide and 44 mm thick. The upper portion of the door consists of a one-ply panel and the bottom part of the door consists of two equal panels of ply-wood, divided by a muntin.

Draw to scale 1:10, the front elevation of a three-panel door.

Use the following specifications:

- 110 mm × 44 mm top rail
- 220 mm × 44 mm lock rail (the top of the lock rail is 1 300 mm from the bottom of the door)
- 220 mm × 44 mm bottom rail
- 110 mm 44 mm stiles
- 110 mm × 44 mm muntin
- 10 mm ply panel
- Stuck mould

NOTE: Include dimension lines of the door. **[20]**

QUESTION 4

Draw to scale 1:2 an isometric view of a half bat brick.

NOTE: Include the dimensions and show the hidden details. **[10]**

QUESTION 5

A one-brick wall built in stretcher bond is twelve courses high and six bricks long.

The wall has a stopped end on the left-hand side and raking backs on the right-hand side.

Draw to scale 1:10 the front elevation of a one-brick wall built in stretcher bond.

The following labels must be indicated:

- Stretcher
- Header
- Stopped end
- Raking backs **[14]**

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QUESTION 6

A roof with a pitch of 30° and an overhang of 300 mm is supported by one-brick external walls and is covered with corrugated galvanised sheeting.

Draw to scale 1:10 a vertical section through only ONE of the eaves and clearly show the following:

- One-brick wall
- 114 mm × 38 mm rafter
- 114 mm × 38 mm tie beam
- 114 mm × 38 mm wall plate
- Corrugated galvanised sheeting roof covering
- 75 mm × 50 mm purlins at 1 200 mm centres
- 220 mm × 25 mm fascia board
- 38 mm × 38 mm brandering at 400 mm centres
- 10 mm ceiling board
- 75 mm cornice
- 10 mm fibre cement board (nailed directly to the underside of the eave rafters)
- 100 mm half-round gutter
- Dimensions of the overhang and pitch **[20]**

TOTAL: 100

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