



higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE

BUILDING DRAWING N3

(8090023)

19 November 2020 (X-paper)

09:00–13:00

REQUIREMENTS: ONE A2 drawing sheet

Calculators and drawing instruments may be used.

This question paper consists of 5 pages, 1 diagram sheet and 1 answer sheet.

153Q1E2019

DEPARTMENT OF HIGHER EDUCATION AND TRAINING
REPUBLIC OF SOUTH AFRICA
NATIONAL CERTIFICATE
BUILDING DRAWING N3
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. Do all drawings to the required scale.
 5. Use both sides of the DRAWING SHEET.
 6. Do all drawings, including candidate's information, in pencil.
 7. Ink pens are not to be used for any responses.
 8. Use your discretion where dimensions are not given.
 9. Sketches and/or diagrams must be neat, reasonably large, in proportion and fully labelled.
 10. All drawing work must comply with the relevant SANS (SABS) recommended codes.
 11. All abbreviations and symbols must comply with the latest National Building Regulations and all relevant SANS (SABS) codes.
 12. Write all labels in capital letters.
 13. Give all drawings an appropriate title and scale.
 14. A balanced layout is very important. Candidates will be penalised for poor planning.
 15. Work neatly.
-

QUESTION 1

Indicate whether the following statements are TRUE or FALSE by writing only 'True' or 'False' next to the question number (1.1–1.5) on the attached ANSWER SHEET. Write your examination number on this sheet and hand it in with the rest of your answer sheets.

- 1.1 Flashing under cover must be turned up at least 75 mm against the surfaces of vertical walls.
- 1.2 The outside face of the coping does not form the drip edge flashing.
- 1.3 Copings are only manufactured from stones. 
- 1.4 A parapet is a low wall around the tile perimeter of a building at roof levels or around balconies.
- 1.5 Chases are the last masonry unit laid in a course.

(5 × 2) **[10]**

QUESTION 2: BRICKWORK

Draw to scale 1: 10 the front elevation of a 1 200 mm long garden wall built in English bond and indicate the following:

- Stopped end 
- Lap joint
- Bed joint
- Toothing
- Racking back
- Stretcher course
- Header course
- Queen closure
- Twelve courses high

[15]

The DIAGRAM SHEET (attached) indicates a line drawing of a double storey dwelling with a mass concrete ground floor. The external walls of this dwelling are built in face brick while the internal walls are plastered.



Use the DIAGRAM SHEET (attached) and answer QUESTION 3, QUESTION 4 and QUESTION 5 on the DRAWING SHEET.

QUESTION 3: GROUND FLOOR CONSTRUCTION

Draw, to scale 1:10, the vertical section at the area A on the DIAGRAM SHEET (attached). The drawing must include a part of the ground floor, the external wall, the foundation and all surrounding construction details.

Specifications:



Wall:	270 mm cavity
Foundation:	800 mm × 300 mm
Concrete floor:	75 mm at 525 mm above foundation
Hard core:	150 mm
Screed:	20 mm
Ground floor finish:	100 mm × 25 mm woodblocks
DPC:	114 mm × 38 mm
Wall ties:	SABS approved
Skirting:	75 mm × 22 mm
Plaster:	19 mm

[15]

QUESTION 4: CONCRETE SLAB WITH SUSPENDED CEILING

Draw, to scale 1:10, a vertical cross-section through area B on the DIAGRAM SHEET (attached) and indicate the detail construction of a part of the reinforced concrete slab, part of the suspended ceiling and part of the wall. Show four hangers, four courses above the slab and seven courses below the slab.



Specifications:

Wall:	270 mm
Wall ties:	SABS approved
Brick force:	SABS approved
Slab:	150 mm
Main bars:	Ø 12 mm at 250 mm centre to centre
Distribution bars:	Ø 8 mm at 335 mm centre to centre
Floor finish:	8 mm ceramic tiles
Skirting:	75 mm × 20 mm
DPC:	375 microns
Hangers:	30 mm × 2 mm galvanised metal steel nailed to the slab
Channel:	65 mm × 30 mm at 400 mm centre to centre
Screed:	20 mm
Cornice:	75 mm
Ceiling:	gypsum board at 265 mm below the concrete slab
Wall ties:	SABS approved
Skirting:	75 mm × 22 mm meranti
Plaster:	19 mm



[20]

QUESTION 5: CASEMENT WINDOW FRAME HEAD

Draw a cross-section through the frame head, shown on Area C on the DIAGRAM SHEET (attached) to show the construction details of the casement window.



Specifications:

Wall:	270 mm
Wall ties:	SABS approved
Brick force:	SABS approved
DPC:	375 microns
Internal opening:	160 × 145 cast in situ lintel
External opening:	soldier arch
Arch support:	75 mm × 75 mm angle iron
Frame head:	100 mm × 75 mm
Rails:	50 mm × 44 mm
Transome:	120 mm × 75 mm
Glass:	3 mm clear

[20]

QUESTION 6: SKELETON JAMB LINING

A brick wall must be provided with a skeleton jamb lining with a raised and fielded panel to receive a flush door.



Draw, to scale 1:5, a horizontal section D-D through the skeleton jamb lining shown on the DIAGRAM SHEET (attached). The drawing must include the wall, the plaster, the backing, the stile, the panel, the rough grounds, the architrave, the skirting and part of the door.

Specifications:

Wall:	330 mm
Backing:	50 mm × 19 mm
Stile:	75 mm × 32 mm
Rough grounds:	50 mm × 19 mm
Architrave:	100 mm × 32 mm
Panel:	raised and fielded (own design)
Door:	44 mm
Plaster:	19 mm

[10]

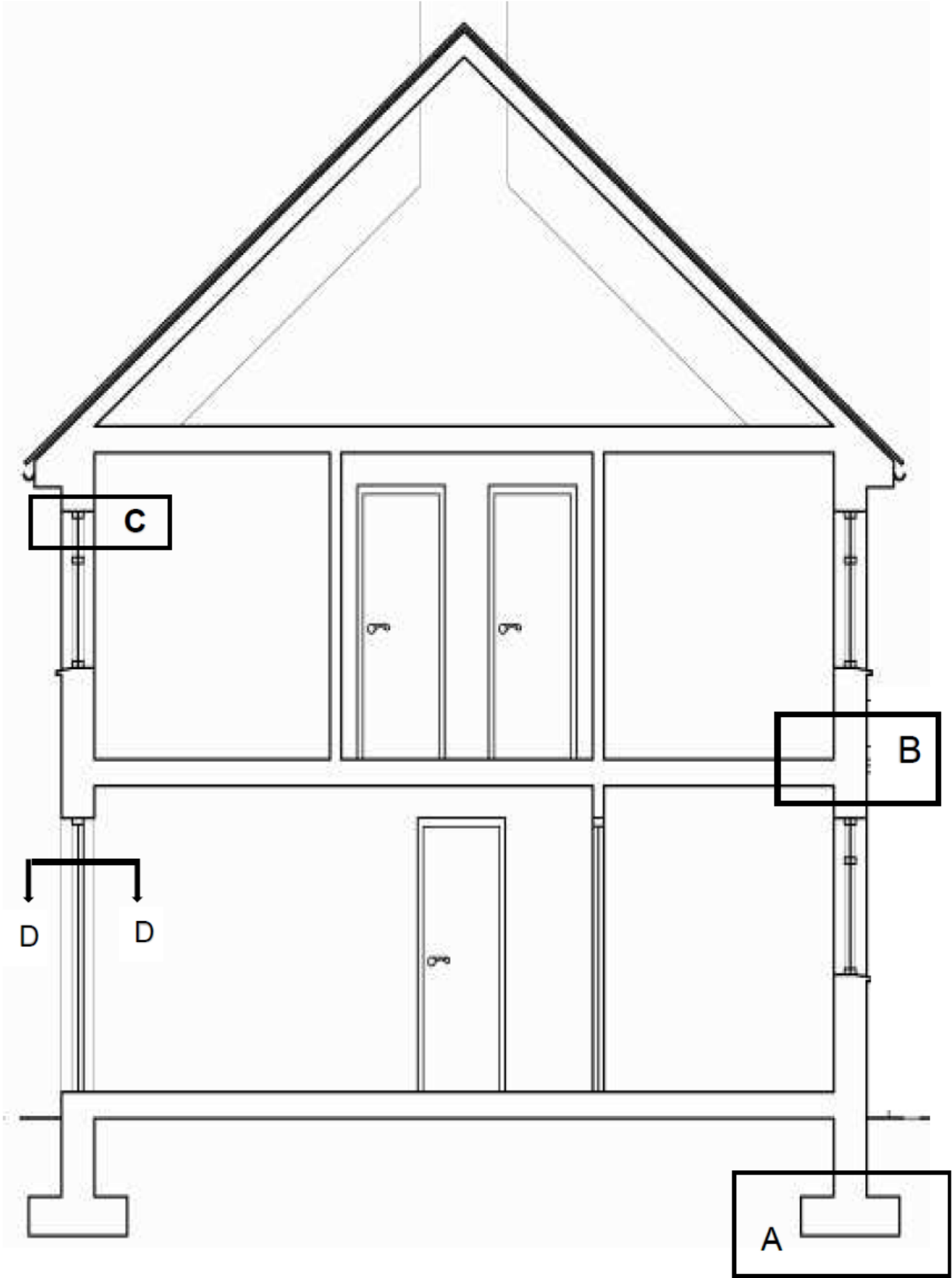
**QUESTION 7: DOUBLE-STOREY COLD-WATER SUPPLY**

Draw a proportional freehand diagram of a vertical section through an installed bidet and show the different parts.

[10]

TOTAL: 100

DIAGRAM SHEET



ANSWER SHEET

EXAMINATION NUMBER:

--	--	--	--	--	--	--	--	--	--	--	--	--

CENTRE NUMBER:

--	--	--	--	--	--	--

QUESTION 1

- 1.1
- 1.2
- 1.3
- 1.4
- 1.5

(5 × 2) [10]

REMOVE THE ANSWER SHEET FROM THE QUESTION PAPER AND HAND IT IN WITH THE DRAWINGS