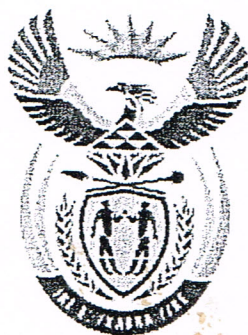
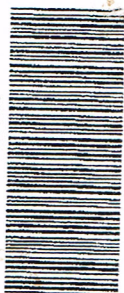


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# higher education & training

Department:  
Higher Education and Training  
**REPUBLIC OF SOUTH AFRICA**

T190(E)(J25)T  
**AUGUST 2012**

**NATIONAL CERTIFICATE: MULTI-DISCIPLINARY DRAWING  
OFFICE PRACTICE**

## **BUILDING DRAUGHTING**

(2050035)

**25 July (X-Paper)**  
**09:00 – 13:00**

**REQUIREMENTS: ONE A3 drawing paper**

**Candidates will require drawing instruments.**

**Calculators may be used.**

**This question paper consists of 6 pages, 2 annexures and a 2-page diagram sheet.**

**DEPARTMENT OF HIGHER EDUCATION AND TRAINING**  
**REPUBLIC OF SOUTH AFRICA**  
NATIONAL CERTIFICATE: MULTI-DISCIPLINARY DRAWING OFFICE  
PRACTICE  
BUILDING DRAUGHTING  
TIME: 4 HOURS  
MARKS: 100

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**INSTRUCTIONS AND INFORMATION**

1. Answer ALL the questions.
  2. Read ALL the questions carefully.
  3. Number the answers correctly according to the numbering system used in this question paper.
  4. Use both sides of the DRAWING PAPER.
  5. A balanced layout is very important and candidates will be penalized for bad planning.
  6. A 15 mm border must be drawn around the DRAWING SHEET (both sides).
  7. The question numbers must be clearly indicated.
  8. ALL drawing work, including candidate information, must be done in pencil.
  9. ALL the drawing work must comply with the SABS Recommended Code of Practice for Building Drawing as well as the SANS 10111 – 1990.
  10. ALL the building regulations must comply with the National Building Regulations SANS 10400 – 1990.
  11. For the purpose of the examination brick sizes should be taken as 220 x 110 x 75 mm.
  12. ALL the abbreviations and symbols must comply with the latest National Building Regulations and ALL relevant SANS (SABS) codes.
  13. Write neatly and legibly.
-



**QUESTION 1: APPLICATION OF THE NATIONAL BUILDING REGULATIONS**

- 1.1 Indicate whether the following statements are TRUE or FALSE. Choose the answer and write only 'true' or 'false' next to the question number (1.1.1 – 1.1.5) in the ANSWER BOOK.

DESCRIPTION		TRUE or FALSE
1.1.1	Any application form shall be dated and signed in black ink by the owner.	
1.1.2	Any application shall be accompanied by at least one set of plans, drawings and diagrams which must be clear and legible.	
1.1.3	Any person intending to erect any building shall submit to the local authority, a site plan; layout drawings and drainage installation drawings together with the application.	
1.1.4	Any application shall be accompanied by at least one set of plans, drawings and diagrams which shall contain the name of the owner of the site concerned.	
1.1.5	Any application shall be accompanied by at least one set of plans, drawings and diagrams which shall be dated and signed in black ink by the owner and every subsequent alteration shall be likewise dated and signed.	

(5)

- 1.2 Plans, drawings and diagrams must be drawn to a suitable scale selected from one of the following as indicated in the TABLE below: Indicate whether the following statements are TRUE or FALSE. Choose the answer and write only 'true' or 'false' next to the question number (1.2.1 – 1.2.5) in the ANSWER BOOK.

DESCRIPTION		TRUE or FALSE
1.2.1	Site plans	1 : 2 000; 1 : 5 000; or 1 : 3 000;
1.2.2	Layout drawings	1 : 100; 1 : 50; 1 : 20
1.2.3	General structural arrangement drawings and details	1 : 100; 1 : 50; 1 : 20; 1:10; 1 : 5; 1 : 2 or 1:1
1.2.4	Fire protection plans	1 : 200; 1 : 100; 1 : 50 or 1 : 20
1.2.5	Plumbing installation drawings	1 : 200; 1 : 100; or 1 : 50

(5)  
[10]

## QUESTION 2: FLOOR PLAN LAYOUT

FIGURE 1, DIAGRAM SHEET 1 (attached), shows a site plan of a proposed single-storey dwelling with a garage.

### BRIEF SPECIFICATIONS

Roof pitch	27,5 degrees
Roof truss	Howe-type roof trusses
Roof covering	Clay tiles
Concrete foundations	600 x 200 mm
Foundation walls	1 brick solid
Concrete floor	75 mm
Barge boards	222 x 32 mm SA pine
Rain-water goods	PVC
Windows and doors	as per attached DIAGRAM SHEET 2

As a draughtsperson, you must design a single-storey dwelling by using the outside dimensions given on the site plan.

Draw, using scale 1 : 100, a fully detailed working drawing of the floor plan layout of the dwelling. The following must be included and indicated on the plan:

- 2.1 A garage, 3 bedrooms, kitchen, dining/living-room and a full bathroom
- 2.2 Room names and floor finishes
- 2.3 ALL external, internal and wall dimensions
- 2.4 Window and door symbols
- 2.5 Sanitary installation symbols must be in accordance with the SABS Code of Practice for Building Drawing
- 2.6 Window codes
- 2.7 Section arrows
- 2.8 Title and scale
- 2.9 True North

[30]



**QUESTION 3: SECTION THROUGH DWELLING**

Draw, using scale 1:50, a section A-A through the dwelling as shown on the attached DIAGRAM SHEET 1 site plan. Indicate the following specifications:

- 3.1 The pitch, roof cover, truss and ceiling
- 3.2 Gutter on fascia
- 3.3 Roof covering (eaves projection) = 300 mm
- 3.4 Strip foundation (to include sizes)
- 3.5 Concrete slab
- 3.6 Damp-proof course (to include minimum height above FGL)
- 3.7 Damp-proof membrane
- 3.8 Compacted fill
- 3.9 Screed
- 3.10 External and internal walls
- 3.11 Finished ground level and finished floor level
- 3.12 Dimension the ceiling height, roof overhang and the minimum damp-proof course distance from the ground level
- 3.13 Title and scale

**[28]****QUESTION 4: ELEVATIONS**

Draw, using scale 1 : 100, ALL the views (north, east, south and west) from the design of the single-storey dwelling plan. Indicate the following on each elevation:

- 4.1 Wall finish (plaster)
- 4.2 Roof bracing (use hidden lines on roof)
- 4.3 Title and scale

**[16]**

### QUESTION 5: SITE PLAN

Refer to FIGURE 1, DIAGRAM SHEET 1 (attached) and copy the site plan using scale 1 : 200. The following must be included and indicated on the site plan:

- 5.1 The boundary lines and pegs
- 5.2 The position of the driveway (carriage-way crossing)
- 5.3 The building lines as shown
- 5.4 The proposed dwelling in the correct position (show the roof as seen from the top)
- 5.5 The drainage system
- 5.6 The direction of the true north
- 5.7 Title and scale
- 5.8 The name of the street

[16]

TOTAL: 100



## ANNEXURE A

TABLE 1 – MAXIMUM TRUSS SPANS FOR VARIOUS RAFTER AND TIE-BEAM SIZES: SANS 10400:1990

1	2	3	4	5	6
ROOF COVERING	TRUSS MEMBER	NOMINAL TIMBER SIZE mm	Max. span, m/ TIMBER GRADE 4	Max. span, m/ TIMBER GRADE 6	Max. span, m/ TIMBER GRADE 8
Class A	Rafter	38 x 114 mm	3,1	4,6	5,8
		38 x 152 mm	4,0	5,8	7,2
		38 x 228 mm	6,1	8,5	10,0
	Tie-beam	38 x 114 mm	3,1	4,5	6,2
		38 x 152 mm	4,5	6,4	8,3
		38 x 228 mm	7,1	10,0	10,0
Class B	Rafter	38 x 114 mm	6,0	9,0	10,0
		38 x 152 mm	8,2	10,0	10,0
		38 x 228 mm	10,0	10,0	10,0
	Tie-beam	38 x 114 mm	4,7	6,7	9,4
		38 x 152 mm	5,9	8,5	10,0
		38 x 228 mm	7,2	10,0	10,0
Class C	Rafter	38 x 114 mm	6,2	9,0	10,0
		38 x 152 mm	8,0	10,0	10,0
		38 x 228 mm	10,0	10,0	10,0
	Tie-beam	38 x 114 mm	4,5	6,7	9,0
		38 x 152 mm	5,9	8,7	10,0
		38 x 228 mm	8,7	10,0	10,0

Class A roof covering includes metal sheets and fibre-cement sheets

Class B roof covering includes concrete tiles, clay tiles or similar materials and thatch

Class C roof covering includes metal roof tiles





## ANNEXURE B

## ROOMS AND THEIR DIMENSIONS: SANS 10400:1990

1	2
ROOM OR SPACE	MINIMUM HEIGHT AND FLOOR AREA
Any habitable room other than a kitchen, scullery or laundry	2,4 m over a minimum of 70% of the floor area, and not less than 2,1 m over the remaining floor area.  6 m <sup>2</sup> with no linear dimension of less than 2 m
Bedroom	2,4 m over a floor area of at least 6 m <sup>2</sup> with a clear height of at least 1,8 m at any point more than 0,75 m from the edge of the floor space.
All habitable rooms other than those listed above.	2,4 m  6 m <sup>2</sup> with no linear dimension of less than 2 m
Passage or entrance hall	2,1 m
Bathroom, shower-room, laundry or room containing a WC pan	2,1 m over any area where a person would normally be in a standing position.
Open mezzanine floor which has an area not exceeding 25% of the area of the floor immediately below it.	2,1 m above and below the mezzanine floor





# DIAGRAM SHEET 2

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