higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

T210(E)(N12)T
NOVEMBER EXAMINATION

NATIONAL CERTIFICATE

CARPENTRY AND ROOFING THEORY N2

(11022192)

12 November 2014 (Y-Paper)
13:00–16:00

This question paper consists of 6 pages and 2 diagram sheets.

ENGINEERING

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DEPARTMENT OF HIGHER EDUCATION AND TRAINING
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE
CARPENTRY AND ROOFING THEORY N2
TIME: 3 HOURS
MARKS: 100

NOTE: If you answer more than the required number of questions, only the required number of questions will be marked. All work you do not want to be marked, must be clearly crossed out.

INSTRUCTIONS AND INFORMATION

1. This question paper must be answered as follows:
   - 1.1 ALL the candidates must answer QUESTION 1 TO 6.
   - 1.2 CARPENTRY CANDIDATES must answer QUESTION 7 only.
   - 1.3 ROOFING CANDIDATES must answer QUESTION 8 only.
   - 1.4 DO NOT answer both QUESTION 7 and QUESTION 8.
2. Read ALL the questions carefully.
3. Number the answers according to the numbering system used in this question paper.
4. ALL drawings must be labelled.
5. Sketches must be neat and clear and done in PENCIL.
6. Keep subsections of questions together.
7. Rule OFF across the page on completion of each subsection.
8. Start each question on a NEW page.
9. Write neatly and legibly.

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QUESTION 1: SETTING OUT OF BUILDINGS

1.1 Complete the following paragraph by using the words provided in the list below. Write only the word(s) next to the question number (1.1.1–1.1.6) in the ANSWER BOOK

engineers; main documentation; preliminary drawings; working plans; larger scales; quantity surveyor; descriptive notes

Working drawings are the (1.1.1) prepared by the architect from which the (1.1.2) prepares the bills of quantities. A good set of drawings is comprehensive with (1.1.3), and supplemented by details to (1.1.4) as necessary. (1.1.5) design and prepare their working drawings from the architect's (1.1.6). (6)

1.2 Briefly describe and illustrate by means of a sketch how the '3 : 4 : 5' method is used to check the corners of a building for squareness. (4)

[10]

QUESTION 2: ROOF CONSTRUCTION

2.1 FIGURE 1, DIAGRAM SHEET 1 shows the plan of a roof. Identify the parts as numbered by writing down the answers next to the question number (2.1.1—2.1.10) in the ANSWER BOOK. (10)

2.2 The roofing square contains all the information and rafter tables that can be used to obtain different rafter lengths.

A roof has a run of 2000 mm and a rise of 1000 mm. Describe with the aid of a neat drawing how a roofing square with a 250 mm rise and 500 mm run is used to mark out the following details:

- To mark the plumb cut at the apex
- To step off the length of the rafter up to the outside of the wall plate
- To mark the birds mouth (10)

[20]

QUESTION 3: ROOF COVERING

3.1 Make a neat and detailed, vertical cross-sectional drawing to show the valley of a roof covered with fibre-cement slates. (8)

3.2 Water leaks can cause damage to the wooden members of a roof and the ceilings. Therefore, the need and application of waterproofing materials are essential to prevent any form of water leakage through the roof.

List FIVE different types of waterproofing materials that are used to seal off joints, openings, cracks, etc. in roofs. (5)

3.3 Give TWO disadvantages of metal tiles when it is used as a roof covering on roofs. (2)

[15]

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QUESTION 4: CEILINGS

It is customary that most buildings, especially houses, are finished off with the installation of ceilings. There are a number of construction methods and a variety of ceiling materials that is used to finish off ceilings.

4.1 Briefly describe EIGHT steps in its correct sequence when constructing or installing a new boarded ceiling. **[8]**

QUESTION 5: DORMER ROOF CONSTRUCTION

There are different types of dormer roofs in dormer construction.

Draw a neat and detailed vertical cross-sectional view through a dormer window with a pitched roof to show the construction clearly.

Do not show any roof covering.

Label ALL the parts. **[15]**

QUESTION 6: ROOF-LIGHT CONSTRUCTION

6.1 The installation of roof lights is one of several ways of providing extra natural lighting into a room.

Make a neat drawing of only the bottom end of a typical roof light built into a sloping roof with a pitch of 38° to show the opening gear and cord fixed to the curb of a roof light.

Clearly show the following:

The bottom rail with part of the glass.
Part of the curb or lining.
The opening gear and part of the cord. (6)

6.2 Briefly explain the steps to install a plastic roof light into a sloping roof. (4)

6.3 Briefly describe what *flashing* is and why is it used in roof work and in the installation of roof lights. (2)
[12]

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QUESTION 7: THIS QUESTION IS FOR CARPENTRY CANDIDATES ONLY

7.1 FIGURE 2, DIAGRAM SHEET 2 shows a vertical cross-sectional view through a raised and fielded dado panelling.

Identify the parts as numbered by writing down the names next to the question number (7.1.1–7.1.8) in the ANSWER BOOK. (8)

7.2 Formwork is used as a temporary mould into which concrete and reinforcement is cast to form a required shape.

Draw a horizontal cross-sectional view through the wooden formwork for a circular concrete column. Label all the parts in the drawing. (6)

7.3 Laggings are members of centring to support the brickwork in the construction of an arch.

Illustrate, with the aid of neat pictorial drawings, the difference between:

7.3.1 Open laggings (3)

7.3.2 Closed laggings (3)

[20]

QUESTION 8: THIS QUESTION IS FOR ROOFING CANDIDATES ONLY

8.1 It is important for roofers to have the knowledge and understanding of the characteristics and uses of all the metal materials applicable to roofing and gutters.

State TWO uses of the following metals applicable to roofing:

8.1.1 Copper

8.1.2 Lead

8.1.3 Galvanised iron

8.1.4 Aluminium

8.1.5 Brass

(5 × 2) (10)

8.2 When installing gutters around a house a number of basic accessories/parts are fitted to discharge the water from the guttering system.

List FIVE basic accessories required to discharge the water from the gutter system (5)

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8.3 Briefly describe the process of how to apply heat-fusion membrane as a waterproofing system. (5)
[20]

TOTAL: 100

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DIAGRAM SHEET 1

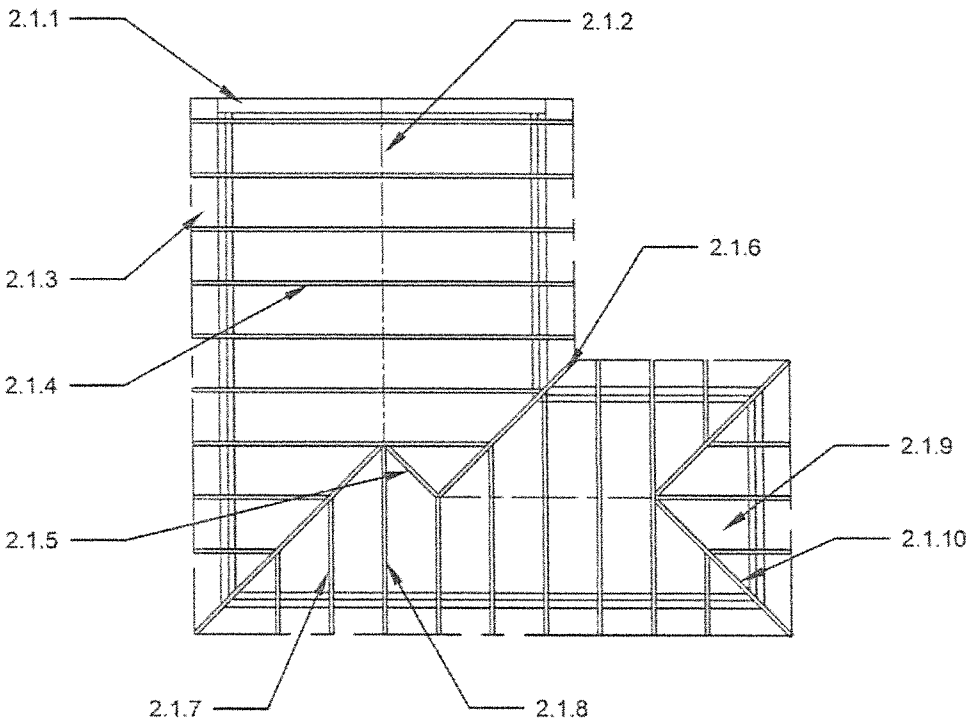


FIGURE 1

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DIAGRAM SHEET 2

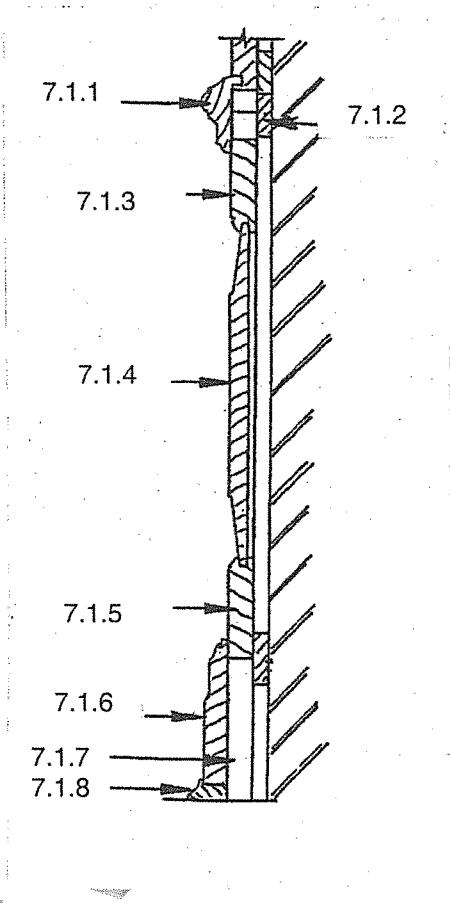


FIGURE 2

ENGLISH WORDING

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