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higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

T260(E)(M26)T
**APRIL EXAMINATION**

# NATIONAL CERTIFICATE

# CARPENTRY AND ROOFING THEORY N2

(11022192)

**26 March 2013 (X-Paper)**
**09:00–12:00**

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

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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

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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. Start each question on a NEW page.

5. Keep subsections of questions together.

6. Sketches must be neat and clear and done in PENCIL.

7. ALL drawings must be labelled.

8. RULE OFF across the page on completion of each subsection.

9. Write neatly and legibly.

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## QUESTION 1: SETTING OUT OF BUILDINGS

DIAGRAM SHEET 1 shows FIVE tools that are used in setting out a building. Identify the tools and give the specific function of each. Write only the answers next to the question number (1.1–1.5) in the ANSWER BOOK. (5 × 2) **[10]**

## QUESTION 2: ROOF CONSTRUCTION

2.1 Pitched roof geometry can be divided into three categories, namely the development of roof surfaces, determining the true lengths of rafters etc, and determining the required angles for the cuts to the rafters and other members of a roof structure.

Illustrate, by means of geometrical construction, how to determine the following:

- The plumb cut of the hip rafter
- The foot/seat cut of the hip rafter
- The true length of the hip rafter
- The dihedral angle (backing bevel) of the hip rafter

Use appropriate dimensions for the span and rise to give an acceptable proportion to the drawing. (10)

2.2 The roofing square is an all-important tool for roofing projects. For example, it is used to determine the length of rafters.

Briefly explain the following parts of the roofing square:

2.2.1 Blade (2)

2.2.2 Tongue (2)

2.2.3 Heel (2)

2.2.4 Face (2)

2.2.5 Back (2)
**[20]**

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## QUESTION 3: ROOF COVERINGS

3.1 In roof construction there are various sections such as the apex/ridge, valley and eaves. Depending on the cladding chosen for the roof covering, each section has a specific finishing.

Draw a neat, detailed horizontal sectional view to show the finishing of the valley of a roof covered with wood shingles. Label all the construction details. (10)

3.2 Water leaks can cause damage to the wooden members of a roof construction. The application of waterproofing materials over openings, joints, etc. is essential to prevent any water leakage through the roof.

Briefly discuss mastic as waterproofing material with regard to the following terms:

3.2.1 Characteristics (2)

3.2.2 Application (1)

3.2.3 Fixing (2)

**[15]**

## QUESTION 4: CEILINGS

Most buildings, especially houses, are finished off with ceilings. A number of construction methods and a variety of ceiling materials are used for this.

4.1 Briefly explain the main function of a ceiling in a building. (2)

4.2 State TWO advantages of each of the following ceilings:

4.2.1 Suspended ceilings (2)

4.2.2 Board ceilings (2)

4.2.3 Timber ceilings (2)

**[8]**

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## QUESTION 5: DORMER ROOF CONSTRUCTION

The function of dormers is to allow daylight into and provide ventilation for a roof space which has been transformed into an attic. It is also an architectural feature which lends elegance to a well-designed building or dwelling.

5.1 Draw a vertical sectional view through a typical dormer window with a flat roof to indicate the construction clearly. Assume that the roof of the dormer is covered with tongue and groove boards. Show all the labels. (12)

5.2 Name THREE types of bay window. (3)
**[15]**

## QUESTION 6: ROOF LIGHT CONSTRUCTION

Roof lights are one of several ways of providing natural lighting in a room.

DIAGRAM SHEET 2 shows two sectional views of a typical roof light construction. Label the parts as numbered by writing down the answers next to the question number (6.1–6.12) in the ANSWER BOOK. **[12]**

## QUESTION 7: THIS QUESTION IS FOR CARPENTRY CANDIDATES ONLY.

Wall panelling, a decorative internal surface, is used in most cases as a wood finish for lounges, offices, theatres, etc.

7.1 Draw a vertical section through wall panelling with a dado wall finish and flush panelling. Label all the parts. (10)

7.2 Describe the step-by-step sequence to hang a framed, ledged and braced door. (6)

7.3 Briefly explain the following terms in construction work:

7.3.1 Centering (2)

7.3.2 Formwork (2)
**[20]**

**OR**

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## QUESTION 8: THIS QUESTION IS FOR ROOFING CANDIDATES ONLY.

8.1 It is sometimes necessary to join the various metals used for roof covering like gutters and flashing.

Name TWO methods of joining each of the following metals:

8.1.1 Copper (2)

8.1.2 Lead (2)

8.1.3 Galvanised iron (2)

8.1.4 Aluminium (2)

8.1.5 Brass (2)

8.2 When a building contractor wants to purchase gutters to finish off a roof, certain standard specifications must be considered.

State FIVE of these standard specifications one has to keep in mind. (5)

8.3 In every trade the tradesperson uses tools that are unique to that trade and which are not used in any other trade.

List FIVE specific tools used exclusively by the roofer. (5)
**[20]**

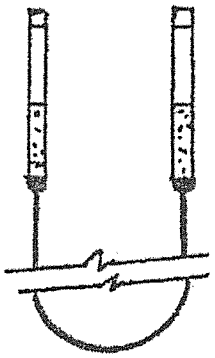
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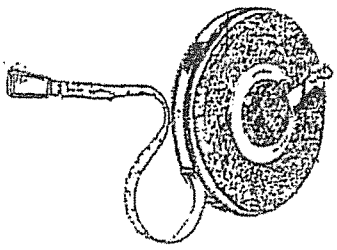
## DIAGRAM SHEET 1



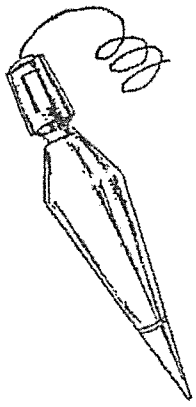
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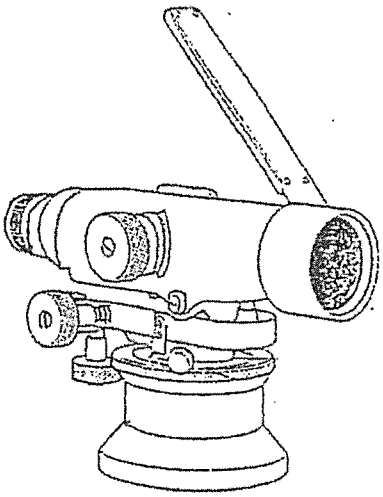
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1.3



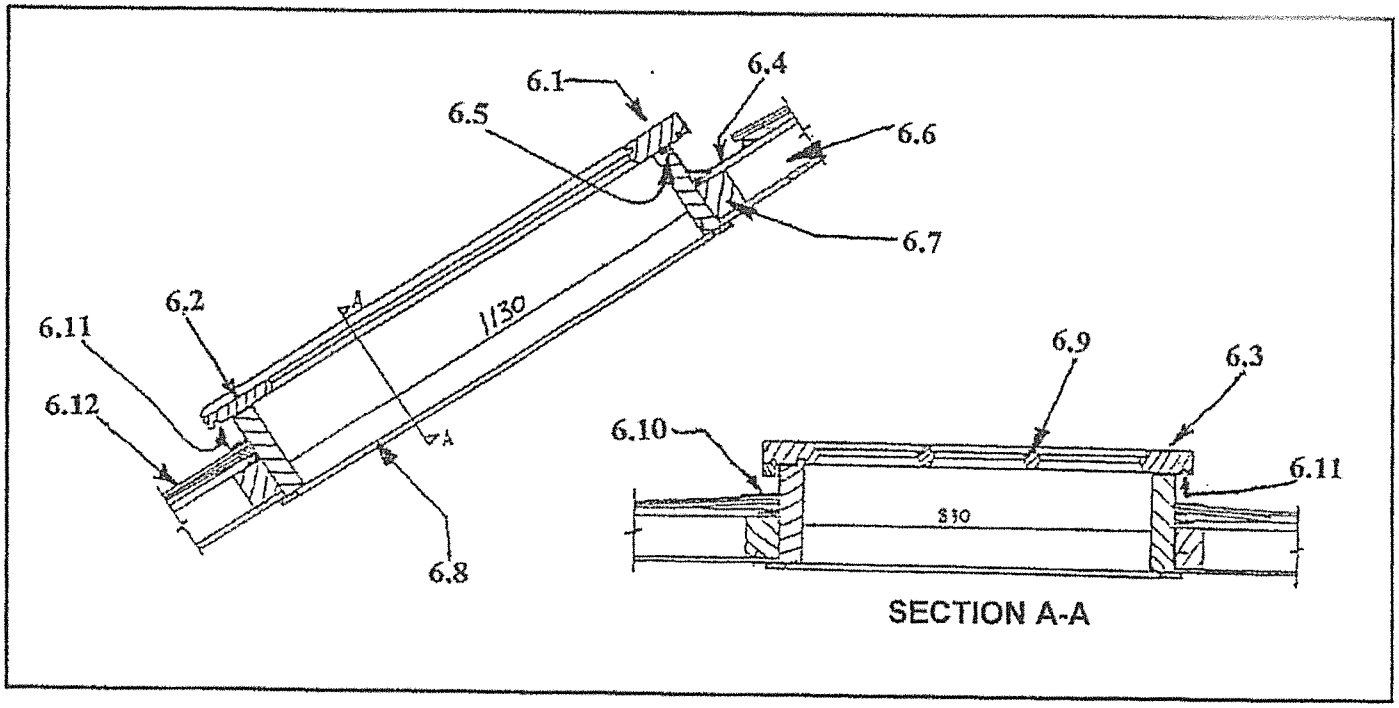
1.4



1.5

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## DIAGRAM SHEET 2




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