higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

# NATIONAL CERTIFICATE (VOCATIONAL)

# CARPENTRY AND ROOF WORK
## NQF LEVEL 3

(12030333)

**21 November 2024 (X-paper)**
**09:00–12:00**

**This question paper consists of 5 pages and an addendum.**

357Q1N2421

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# DEPARTMENT OF HIGHER EDUCATION AND TRAINING
# REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)
CARPENTRY AND ROOFWORK
NQF LEVEL 3
TIME: 3 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 according to the numbering system used in this question paper.
4. Use only a black or blue pen.
5. Write neatly and legibly.

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## QUESTION 1: HIPPED ROOFS

1.1 Refer to the ADDENDUM (attached).

Complete the table by comparing the gable roof and the hipped roof under the headings given. Submit the ADDENDUM together with your ANSWER BOOK. (10)

1.2 Define the term *prefabricated roof truss*. (2)

1.3 A hipped roof is constructed with a combination of truss members.

Name THREE of these truss members. (3)

1.4 Explain how the additional members in a hipped roof end stabilise the roof. (2)

1.5 Define the term *deemed to satisfy*. (1)

1.6 Explain TWO functions of triangulated ends found on a hipped roof. (2)

1.7 List FIVE factors that influence roof stability. (5)

1.8 Name FIVE tools required by a carpenter when levelling a hipped roof. (5)

**[30]**

## QUESTION 2: ERECTING L-SHAPED ROOFS

2.1 Define the terms *roof truss* and *roof members.* (2)

2.2 Give TWO examples of dead loads and live loads, which are loads commonly experienced by roofs. (4)

2.3 Why is it difficult to build an L-shaped roof without a rational design? (3)

2.4 State the reason why the slope of a valley gutter is lower than the slope of the intersecting roofs. (2)

2.5 List THREE types of roof valleys found in South Africa. (3)

2.6 Why is it important to consider the slope when erecting roof trusses? (2)

2.7 Carpenters tack the nails when joining the members of a roof truss.

What is meant by the term *tacking the nails*? (2)

2.8 Describe the following terms as commonly used in roof construction:

2.8.1 Carpenter

2.8.2 Carpentry

(2 × 2) (4)

2.9 Complete the table below by providing the missing timber member name or timber size. Write only the answer next to the question number (2.9.1–2.9.3) in the ANSWER BOOK. Do not redraw the table.

| TIMBER MEMBER | SIZE |
|---|---|
| **2.9.1** | 1 114 mm × 38 mm |
| Brandering | **2.9.2** |
| Joist | **2.9.3** |

(3)

2.10 State TWO functions of a wall plate on a building structure. (2)

2.11 Give THREE reasons for erecting a roof on a house. (3)
**[30]**

## QUESTION 3: INSPECTION OF ROOF STRUCTURES

3.1 Indicate whether the following statements are TRUE or FALSE by writing only 'True' or 'False' next to the question number (3.1.1–3.1.4) in the ANSWER BOOK.

3.1.1 A competent person is a sufficiently qualified, skilled and experienced person.

3.1.2 Woodworkers determine the structural soundness of buildings and construction projects.

3.1.3 Engineers apply principles of science and mathematics to develop economical solutions to technical problems.

3.1.4 Building inspectors possess the skills and expertise to transform raw timber into functional and aesthetically pleasing carpentry and to join other wooden objects.

(4 × 2) (8)

3.2 Name TWO SANS regulations for timber roof construction. (2)

3.3 State TWO reasons for proper roof inspection in construction. (2)

3.4 Give THREE items that you as an inspector will need in order to do a proper inspection of a roof. (3)
**[15]**

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## QUESTION 4: ROOF CLADDING

4.1 Why may the roof design not be changed without permission from the roof designer? (2)

4.2 Name TWO reasons for changing roof covering materials after the roof frame has been completed. (2)

4.3 Describe the following terms commonly used in roof construction:

4.3.1 Eaves

4.3.2 Verges

4.3.3 Ridges

4.3.4 Fascia boards

(4 × 1) (4)

4.4 Identify TWO ways of preventing a roof from being blown off by the wind. (2)

4.5 Name the roof pitch suitable for each of the roof-covering materials listed below:

4.5.1 Thatch

4.5.2 Metal ribbed sheets

4.5.3 Concrete tiles

4.5.4 Metal tiles

(4 × 1) (4)

4.6 What is meant by the term *roof covering*? (1)

4.7 Name TWO causes of white rust commonly found on a galvanised roofing sheet. (2)

4.8 Name THREE materials required to secure a jack truss to a wall plate during roof construction. (3)

4.9 Name THREE seam patterns used on sheet metal roofing. (3)

4.10 State TWO properties of Mazista slate. (2)

**[25]**

**TOTAL: 100**

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(12030333)

**ADDENDUM** **EXAMINATION NUMBER:** | | | | | | | | | | | | | |

| HEADINGS | GABLE ROOF | HIP ROOF |
|---|---|---|
| Cost | | |
| Maintenance | | |
| Durability | | |
| Wind and air flow | | |
| Appearance | | |

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