higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

CARPENTRY AND ROOF WORK
NQF LEVEL 3

(12030333)

10 March 2020 (Y-paper)
13:00–16:00

This question paper consists of 5 pages.

369Q1S2010

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TIME: 3 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. Start each question on a new page.
5. Write neatly and legibly.

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SECTION A

QUESTION 1: HIPPED ROOFS

1.1 Choose the correct term from those in brackets. Write only the answer next to the question number (1.1.1–1.1.5) in the ANSWER BOOK.

1.1.1 A (rationally designed roof/deemed-to-satisfy roof/both rationally designed and deemed-to-satisfy roofs) must be certified by a registered structural engineer.

1.1.2 Stability of a hipped roof is directly influenced by the (materials used/span of the roof/width of the wall plate).

1.1.3 SANS 1040 provides information on (the manufacture and erection of roof trusses/fixing concrete tiles).

1.1.4 Jack trusses are fixed to the hip trusses at a (60°/90°/45°) angle.

1.1.5 A roof layout clearly shows the (type of roof covering/bracing details/slope of the gutters).

(5 × 1) (5)

1.2 Give detailed descriptions of the differences between each of the following:

1.2.1 Tilting batten and ridge batten

1.2.2 Battens and purlins

1.2.3 Fascia board and barge board

1.2.4 Eaves and roof overhang

1.2.5 Apex and rise

(5 × 4) (20)

1.3 Write down the sequence in which the trusses given below should be raised onto a hipped roof.

half-truss; jack truss; common truss; hip girder; girder truss (5)

[30]

QUESTION 2: ERECTING AN L-SHAPED ROOF

2.1 Explain the difference between an *L-shaped monopitch roof* and an *L-shaped dual-pitched roof.* (4)

2.2 Give THREE reasons why it is not possible to build an L-shaped roof without a rational design. (3)

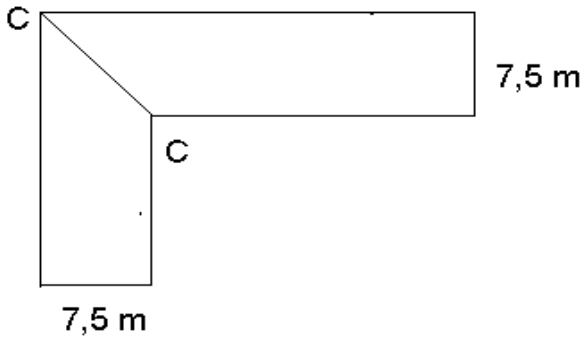
2.3 Name THREE types of valley gutters commonly used on an L-shaped roof. (3)

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2.4 Give the FIVE steps in which a valley girder should be raised. (5)

2.5 The FIGURE below shows the plan of a monopitch L-shaped roof.

Use the dimensions to calculate the length of the girder truss C-C.



MONOPITCH L-SHAPED ROOF (3)

2.6 List the FOUR guidelines to bear in mind when installing the lining in a valley gutter. (4)

2.7 Define the following terms:

2.7.1 Datum

2.7.2 Tack nailing

2.7.3 Prefabricated

2.7.4 Beam-filling

(4 × 1) (4)

2.8 What simple test can be done to determine whether valley planks are strong enough? (1)

2.9 A monopitch roof has no wall plate on the opposite side of the wall to support the pitched part of the trusses.

List THREE methods that could be applied on the opposite side of the wall to support the trusses. (3)

[30]

QUESTION 3: INSPECTION OF ROOF STRUCTURES

3.1 Briefly state the work of the following professional personnel:

3.1.1 Professional engineer

3.1.2 Competent person

3.1.3 Responsible person

3.1.4 Professionally accredited roof inspector

(4 × 1) (4)

3.2 Give FOUR reasons why a roof must be properly inspected before it is loaded (put under weight). (4)

3.3 State FOUR consequences of poor or no roof inspection. (4)

3.4 Give THREE reasons why the battens that support the roof covering must be accurately set out. (3)

[15]

QUESTION 4: CLADDING A TIMBER ROOF STRUCTURE

4.1 List THREE advantages and THREE disadvantages of valley fasteners.

(3 × 2) (6)

4.2 Name FOUR elements of a roof design that could be affected by the shape and weight of the roof covering material used. (4)

4.3 Why it is important to know which type of roof covering will be used before the superstructure can be completed? (3)

4.4 List THREE benefits of using concrete tiles as a roof covering. (3)

4.5 Building regulations specify that it is mandatory to install underlay on certain roofs.

List THREE types of roofs where the above regulation must be applied. (3)

4.6 Which metal fasteners should be used for each of the following?

4.6.1 Fixing concrete roof tiles to battens

4.6.2 Fixing rake tiles at the end of a gabled roof

4.6.3 Fixing hurricane clips to the purlins

(3 × 1) (3)

4.7 Wind speed is an important factor to consider when selecting tiles as a roof covering.

List THREE areas on a roof most vulnerable to wind. (3)

[25]

TOTAL: 100

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