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 2018 (Y-Paper)
13:00–16:00

This question paper consists of 6 pages.

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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. All work you do not want to be marked must be clearly crossed out.
5. Start each question on a NEW page.
6. Rule off across the page on completion of each question.
7. All the abbreviations and symbols must comply with the latest National Building Regulations and all relevant SANS (SABS) codes.
8. Write neatly and legibly.

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QUESTION 1: HIPPED ROOFS

1.1 Describe the difference in appearance between a hipped roof and a gabled roof. (2)

1.2 Name FOUR roof/truss members used in a hipped roof that would not be used in a gabled roof. (4)

1.3 State why a hipped roof does not require diagonal bracing. (2)

1.4 Explain the benefits of the aerodynamic shape of a hipped roof. (4)

1.5 Give FIVE reasons why or when a rational design is mandatory for a hipped roof. (5)

1.6 The various stages of roof planning, construction and approval are given below. Write only the person responsible for each stage next to the question number (1.6.1–1.6.5) in the ANSWER BOOK.

1.6.1 Architectural design

1.6.2 Rational design

1.6.3 Manufacturing of materials

1.6.4 Erecting the roof

1.6.5 Inspecting the roof

(5 × 1) (5)

1.7 Give THREE reasons why the regulated National Standards are important in roof construction. (3)

1.8 Give FIVE purposes for doing an on-site inspection before starting the roof erection. (5)

[30]

QUESTION 2: ERECTING AN L-SHAPED ROOF

2.1 Wall plates serve an important function in roof construction.

Explain why a monopitch roof will require fewer wall plates than a dual-pitch roof. (3)

2.2 State where 45° truss hangers would be used in an L-shaped roof. (2)

2.3 Safety is essential during roof construction.

Describe a method of safely raising and positioning a monopitch truss. (4)

2.4 Give ONE example of when each of the following tools could be used when erecting a roof:

2.4.1 Sliding bevel/bevel square

2.4.2 Chalk line

2.4.3 Water/pipe level

2.4.4 Double wedges

2.4.5 Nylon/gut line

2.4.6 Crowbar

2.4.7 Steel punch

2.4.8 Hacksaw

2.4.9 Cold chisel

2.4.10 Plumb bob

(10 × 1) (10)

2.5 Explain why a girder truss is always thicker than a standard truss. (2)

2.6 Give TWO reasons why the valley on an L-shaped roof is the place where it is most likely to leak. (2)

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2.7 Choose the correct option from those given in brackets. Write only the option next to the question number (2.7.1–2.7.5) in the ANSWER BOOK.

2.7.1 An L-shaped roof with gable ends has (4 sloping sides; 1 sloping side; 1 sloping side and 2 gable ends).

2.7.2 The slope of a valley is always (at the same angle; at a bigger angle; at a smaller angle) than the two intersecting roofs.

2.7.3 Void formers are hollow boxes built into a wall to support (bottom chord runners; monopitch trusses; hip trusses).

2.7.4 The tops and bottoms of valley planks are cut at an angle of (90°; 60°; 45°).

2.7.5 The (standard truss; jack truss; valley girder truss) is the first truss to be raised when erecting a monopitch roof.

(5 × 1) (5)

2.8 Name TWO fixing connectors used when assembling a girder truss. (2)

[30]

QUESTION 3: INSPECTION OF ROOF STRUCTURES

3.1 Name the institution that compiled the check list commonly used by roof inspectors. (2)

3.2 Which person is responsible for appointing a roof inspector? (1)

3.3 Give TWO main reasons why all roofs must be inspected. (2)

3.4 Name SIX items of project information that should be included under Section A of a Site Inspection Checklist. (6)

3.5 Name THREE tools/devices that a roof inspector would use while inspecting a roof. (3)

3.6 What is the minimum depth for roof anchors to be built into the supporting brickwork? (1)

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QUESTION 4: ROOF CLADDING

4.1 Name the material used in Class A-type roof covering. (1)

4.2 Give THREE reasons why a 'Class A' roof covering is the preferred choice for most large buildings such as factories, schools and warehouses. (3)

4.3 A thatched roof is very attractive, but has several disadvantages.

State THREE facts why thatch is not a good choice as a roof covering. (3)

4.4 What is installed to prevent wind-blown dust from entering a building with a tiled roof? (2)

4.5 Give the minimum roof pitch for each of the following roof coverings:

4.5.1 Fibre-cement slate

4.5.2 Clay tiles

4.5.3 Metal tiles

(3 × 1) (3)

4.6 What is the minimum recommended end-lap for corrugated iron roof sheets? (1)

4.7 Explain why the fixing and laying of roof sheets are less labour intensive than the fixing and laying of concrete tiles. (3)

4.8 Choose an item from COLUMN B that matches a/an item/word/description in COLUMN A. Write only the letter (A–E) next to the question (4.8.1–4.8.5) in the ANSWER BOOK.

	COLUMN A		COLUMN B
4.8.1	Truss spacing	A	bolts and nails
4.8.2	Purlin joints	B	SANS 10400
4.8.3	National Building Regulations	C	760 mm
4.8.4	Deviation in roof material	D	splayed and nailed
4.8.5	Elements of roof design	E	approved by roof designer

(5 × 1) (5)

4.9 Describe the method of installing the underlay in a valley. (4)

[25]

TOTAL: 100

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