higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE

CARPENTRY AND ROOFING THEORY N2

(11022192)

1 December 2023 (X-paper)
09:00–12:00

Drawing instruments may be used.

This question paper consists of 8 pages.

185Q1G2301

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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

INSTRUCTIONS AND INFORMATION

1. Answer the question paper as follows:

   1.1 All candidates must answer QUESTION 1 to QUESTION 6.

   1.2 CARPENTRY CANDIDATES must answer QUESTION 7.

   1.3 ROOFING CANDIDATES must answer QUESTION 8.

   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. Sketches must be neat, clear, labelled and done in pencil.

5. Write neatly and legibly.

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QUESTION 1

1.1 Various options are given as possible answers to the following questions. Choose the answer and write only the letter (A–C) next to the question number (1.1.1–1.1.6) in the ANSWER BOOK.

1.1.1 Preliminary freehand drawings not drawn to scale but in good proportion:

A Working drawings
B Sketches
C Design drawings

1.1.2 Vertical pegs with horizontal members, erected around a structure to be erected:

A Benchmarks
B Builder's profiles
C Datum pegs

1.1.3 Used to check if structures are vertically straight or used as a vertical reference line:

A Tape measure
B Line level
C Plumb bob

1.1.4 Used to determine the levels of two points, not in line of site and around corners:

A Water level
B Boat level
C Measuring staff

1.1.5 Ordinary measuring equipment used in sets of three for the sighting of levelness of trenches:

A Boning rod
B Range rod
C Measuring rod

1.1.6 Used in conjunction with a spirit level to obtain a horizontal level of two points:

A Boundary line
B Straight edge
C Builder's line

(6 × 1) (6)

1.2 Explain by means of a labelled line diagram the application of Pythagoras theorem when setting-out a square corner on a building site. (4)

[10]

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QUESTION 2

2.1 FIGURE 1 below illustrates a plan view of a L-shape house. The house must be finished off with a gable end roof construction on the southern side of the building and a hipped end roof construction on the eastern side of the building.

Illustrate with the aid of a neat, labelled drawing a plan view, in good proportion, the construction layout of the roof trusses and a flying hip in position.

Note: The interior design of the rooms e.g., kitchen, bathrooms etc. must not be shown.

Clearly show and label the following parts of the roof:

• Gable end • Hipped end • Flying hip • Jack rafter • Hip corner • Full truss	• Ridge • Valley • Eaves • Hip rafter • Half truss

(16)

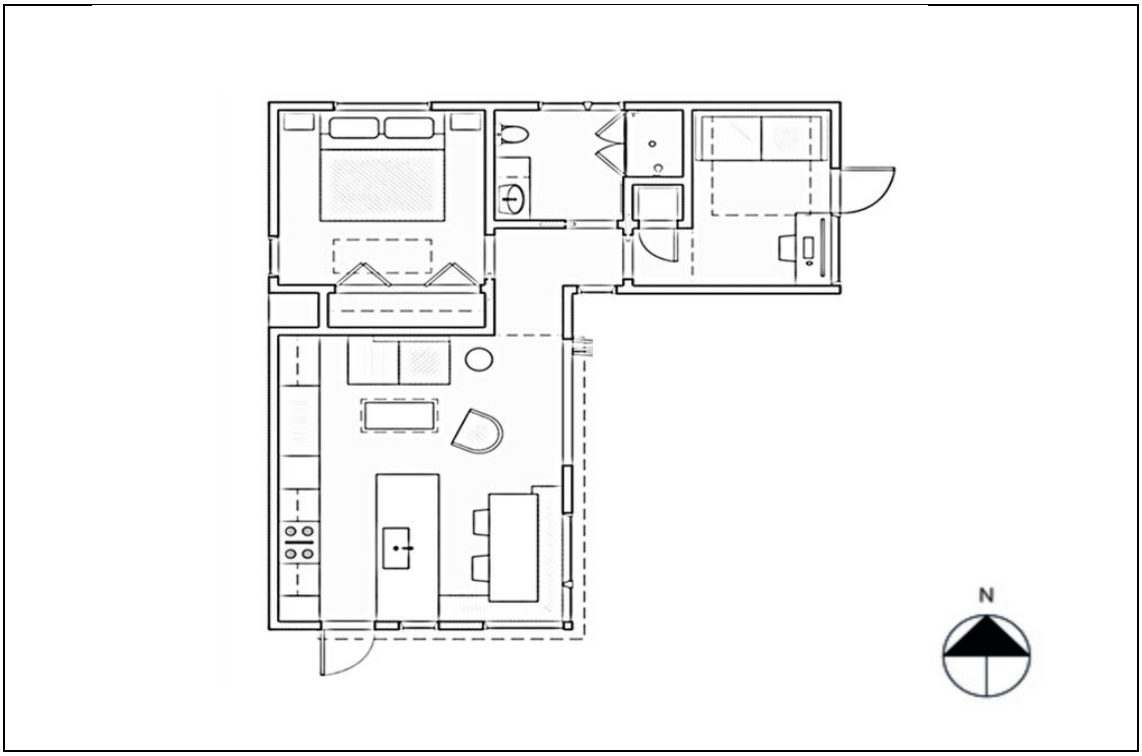


FIGURE 1

2.2 Briefly explain each of the following roof truss terms:

2.2.1 King post

2.2.2 Queen post

(2 × 2) (4)

[20]

QUESTION 3

3.1 Name THREE materials that can be used as waterproofing material. (3)

3.2 State FIVE criteria to consider when choosing roof covering material for a specific house or building. (5)

3.3 Give ONE disadvantage of each of the following roof covering materials:

3.3.1 Fibre cement slates

3.3.2 Metal tiles

3.3.3 Wood shingles

(3 × 1) (3)

3.4 Give the minimum pitch allowed for the following roof covering material.

3.4.1 Clay tiles with an approved underlay

3.4.2 Fibre cement slates with an approved underlay

3.4.3 Thatch roof covering that is 300 mm deep

3.4.4 Secret fixed sheets

(4 × 1) (4)

[15]

QUESTION 4

Explain in point form the sequence of steps to install and fix a new metal grid suspended ceiling system in a building with a concrete ceiling. **[8]**

QUESTION 5

5.1 FIGURE 2 below shows a cross-sectional view of the construction and detail between the bottom section of a dormer and part of the main roof.

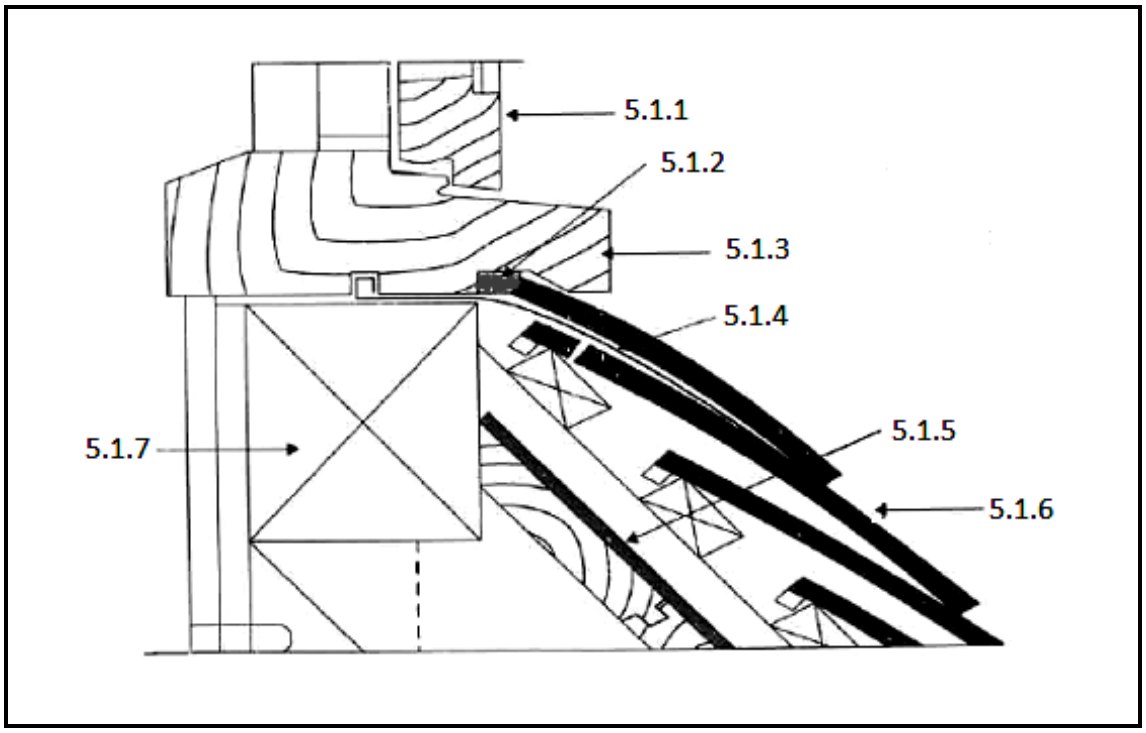


FIGURE 2

Identify all the parts by writing only the answer next to the question number (5.1.1–5.1.7) in the ANSWER BOOK. (7 × 1) (7)

5.2 Name THREE types of dormers used in roofing construction. (3)

5.3 Make a neat pictorial sketch of any ONE of the dormers named in QUESTION 5.2. Write the name of the dormer below the sketch. (5)
[15]

QUESTION 6

6.1 Explain in point form the sequence of steps to fit a plastic roof light into the main roof of a building that is covered with slates. (7)

6.2 Give THREE advantages of having a roof light built into the roof of a house. (3)

6.3 Briefly explain the term *patent glazing*. (2)
[12]

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QUESTION 7: CARPENTRY CANDIDATES ONLY

7.1 Make a neat, labelled, vertical cross-sectional sketch through the top part of a drywall partition to show the construction of a framework made of timber. (7)

7.2 Explain the procedures that you will follow, when setting up a metal door frame. (7)

7.3 Discuss the basic requirements for the construction of quality formwork with reference to each of the following:

7.3.1 Leakage

7.3.2 Reuse and finishing

7.3.3 Storage

(3 × 2) (6)
[20]

QUESTION 8: ROOFING CANDIDATES ONLY

8.1 Give TWO characteristics of each of the following metal materials used in the roofing trade:

8.1.1 Galvanised iron

8.1.2 Aluminium

8.1.3 Copper

8.1.4 Lead

(4 × 2) (8)

8.2 Briefly explain each of the following concepts:

8.2.1 Waterproofing

8.2.2 Weatherproofing

(2 × 2) (4)

8.3 Explain the procedure to apply a waterproofing self-adhesive membrane. (4)

8.4 Give the function of each of the following tools used by a roof worker:

8.4.1 Scriber

8.4.2 Slate ripper

8.4.3 Handsaw

8.4.4 Drill and drill bits

(4 × 1) (4)
[20]

TOTAL: 100

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