higher education & training

Department:
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REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

CARPENTRY AND ROOF WORK
NQF LEVEL 4

(12030504)

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DEPARTMENT OF HIGHER EDUCATION AND TRAINING
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)
CARPENTRY AND ROOF WORK
NQF LEVEL 4
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. Write neatly and legibly.

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QUESTION 1

1.1 Explain how the inspection of the roof void would assist the carpenter before installing a support deck for a hot water geyser. (3)

1.2 Give TWO reasons why a geyser support deck, resting on the tie beams in a roof covered with corrugated iron sheets would require stronger and possibly more members than the support deck in a tiled roof. (2)

1.3 Give ONE term for each of the following descriptions. Write only the term next to the question number (1.3.1–1.3.4) in the ANSWER BOOK.

1.3.1 The fixing method used to attach an additional member to the tie beam.

1.3.2 A disadvantage of placing the support deck too far from the taps.

1.3.3 The part of a timber roof truss that should never be removed or cut into, to make space for a geyser support deck.

1.3.4 The maximum truss span on which a carpenter can design and install a support deck for a hot water geyser. (4 × 1) (4)

1.4 Make a neat, labelled drawing showing a geyser supported on a support deck built between the tie beams across the passage walls. (12 x ½) (6)

[15]

QUESTION 2

2.1 Explain how a ceiling benefits a lightweight, prefabricated building. (2)

2.2 List the steps taken when setting out the brandering for a gypsum board ceiling in the correct order. (6)

2.3 Describe the correct way of nailing the battens to the bottom chords before levelling the brandering. (3)

2.4 You are required to install a gypsum board ceiling in a room measuring 8,4 m x 4,8 m.
Use the following specifications and dimensions to calculate the amount of material needed to complete the task:

The maximum roof truss span is 4,8 m
The brandering/batten spacing is 400 mm
S.A. Pine battens are 3,6 m x 38 mm x 38 mm
1 gypsum ceiling board measures 3,6 m x 1,2 m x 6 mm
1 length of gypsum cornice is 3m long and 75 mm wide
S.A. Pine cover strip measures 3 m x 44 mm x 10 mm

Note: All calculations must be shown, and the material required must be shown in unit numbers e.g. 20 boards. (4 × 3) (12)

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2.5 Give TWO instances when insulation improves the benefits provided by a ceiling. (2)

2.6 Give a brief explanation of how to make and install the frame on which a trapdoor lid rests. (3)

2.7 Give TWO advantages when using fibreglass for ceiling insulation. (2)

[30]

QUESTION 3

3.1 Give TWO reasons why it is more expensive to install a suspended timber floor than a concrete floor. (2)

3.2 Explain why the engineer would consider the following factors (3.2.1–3.2.3) when designing a suspended timber floor:

3.2.1 Under-floor space/clearance

3.2.2 Joist spacing

3.3.3 Service loads

(3 × 1) (3)

3.3 List THREE benefits of using laminated beams instead of natural timber beams for the joists in a suspended floor. (3)

3.4 Various options are given as possible answers to the following questions. Choose the answer and write only the letter (A–D) next to the question number (3.4.1–3.4.5) in the ANSWER BOOK.

3.4.1 The minimum bearing length for floor joists built into masonry is …

A 150 mm with 10 mm clearance.
B 200 mm with 15 mm clearance.
C 75 mm with 10 mm clearance.
D 100 mm with 20 mm clearance.

3.4.2 The correct position to place damp-proof course in a suspended floor is …

A between the sole plate and the supporting wall.
B between the floor joists and sole plate.
C between the floor boards and joists.
D between the foundation and the sleeper wall.

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3.4.3 A sleeper wall is an independent structure that …

A provides extra ventilation underneath the floor.
B prevents warping of the floorboards.
C is built after the floor joists have been placed in position.
D provides extra support for the floor joist.

3.4.4 Bracing is essential in a timber floor …

A when it is supported on sleeper piers.
B when supported on a sleeper wall.
C When it is not supported on a sleeper wall or sleeper piers.
D when the floor span is greater than 3 meters.

3.4.5 When fitting tongue and groove floor boards, the first board must be fixed ...

A with the tongue facing the wall.
B at 90° to the sole plates.
C with the groove facing the wall.
D tightly against the supporting wall.

(5 × 1) (5)

3.5 Explain why holes for electrical conduits to pass through should never be drilled in the upper or lower third of a floor joist. (3)

3.6 The carpenter would first mark out three parallel and level lines across the two supporting walls and the back wall when setting out for a mezzanine floor. Give a brief explanation of what these three lines indicate. (3)

3.7 Name the TWO types of nails commonly used to fix flooring boards to the floor joists. (1)

[20]

QUESTION 4

4.1 Explain why the carpenter should always consult the plan and door schedule before hanging the doors in a building. (1)

4.2 List THREE possible faults found in a doorframe that would make the hanging of a door difficult. (3)

4.3 Write down the EIGHT general steps to follow when hanging a door after assessing the doorframe. (8)

4.4 Explain why it is advisable to plane a slight bevel on the door stiles when hanging a door. (2)

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4.5 State the connection between the following mortise lock components:

4.5.1 The dead bolt and the key

4.5.2 The latch bolt and the spindle

(2 × 1) (2)

4.6 Complete the following sentences by choosing the correct term from those given in brackets. Write only the answer next to the question number (4.6.1–4.6.4) in the ANSWER BOOK.

4.6.1 The strike plate is fitted into (the door stile/the lock rail/the jamb of the doorframe).

4.6.2 A lock block is an essential component found in all (hollow core doors/panel doors/external doors).

4.6.3 The direction in which a door swings is (influenced by the choice of mortise lock/not influenced by the lock because mortise locks are reversible/influenced by the number of levers in the mortise lock).

4.6.4 A (block plane/try plane/router) is useful for the final trimming of a door.

(4 × 1) (4)
[20]

QUESTION 5

5.1 Discuss the procedures that you will follow to mark, install and finish off kitchen cabinets. Make use of the following headings in question numbers (5.1.1-5.1.2) to answer the question. Write only the answer next to the question number (5.1.1-5.1.2) in the ANSWER BOOK.

Note: Do not explain the fitting and levelling of the doors and drawers.

5.1.1 Marking out and locate the appropriate locations. (5)

5.1.2 Fit, level and finish off the cabinets and shelfs. (10)
[15]

TOTAL: 100

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