higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE (VOCATIONAL)

CARPENTRY AND ROOFWORK
NQF LEVEL 2

28 November 2023

This marking guideline consists of 6 pages.

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INSTRUCTIONS TO MARKERS

1. Mark all the questions.
2. Follow the answers according to the numbering system used in this question paper.
3. Use only a red pen.
4. Put your ticks and crosses neatly and legibly.

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QUESTION 1: BASIC TOOLS AND TERMINOLOGY

1.1 1.1.1 A tape measure.
Used to determine the size of an object, material, etc.

1.1.2 A builder's line or fish line.
Used to align trusses, setting out, etc.

1.1.3 A ring/flat spanner.
Used for tightening or loosening nuts and bolts.

1.1.4 A hand drill.
Used for drilling small holes.

1.1.5 A carpenters pencil.
Used for marking off timber.

(5 × 2) (10)

1.2 A cross-cut saw is used for cutting timber across the grain.
A rip saw is used for cutting timber with the grain. (2)

1.3
- A circular saw
- An electric drill
- An angle grinder (3)

1.4 Mono-pitch refers to a roof structure with only one pitch or slope. (1)

1.5 1.5.1 Girder truss – a strong truss✓ that supports other trusses✓

1.5.2 Scissors truss – a truss with sloping top✓ and bottom chords✓

(2 × 2) (4)
[20]

QUESTION 2: ROOF CONSTRUCTION

2.1
- Reeds
- Grass mats
- Animal skins
- Branches (Any 2 × 1) (2)

2.2
- Protects people from the weather.
- Prevents damage to equipment, furniture, etc. (2)

2.3
- Hot-water geysers
- Air-conditioning units
- Water tanks (3)

2.4
- A deemed-to-satisfy roof is designed based on a carpenter's experience.
- A rationally designed roof is manufactured by engineers according to scientific calculations. (2)

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2.5
- A hip roof is very strong
- A hip roof is attractive (2)

2.6 Roof erector – a qualified individual✓ responsible for erecting a roof✓ (2)

2.7
- Different roof spans
- Different roof pitches
- Different loads on roofs (3)

2.8
- Pull the hoop iron tightly over the rafter.
- Bend the hoop iron down the other side of the rafter.
- Nail the hoop iron securely into the top and side of the rafter. (3)

2.9
- The roof could blow off.
- The roof could collapse.
- High repair costs (3)

2.10 2.10.1 Batten size = 38 mm × 38 mm or 38 mm × 50 mm
Purlin size = 50 mm × 76 mm (Any 1 × 1) (1)

2.10.2
- They support various roof coverings.
- They help to stabilise a roof structure. (2)

2.10.3
- By using nails together with hurricane clips
- By using nails together with galvanised wire (2)

2.11 2.11.1 D
2.11.2 C
2.11.3 A
2.11.4 B
(4 × 1) (4)

2.12
- No wastage of timber
- Time saving
- They are guaranteed (3)

2.13
- The trusses remain vertical
- They can resist strong winds
- The truss chords remain straight (3)

2.14 2.14.1 190 mm
2.14.2 280–350 mm
(2 × 1) (2)
[40]

QUESTION 3: BUILDING A HOWE TRUSS

3.1
- Draw a truss template.
- Mark off truss members from the template and cut them to size.
- Assemble and join all the members with nails and bolts. (3)

3.2
- Top chord/rafter
- Bottom chord/tie beam
- King post
- Queen post
- Strut/web (5)

3.3 3.3.1 When two members are fastened or joined together
3.3.2 When a chalk line is drawn to mark a straight line on a flat surface
(2 × 1) (2)

3.4
- Draw a horizontal line.
- Mark the centre point of the line 'A'.
- Measure 300 mm along the line from A and mark it point 'B'.
- Scribe an arc of 400 mm from 'A' perpendicular to the line.
- Scribe an arc of 500 mm from 'B' to intersect with the arc from 'A' and mark the intersection point 'C'.
- Join 'C' to the centre point 'A' on the line.
- The angle BAC should be equal to 90° (or square). (7)

3.5 100-mm nails (1)

3.6 Sliding bevel (1)

3.7 4 (the top and bottom of both rafters) (1)
[20]

QUESTION 4: HOW TO BUILD A GABLE ROOF

4.1
- Employees could injure themselves or even lose their lives.
- A fine could be imposed on the employer for not adhering to safety rules. (2)

4.2
- The size of the timber needed
- The grade of the timber to be used
- The type of the treatment the timber should have received
- The type of timber to be used (4)

4.3 4.3.1 True
4.3.2 True
4.3.3 False
4.3.4 False
4.3.5 False
(5 × 1) (5)

4.4
- Nail one end of the brace/stay to the top end of the rafter.
- Ensure that the truss is plumb.
- Nail the other end of the brace/stay to the wall plate. (3)

4.5
4.5.1 1 500 mm
4.5.2 3
4.5.3 between the wall plate and the tie beam
4.5.4 spirit level
4.5.5 6 courses
4.5.6 underside

(6)
[20]

TOTAL: 100

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