higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE (VOCATIONAL)

CARPENTRY AND ROOFWORK
NQF LEVEL 3

21 November 2024

This marking guideline consists of 5 pages.

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QUESTION 1

1.1

HEADINGS	GABLE ROOF	HIP ROOF
Cost	The roof is less costly.	This roof is more expensive to construct.
Maintenance	It requires limited maintenance.	It requires more maintenance because of the valley.
Durability	It is tough in rain and snow.	It is the strongest type of roofing structure due to its design.
Wind and air flow	The pressure is on the front wall and there is suction on the roof.	The pressure is on the front wall and there is less suction on the roof.
Appearance	It has two sloped sides.	It has three or four sloped sides in most instances.

(5 × 2) (10)

1.2 A prefabricated roof truss is the structure manufactured beforehand or in the workshop and taken to the construction site thereafter to cover the structure. (2)

1.3
- Bottom chord
- King post
- Web
- Rafter (Any 3 × 1) (3)

1.4 By spreading the load evenly on the building walls and down to the foundation of the building (2)

1.5 Deemed to satisfy is the way of doing things based on past experience and not considering scientific calculations. (1)

1.6
- To stabilise and make the roof rigid/self-bracing
- To make the whole structure firm and strong (2)

1.7
- Size of the roof
- Materials used to erect the roof
- Quality of workmanship
- Load the roof has to carry
- Weather conditions of the area (5)

1.8
- Rafter square
- Measuring tape
- Claw hammer
- Spirit level
- Carpenter's pencil
- Wood chisel
- Nail puller (Any 5 × 1) (5)

[30]

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QUESTION 2

2.1
- A roof truss is a timber member joined in a triangulation pattern to form a sturdy frame to carry the roof covering and any other loads for which it is designed.
- Roof members are joined to form a roof structure, e.g. a king post, rafter, bottom chord, queen post and web. (2)

2.2
- Dead loads: Ceilings, tile slates and brickwork
- Live loads: Wind, rain, birds and workmen on a roof (2 × 2) (4)

2.3
- Because of trusses of different sizes and shapes
- Because it is complicated
- Because scientific calculations are used by the designer (3)

2.4
- As the bottom side of the jack truss gets longer, the top also gets longer, decreasing the angle, thereby becoming lower.
- It is lower so that it can collect water and allow the flow of water, and so that nothing can accumulate on the valley. (2)

2.5
- Lined valley and open valley
- Inverted roll-top ridging valley
- Concealed valley and bastard valley (3)

2.6
- The slope allows water to flow off the roof.
- It protects the roof from gale winds.
- It gives the structure shape.
- It beautifies buildings.
- It determines the type of materials to be used. (Any 2 × 1) (2)

2.7 Tacking the nails means hammering a nail into timber, but not permanently. It is not completely tight so that it can be easily removed. This activity can be done during template construction or skeleton work. (2)

2.8 2.8.1 A carpenter is a skilled person who builds or repairs wooden structures, such as houses, scaffolds or shelving.

2.8.2 Carpentry is a skilled trade and a craft in which the primary work performed is the cutting, shaping and installation of building materials.

(2 × 2) (4)

2.9 2.9.1 Rafter
2.9.2 38 mm × 38 mm
2.9.3 76 mm × 220 mm

(3 × 1) (3)

2.10
- It makes the bearing surface level.
- It acts as a bearing surface for the roof trusses.
- It spreads the load evenly over a large area.
- It spreads the load evenly to the foundation of the building. (Any 2 × 1) (2)

2.11
- To beatify the building structure
- To give stability to the building
- To protect people and their belongings (3)

[30]

QUESTION 3

3.1
3.1.1 True
3.1.2 False
3.1.3 True
3.1.4 False

(4 × 2) (8)

3.2
- SANS 10400
- SANS 10243 (2)

3.3
- To ensure that everything conforms to the design
- To ensure that it is safe for occupancy
- To ensure that approved materials are used (Any 2 × 1) (2)

3.4
- Tools
- Drawing
- Checklist
- Safety specifications (Any 3 × 1) (3)

[15]

QUESTION 4

4.1 A roof designer has technical expertise on the detailed design of the members, the method of construction and the hardware materials to be used. (2)

4.2
- A mistake during the design stage
- Unavailability of materials
- Poor quality of materials (Any 2 × 1) (2)

4.3
4.3.1 Eaves are an extension of the roof that overhang the walls of the house.

4.3.2 Verges are the outer ends of the roof above the gable end.

4.3.3 Ridges are horizontal lines running the length of the roof where the two roof planes meet.

4.3.4 Fascia boards are long, straight boards that run along the lower edge of a roof.

(4 × 1) (4)

4.4
- Mechanically fixing the roof-covering material with serrated nails and screws
- Using storm clips (2)

4.5
4.5.1 45°–55°
4.5.2 5°−15°
4.5.3 17°−26°
4.5.4 10°−15°

(4 × 1) (4)

4.6 The roof covering is the method of covering a building structure with any kind of roofing material to protect the timber framing and the inhabitants. (1)

4.7
- Water
- Moisture condensation (2)

4.8
- Hoop iron
- Roll bolts
- Clout nails
- 5 mm Ø wire (Any 3 × 1) (3)

4.9
- Standing seam
- Double lock standing seam
- Single lock standing seam (3)

4.10
- Good fire protection
- Long lifespan (2)

[25]

TOTAL: 100

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