higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE (VOCATIONAL)

MASONRY
NQF LEVEL 3

16 NOVEMBER 2022

This marking guideline consists of 5 pages.

✓ = 1 mark

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QUESTION 1: GENERAL

1.1
1.1.1 True
1.1.2 True
1.1.3 False
1.1.4 False
1.1.5 True
1.1.6 True
1.1.7 False

(7 × 1) (7)

1.2
1.2.1 Hollow masonry units – are units that contain a core of more than 25% of their gross volume.✓ Hollow units are commonly used in structural applications. Less materials are used to manufacture them and they are quite light, which makes them easy to work with.✓

1.2.2 In situ concrete – is constructed on site from fresh concrete placed by workers.✓ It cures in the platform or mould it is placed, and is intended to be a fixed structure.✓

1.2.3 Pre-cast concrete – is manufactured with reinforced wire and left to cure.✓ Once cured, it is sold by the metre at hardware shops. It is purchased in a solid form and usually used above openings.✓ A pre-cast structure is built by casting concrete into a mould and then curing it in a controlled factory environment.

1.2.4 Roof Anchor – is used for tying metal straps to masonry walls or concrete.✓ Roof anchors are also used to tie roof trusses to walls.✓

1.2.5 A cavity wall – consists of two parallel walls with a space between them.✓ The two leaves are tied to each other by means of wall ties.✓

1.2.6 Thumbprint hard – is a test to determine the stiffness of mortar✓ by pressing your thumb slightly against a finished section of wall.✓

(6 × 2) (12)

1.3
1.3.1 E
1.3.2 A
1.3.3 D
1.3.4 C
1.3.5 G
1.3.6 F

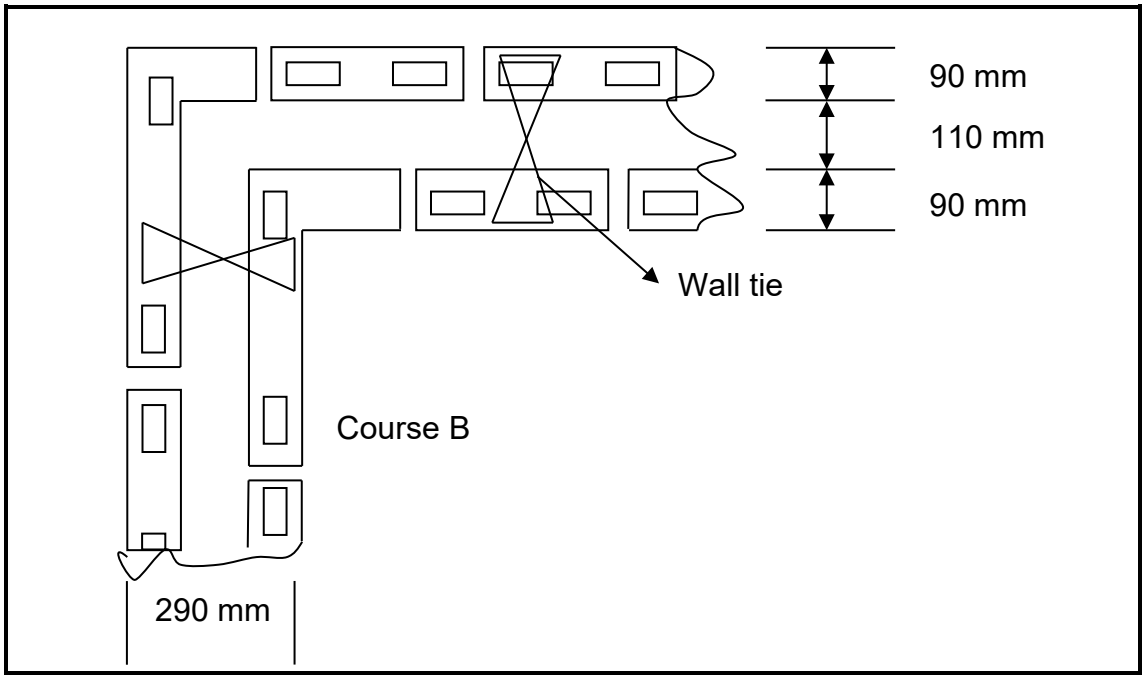
(6 × 1) (6)
[25]

QUESTION 2: CAVITY WALL CONSTRUCTION

2.1 Attach DPC to the sides of the window frame.✓ Place the window frame on two bricks on the wall.✓ Use two 'stays', attached to the top of the frame and keep it in position with weights at the other end.✓ Use a plumb level to ensure that the window frame is vertical and level and at the correct height.✓ Adjust the weights to keep the window secure and in position.✓ Continue building the wall as well as the window lugs into the brickwork.✓ Erect a scaffold and continue building to the top of the frame.✓ Remove the stays and check for plumb and level.✓ Place a reinforced-concrete lintel over the top of the window resting on either side of the wall.✓

(Relevant alternate answer accepted) (9)

2.2



Alternate plan course B of a 290 mm corner cavity wall

Correctness of course B	3 MARKS
Overall neatness	2 MARKS
Labelling/dimensions	3 MARKS
Wall ties inserted	1 MARK
Title of drawing	1 MARK
TOTAL MARKS	**10 MARKS**

2.3
- Butterfly wall ties
- Single-wire wall ties
- Modified PWD wall ties
- Double-triangle wall tie
- Crimp wire ties
- Galvanized MS strap

(Any 4 × 1) (4)

2.4 Temporary openings called clean-out holes can be used✓ to remove mortar droppings in the bottom of the cavity. Timber battens can be used to clean the droppings and debris on the inside of a wall.✓ Openings can be made low down a wall.✓ A cavity should be cleaned on a daily basis✓ so that mortar droppings do not set. (Any 4 × 1) (4)

[27]

QUESTION 3: BASIC MASONRY WALL CONSTRUCTION WITH HOLLOW UNITS

3.1
- Place the straight edge on two masonry units of the same measurements.
- Place a long spirit level or another straight edge on the top of the straight edge.
- Adjust the straight edge upwards or downwards
- until the bubble is in the centre of the vial of the spirit level.
- Measure the distance between the top of the straight edge and the bottom of the spirit level.
- If the distance is greater than 6 mm, the foundations should be levelled and if it is less than 6 mm, our checks can be completed.

(Must be in the correct sequence) (6)

3.2 3.2.1
- Bed joints
- Horizontal joints (Any 1 × 1) (1)

3.2.2
- Vertical joints
- Perpend joints (Any 1 × 1) (1)

3.2.3
- Ruled joints look neat.
- Ruled joints prevent water from getting into a wall. (2)

3.2.4 First you use a long jointer to rule the bed or horizontal joints.✓ Then you use a short jointer to rule the vertical or perpend joints.✓ Finally, you remove excess mortar✓ with a trowel before it hardens and clean the wall with a sponge or brush.✓ (4)

3.3 3.3.1 Full unit
3.3.2 190 × 190 × 190 mm
3.3.3 ¾ unit
3.3.4 90 × 190 × 190 mm
3.3.5 390 × 190 × 190 mm

(5 × 1) (5)

3.4 The area to be build must be even.✓ Any lump higher that 5 mm must be removed.✓ Remove holes deeper than 25 mm before laying out walls.✓ Deep holes can be filled with concrete.✓ High bumps must be removed with a chisel and hammer.✓

(Relevant alternate answer accepted) (5)

[24]

QUESTION 4: ADVANCED MASONRY WALL CONSTRUCTION

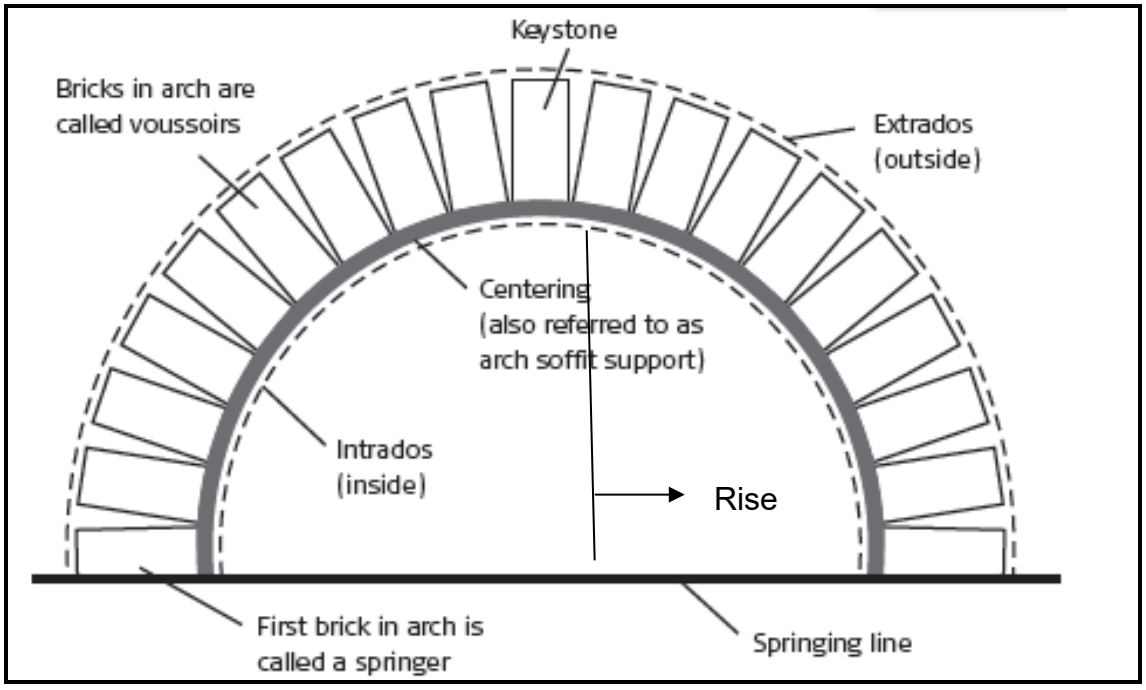
4.1 4.1.1
- Clay masonry units
- Concrete masonry units (2)

4.1.2 When acid is used, dilute it with water or a special masonry cleaner.✓ The dilution should contain 5% hydrochloric acid and 95% water. The masonry should always be soaked with clean water✓ before the diluted acid is applied. It will prevent the acid from being absorbed into the masonry before it reacts with the mortar smears and droppings.✓ Use the diluted acid to clean the mortar droppings and smears on the brickwork. Finally, thoroughly rinse the brickwork so that no acid remains on the brickwork.✓ (4)

4.1.3 Allow large mortar droppings to harden slightly before removing them with a trowel or chisel.✓ Rub the concrete surfaces with another piece of concrete masonry and then rub the surface with a stiff-fibre bristle brush.✓ If required, use chemical agents. But follow the instruction so that the masonry is not damaged.✓ If acid is used, try it on a small panel first to see if it works. If it does, then continue with larger panels.✓ (4)

4.2 A – Ladder type
B – Truss type (2)

4.3



Correctness of semi-circular arch	2 MARKS
Overall neatness	2 MARKS
Correct labelling	8 MARKS
TOTAL MARKS	**12 MARKS**

(12)
[24]

TOTAL: 100

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