higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

MASONRY
NQF LEVEL 3

(12020353)

21 November 2024 (X-paper)
09:00–12:00

This question paper consists of 6 pages.

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DEPARTMENT OF HIGHER EDUCATION AND TRAINING
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)
MASONRY
NQF LEVEL 3
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. Use only a black or blue pen.
5. Write neatly and legibly.

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QUESTION 1: CAVITY WALL CONSTRUCTION

1.1 Define the following terminologies as used in masonry level 3.

1.1.1 Cavity wall

1.1.2 Perimeter ring-beam

1.1.3 Wall ties

1.1.4 Pre-cast concrete

1.1.5 Roof anchor

1.1.6 Jamb

(6 × 2) (12)

1.2 Draw a vertical section through a cavity wall foundation brick work built with cavities filled with concrete showing the following specifications:

- Concrete foundation
- The two leaves
- Concrete filling to support the DPC
- Stepped DPC
- Wall tie
- Part of the wall above the DPC (12)

1.3 Explain how mortar droppings and debris can be removed during the construction of a cavity wall. (4)

1.4 Indicate whether the following statements are TRUE or FALSE by writing only 'True' or 'False' next to the question number (1.4.1–1.4.7) in the ANSWER BOOK.

1.4.1 DPC is waterproof material that allows water or moisture to rise up through the wall.

1.4.2 Cavity walls are used in coastal areas where there is a lot of rain and for insulation.

1.4.3 Timber battens can be used to prevent mortar from dropping into the cavity.

1.4.4 Weepholes in the outer wall are used to drain the cavity between the two leaves.

1.4.5 The superstructure is the part of the building that is above the finished floor level to the underside of the wall plate.

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1.4.6 Cavity wall foundation brick work is built with cavities filled with concrete.

1.4.7 When the roof is added, the ties or roof anchors are wrapped around the rafter and nailed to it.

(7 × 1) (7)
[35]

QUESTION 2: BASIC MASONRY WALL CONSTRUCTION WITH HOLLOW UNITS

2.1 Choose ONE term from the list below for each of the following descriptions and write it next to the question number (2.1.1–2.1.7) in the ANSWER BOOK.

bed joint reinforcement; (290 × 190 × 190 mm); (200 mm); (85 mm) (190 × 190 × 190 mm); (90 × 190 × 190 mm); thumbprint hard; (390 × 190 × 190 mm)

2.1.1 A test used to determine the stiffness of mortar by pushing the thumb slightly with pressure against a finished section of wall.

2.1.2 Full hollow unit size

2.1.3 ¾ hollow unit size

2.1.4 ½ hollow unit size

2.1.5 ¼ hollow unit size

2.1.6 It is used to improve the structural performance of masonry walls by providing additional resistance to lateral loads.

2.1.7 The intervals of gauge when building with 190 mm high blocks inclusive of mortar.

(7 × 1) (7)

2.2 Explain the procedure to measure and correct, if necessary, the foundation footing to ensure that it is truly horizontal and flat. (8)

2.3 There are SIX main ways of ruling vertical and horizontal joints in a face brick wall. These ways are divided into three categories as listed in (2.3.1–2.3.3). List TWO examples of ruling joints in each category.

2.3.1 Good

2.3.2 Fair

2.3.3 Poor

(3 × 2) (6)

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2.4 Explain how hollow masonry work should be reinforced and strengthened to avoid cracking. (6)

2.5 State any THREE methods that can be used to protect new masonry from rain damage. (3)

[30]

QUESTION 3: ADVANCED MASONRY WALL CONSTRUCTION

3.1 Choose a term from COLUMN B that matches a description in COLUMN A. Write only the letter (A−H) next to the question number (3.1.1–3.1.6) in the ANSWER BOOK.

COLUMN A		COLUMN B	
3.1.1	Brick force is also known as bed joint reinforcement	A	arch ring
		B	soffit
3.1.2	Concrete that is constructed on site	C	intersecting walls
3.1.3	A wall that crosses or intersects another wall and is also called cross walls	D	bed joint
		E	ring beam
3.1.4	Underside of a beam	F	in-situ concrete
3.1.5	The curved part of an arch	G	pre-cast concrete
3.1.6	The horizontal joints in face brick	H	brick force

(6 × 1) (6)

3.2 Brick force is a light, welded steel fabric made of two hard-drawn wires held apart known as ladder-type brick force and truss type brick force.

By means of a simple sketch, show the following:

3.2.1 Ladder-type brick force

3.2.2 Truss type brick force

(2 × 3) (6)

3.3 Explain the process to place a recessed electrical plug box and conduit into a hollow unit. (7)

3.4	List any EIGHT parts that form a semi-circular brick arch.	(8)
3.5	Explain how new walls can be protected during construction.	(6)
3.6	State the main purpose of installing roof anchors.	(2)
		[35]

TOTAL: 100

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