higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

MASONRY
NQF LEVEL 3

(12020353)

16 November 2022 (X-paper)
09:00–12:00

This question paper consists of 7 pages.

395Q1N2216

Copyright reserved

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. Start each section on a new page.
5. Use only a blue or black pen.
6. Write neatly and legibly.

Copyright reserved

QUESTION 1: GENERAL

1.1 Indicate whether the following statements are TRUE or FALSE. Choose the answer and write only 'true' or 'false' next to the question number (1.1.1–1.1.7) in the ANSWER BOOK.

1.1.1 Intersecting walls cross or intersect other walls and are also called cross walls.

1.1.2 Centring is a temporary frame supporting an arch while it is constructed to the required shape.

1.1.3 Weep holes are used to cause moisture in a cavity.

1.1.4 A lintel is a vertical structural block that spans the space or opening between two vertical supports.

1.1.5 Shell bedding is a term usually used in hollow block construction to describe joints in which only the face shells of blocks are bedded in the mortar.

1.1.6 A ring beam is made of concrete and is built around the perimeter at the top of a wall.

1.1.7 The embedment depth for lightweight roofs is 300 mm.

(7 × 1) (7)

1.2 Define the following civil terminology as used in Masonry level 3.

1.2.1 Hollow masonry units

1.2.2 In-situ concrete

1.2.3 Pre-cast concrete

1.2.4 Roof Anchor

1.2.5 A cavity wall

1.2.6 Thumbprint hard

(6 × 2) (12)

Copyright reserved

1.3 Choose a/an word/item from COLUMN B that matches a description in COLUMN A. Write only the letter (A–H) next to the question number (1.3.1–1.3.6) in the ANSWER BOOK.

COLUMN A		COLUMN B	
1.3.1	A water proof material that avoids water penetration	A	wall ties
1.3.2	Ties the outer leaf and inner leaf together in a cavity wall	B	brickforce
1.3.3	Placed above all openings	C	bedding
1.3.4	Horizontal mortar joint in which masonry units are laid on	D	lintels
1.3.5	Short jointers are used at these points for finishing face brick walls	E	damp proof course
1.3.6	To tie intersecting/cross walls into structural walls every second course	F	z-bars
		G	vertical joints
		H	horizontal joints

(6 × 1) (6)

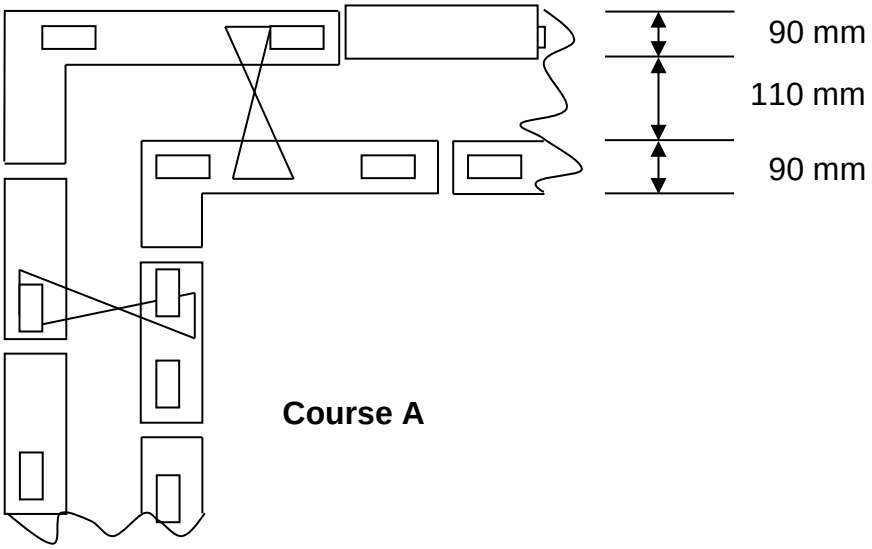
[25]

QUESTION 2: CAVITY WALL CONSTRUCTION

2.1 Explain the activities required for the installation of a steel window frame, including DPC. (9)

2.2 The course A diagram below shows a 290 mm corner cavity wall built in stretcher bond with 190 mm × 90 mm × 90 mm blocks.

Draw course B of the alternate plan course shown in the diagram.
Show the wall ties when you draw course B.
No stopped ends are required.



Course A

(10)

2.3 Wall ties join the inner and outer leaves of a cavity wall.

List FOUR types of wall ties that can be used in a cavity wall. (4)

2.4 Mortar droppings and debris usually falls during the construction of a cavity wall.

Explain ways to remove mortar dropping and debris. (4)

[27]

QUESTION 3: BASIC MASONRY WALL CONSTRUCTION WITH HOLLOW UNITS

3.1 Re-arrange the following list of activities to measure and correct foundation footings in logical and progressive sequence. Write the answer next to the question numbers (3.1.1–3.1.6) in the ANSWER BOOK.

3.1.1 Until the bubble is in the centre of the vial of the spirit level.

3.1.2 Place the straight edge on two masonry units with the same measurements.

3.1.3 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.

3.1.4 Take a long spirit level or another straight edge and place it on top of the straight edge.

3.1.5 And adjust the straight edge upwards or downwards.

3.1.6 Measure the distance between the top of the straight edge and the bottom of the spirit level.

(6 × 1) (6)

3.2 Long and short jointers are tooling tools used to finish off face brick walls during the construction phase.

3.2.1 Name the joints where a long jointer will be used. (1)

3.2.2 Name the joints where a short jointer will be used. (1)

3.2.3 State TWO advantages of ruled joints. (2)

3.2.4 Explain the basic steps to follow in the ruling of joints. (4)

3.3 Complete the following table of the sizes of hollow units by filling in the missing name or dimensions. Write only the word(s) or dimensions next to the question number (3.3.1–3.3.5) in the ANSWER BOOK.

Name of unit	Dimensions of unit
(3.3.1) …	390 × 190 × 190 mm
½ unit	(3.3.2) …
(3.3.3) …	290 ×190 × 190 mm
¼ unit	(3.3.4) …
Sash unit	(3.3.5) …

(5 × 1) (5)

3.4 Explain the prescribed variance allowed in the thickness of a mortar bed according to SANS 2001 - CM1 Table 13. (5)

[24]

QUESTION 4: ADVANCED MASONRY WALL CONSTRUCTION

4.1 At the end of each day, masonry units need to be cleaned without scratching them.

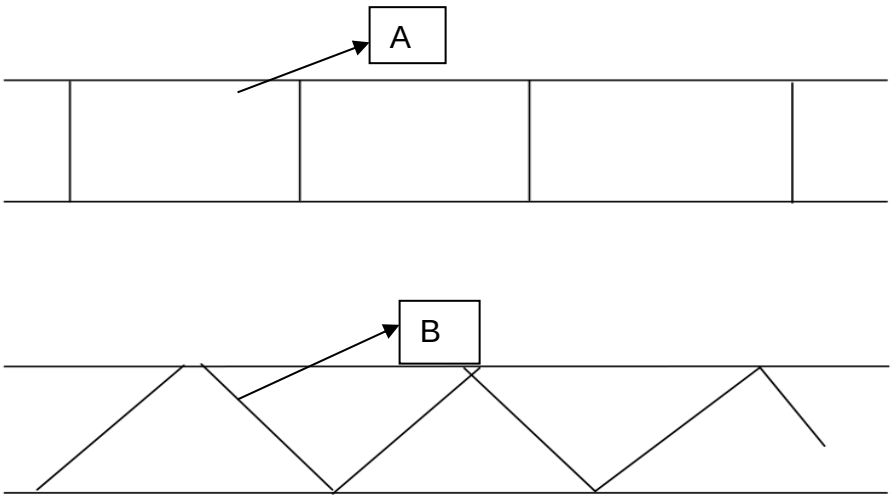
4.1.1 List TWO types of masonry brick units. (2)

4.1.2 Explain the cleaning of clay brick masonry without scratching the bricks. (4)

4.1.3 Explain the cleaning of concrete masonry without scratching the bricks. (4)

4.2 The diagram below shows the two types of brickforce.

Write the name of the type of brickforce labelled A and B in your ANSWER BOOK.



(2 ×1) (2)

4.3 Make a neat drawing of a semi-circular arch and indicate the following parts:

- Voussoirs
- Keystone
- Extrados
- Intrados
- Springer
- Springer line
- Soffit
- Rise

(12)
[24]

TOTAL: 100

Copyright reserved