

**higher education  
& training**

Department:  
Higher Education and Training  
**REPUBLIC OF SOUTH AFRICA**

**NATIONAL CERTIFICATE (VOCATIONAL)**

**MANSORY  
NQF LEVEL 2**

**NOVEMBER 2010**

**(12020152)**

**11 November (X-Paper)  
09:00 – 12:00**

**This question paper consists of 6 pages.**

**TIME: 3 HOURS**  
**MARKS: 100**

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**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. Write neatly and legibly.
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**QUESTION 1: GENERAL**

Choose a description from COLUMN B that matches the item/term in COLUMN A. Write only the letter (A – J) next to the question number (1.1 – 1.10) in the ANSWER BOOK.

| COLUMN A |                | COLUMN B |                                                                                                       |
|----------|----------------|----------|-------------------------------------------------------------------------------------------------------|
| 1.1      | Bed joint      | A        | an arrangement of bricks over an opening                                                              |
| 1.2      | Bond           | B        | short pieces of wire built into the brickwork to keep the two leaves together                         |
| 1.3      | Centre         | C        | the brickwork from floor slabs (DPC) up to wall plate level                                           |
| 1.4      | Arch           | D        | lengths of hoop iron or strands of wire built into walls to secure the roof to the walls              |
| 1.5      | Wall ties      | E        | strips of metal fixed into the sides of wire and built into walls to secure frames to brickwork       |
| 1.6      | Superstructure | F        | an arrangement of bricks in a pattern                                                                 |
| 1.7      | Reinforcing    | G        | a precast pre-stressed concrete beam built in above doors, windows and openings in walls              |
| 1.8      | Roof ties      | H        | the horizontal joint                                                                                  |
| 1.9      | Lugs           | I        | temporary support which is placed across an opening to support the brickwork when crossing an opening |
| 1.10     | Lintel         | J        | metal rods built into masonry walls, or placed in concrete to strengthen it                           |

(10 x 1)

(10)

**QUESTION 2: INTRODUCTION AND BACKGROUND**

Indicate whether the following statements are TRUE or FALSE. Choose the answer and write only 'true' or 'false' next to the question number (2.1 – 2.8) in the ANSWER BOOK.

- 2.1 Stretcher bond is also known as a running bond.
- 2.2 Clay bricks are made of clay, which has been fired to make it hard.
- 2.3 A non-structural wall is an internal wall and can only carry its own load.
- 2.4 The subsoil or bottom of the excavation on which the concrete foundation rests may be rock, clay, gravel or sand.

- 2.5 An English bond consists of stretcher courses only.
- 2.6 Modular masonry units are designed to make it easier to build walls that comply with the minimum National Standards.
- 2.7 A cavity wall consists of a single-leaf wall, built with concrete hollow blocks.
- 2.8 The CMA stipulates that 'unless otherwise stated', units shall be laid in stretcher bond. (8 x 1) (8)

### QUESTION 3: SETTING OUT MASONRY WALLS

- 3.1 3.1.1 Why is it necessary to take care of tools? (3)
- 3.1.2 Name the FOUR groups into which a bricklayer's tools can be divided. (4)
- 3.1.3 List the uses of the following masonry tools:
- A Builders line (1)
  - B Steel square (1)
  - C Bolster (1)
  - D Four pound hammer (1)
  - E Hawk (1)
  - F Radius tool (1)
- 3.2 Most builders use the 3:4:5 method to check if the corners of the internal walls are square. Briefly describe this method. (3 x 2) (6)
- 3.3 What is the difference between a *gauge rod* and a *corner profile*? (4)
- [23]**

### QUESTION 4: BASIC CONSTRUCTION OF MASONRY WALLS

- 4.1 When new buildings are constructed, the Building Standards require DPC to be built into the walls, two courses above the highest point of the natural ground level.
- 4.1.1 What is the purpose of a damp-proof course? (1)
- 4.1.2 Choose TWO DPC materials from the list of common building materials below that can be used in the construction of a building.
- bricks; sand; malthoid; cement; polythene sheets
- (2)
- 4.1.3 List SIX places where DPC must be placed when constructing a building. (6)
- 4.1.4 What is the difference between a *horizontal damp-proof course* in a wall and an *under-floor membrane (damp-proof sheeting)*? (4)
- [13]**

- 4.2 A dwelling is constructed with 390 x 190 x 190 mm concrete hollow blocks. The external walls are single-leaf structural walls, reinforced with a truss pattern brick force course. Draw, in good proportion, the first TWO courses of one of the external return corners.

HINT: Both leaves of the return corner should be THREE blocks long. Clearly indicate the brick force in both courses.

(8)

- 4.3 The mixing of burnt clay and concrete masonry units should not be allowed, but there are instances where they can be mixed in walls. Draw, in good proportion, TWO methods when it is permissible to mix the units together.

(6)

**[27]**

### QUESTION 5: ADVANCED CONSTRUCTION OF MASONRY WALLS

- 5.1 Various options are given as possible answers the following questions. Choose the answer and write only the letter (A – D) next to the question number (5.1.1 – 5.1.5) in the ANSWER BOOK.

- 5.1.1 Brick force provides ... reinforcement in masonry work to control cracking.

- A stretcher
- B tension
- C vertical
- D header

(1)

- 5.1.2 When return corners are reinforced with steel rods, they must be bent at an angle of ...

- A 60°
- B 75°
- C 90°
- D 40°

(1)

- 5.1.3 A ... is the vertical post at the side of a door or window.

- A jamb
- B hollow section
- C steel bar
- D square tubing

(1)

- 5.1.4 The DPC underneath a door frame protects it from ...

- A falling mortar.
- B paint.
- C dust.
- D rising damp/moisture.

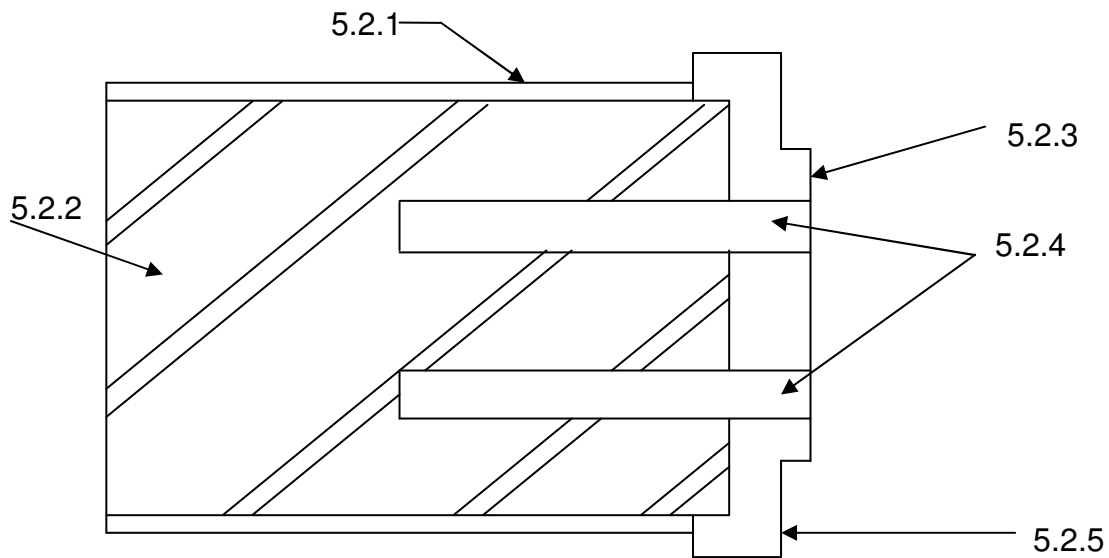
(1)

5.1.5 Temporary supports keep door and window frames ... during construction.

- A level
- B plumb and braced
- C square
- D undamaged

(1)

5.2 FIGURE 1 below shows a horizontal section through a double rebated steel doorframe built into the middle of a double-leaf structural wall. Label parts 5.2.1 to 5.2.5.



**FIGURE 1**

5.3 List THREE types of bond-block lintels. (3)

5.4 Why is it important to cure concrete lintels? (4)

5.5 Define the following arch terms:

- 5.5.1 Voussoirs
- 5.5.2 Intrados
- 5.5.3 Extrados
- 5.5.4 Span
- 5.5.5 Easing

(5)

5.6 List THREE types of materials used to seal control joints. (3)

5.7 Why is it important to have roof plans? (2)

5.8 Name TWO types of roof anchors. (2)

**[32]**

**TOTAL: 100**