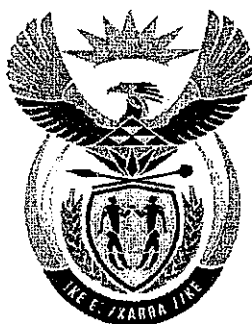


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education

Department:
Education
REPUBLIC OF SOUTH AFRICA

**T230(E)(M23)T
APRIL 2010**

NATIONAL CERTIFICATE

BUILDING DRAWING N3

(8090023)

**23 March (X-Paper)
09:00 – 13:00**

REQUIREMENTS: A2 drawing paper

This question paper consists of 6 pages.

**DEPARTMENT OF EDUCATION
REPUBLIC OF SOUTH AFRICA
NATIONAL CERTIFICATE
BUILDING DRAWING N3
TIME: 4 HOURS
MARKS: 100**

INSTRUCTIONS AND INFORMATION

1. Answer ALL the questions.
 2. Read ALL the questions carefully.
 3. Number the answers correctly according to the numbering system used in this question paper.
 4. Use both sides of the drawing paper.
 5. ALL the drawings are to be fully dimensioned and neatly finished off with descriptive titles and notes to conform with the SANS Recommended Practice for Building Drawings.
 6. Write neatly and legibly.
-

QUESTION 1

Draw, to scale 1:10, the vertical section through the external wall, foundation and the concrete floor of a building. The external wall consists of hammer or squared faced ashlar while the internal skin consists of brickwork that tie in three courses with the ashlar. The wall is plastered internally only.

Specifications:

Concrete foundation	:	700 mm × 230 mm
External wall	:	Overall width 330 mm
Ashlars	:	225 mm high by 110 mm wide and 225 mm high by 220 mm wide

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Bricks	:	220 mm × 110 mm × 75 mm	
Concrete floor	:	150 mm	
Hardcore	:	150 mm	
Ground level	:	225 mm below top of concrete floor	
Screed	:	20 mm	
Floor finish	:	220 mm × 75 mm × 25 mm woodblocks with 150 mm × 25 mm skirting	
Damp proof course	:	230 micron	[20]

QUESTION 2

FIGURE 1 below shows a line diagram of a wooden casement window built into a cavity wall of a domestic dwelling.

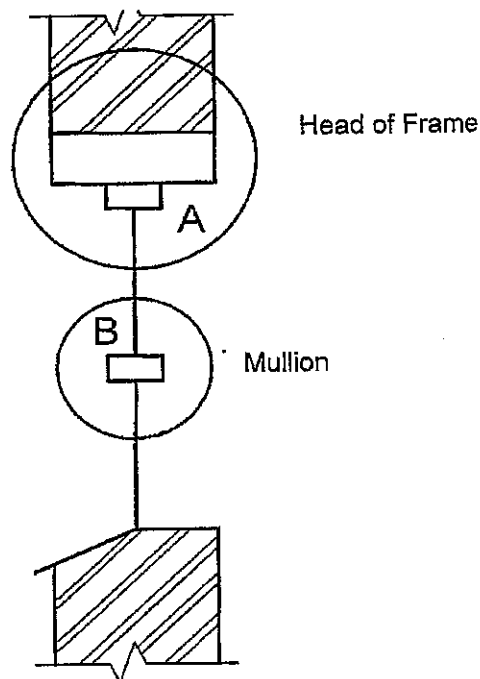


FIGURE 1

- 2.1 Draw to scale 1:5, a vertical cross section at the head of the frame, as circled at 'A' to show the constructional details. (15)
- 2.2 Draw to scale 1:2, a vertical cross section through the mullion, as circled at 'B' to show the constructional details. (10)

PTO

Specifications:

Wall thickness	:	270 mm
External wall	:	Face brick with soldier arch over window opening
Finish to internal wall	:	19 mm plaster
Brick force	:	SANS approved
Tie wires	:	SANS approved
Damp proof course	:	375 micron
Lintel	:	Reinforced 160 mm × 145 mm cast in situ
Arch support	:	75 mm × 75 mm angle iron
Frame head	:	100 mm × 75 mm
Rails	:	50 mm × 44 mm
Mullion	:	100 mm × 75 mm
Glass	:	3 mm clear

[25]

QUESTION 3

Draw, to scale 1:10, the TWO alternate plan layers of a straight wall (no returns or corners) built in Flemish bond. The wall is two bricks in thickness and eight-and-a-half bricks in length.

Show only ONE stopped end on the left-hand side of the wall.

[10]

PTO

QUESTION 4

FIGURE 2 below, shows a line diagram of a free-standing garage 5,0 m × 3,0 m. The garage has a flat roof with one end fixed against a parapet wall and the other end takes an overhang.

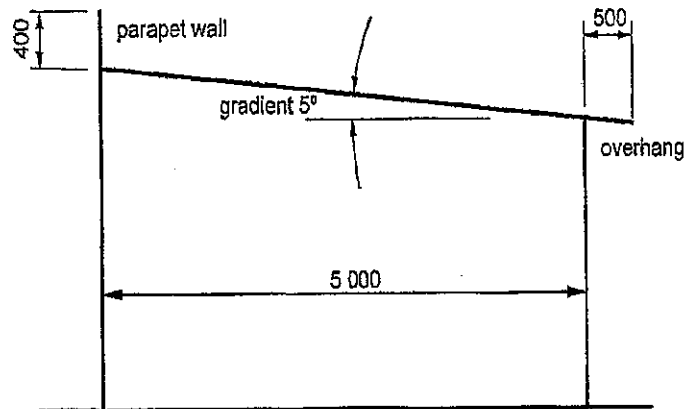


FIGURE 2

Specifications:

Roof cover	:	IBR roof sheeting
Rafters	:	150 mm × 50 mm
Wall plate	:	114 mm × 38 mm
Purlins	:	76 mm × 50 mm
Wall	:	220 mm
Coping	:	Saddle back
Fascia board	:	220 mm × 12 mm fibre cement
Gutter	:	150 mm half-round fibre cement
Down pipe	:	75 mm diameter fibre cement

Draw, to scale 1:10, a complete vertical section through the roof. The drawing must include the parapet wall with flashing detail as well as the eaves. Only part of the wall and down pipe must be shown below the roof.

[20]

PTO

QUESTION 5

An outbuilding must be provided with hot and cold water draw-off points. The draw-off points consist of a basin, shower and a water closet with flushing cistern.

Show, by means of a single-line diagram (not to scale), the pipe arrangement for the cold water system only, from the municipal stopcock outside the boundary of the building up to the geyser and draw-off points. The cold water supply must be branched off just after the pressure reducing valve at the geyser.

[10]**QUESTION 6**

Draw, to scale 1:10, a vertical section through part of a straight flight reinforced concrete staircase.

Specifications:

Tread	:	325 mm (with 25 mm toe piece included)
Rise	:	160 mm
Waist	:	152 mm
Steel reinforcement	:	16 mm diameter tensile rods at 150 mm centres and 8 mm diameter distribution rods at 200 mm centres
Balusters	:	25 mm × 25 mm wrought iron
Handrail	:	50 mm × 25 mm wrought iron Height of 900 mm measured from the nosing line
Finishing of steps	:	Use own discretion

Your drawing should include at least FIVE steps with ONE baluster as well as a method of fixing the balusters.

[15]**TOTAL: 100**