

**GAUTENG DEPARTMENT OF EDUCATION
SENIOR CERTIFICATE EXAMINATION**

BRICKLAYING AND PLASTERING SG

POSSIBLE ANSWERS OCT / NOV 2006

QUESTION 1

- 1.1
- Retain formwork in place for a longer period.PP
 - Cover concrete with impermeable sheeting.PP
 - Cover concrete with wet sacks, wet sand etc.PP
 - Spray the surface at certain intervals with water.PP
- (8)
- 1.2 Cube testP
- (1)
- 1.3 Slump test P
- (1)
- 1.4
- SlateP
 - P.V.C.P
 - AsphaltP
 - LeadP
 - BitumenP
 - MelthoidP
- (6)
- 1.5
- The direction of the fluePP
 - The shape of the buildingPP
 - The slope of the roofPP
 - The proximity of the trees or other buildingsPP
 - The position of the door or window openingPP
- (10)
- 1.6 A distance a pile penetrates after each blowPP
- (2)
- 1.7
- Be of a sufficient strengthPP
 - Be protected against damagePP
 - Be constructed of durable materialPP
 - All joints should remain watertightPP
 - The joints must not form any obstruction in the interior of the drainPP
 - Be laid in a straight line between points where changes of direction occurPP
 - Be self-cleansingPP
 - Be of adequate size to carry maximum volume of matterPP
 - Where any drain or sewer passes under a building such precautions should be taken to prevent damage or loss of watertightness PP
 - Be capable of withstanding watertightness test after its completionPP
- [20]

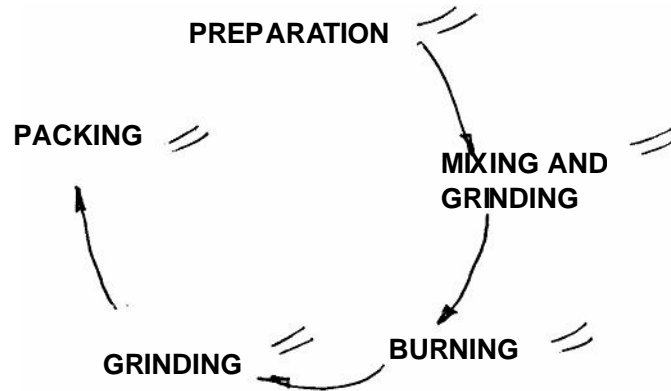
QUESTION 2

- 2.1
- Base plateP
 - Toeboard clipP
 - Double couplerP
 - Single couplerP
 - Reveal pinP
 - Putlog endP
 - Swivel couplerP
 - Putlog clipP
- (8)
- 2.2 Drawing (20)

QUESTION 3

- 3.1 It is a substance which is applied to walls and ceilings while it is plastic and which later hardens.PP (2)
- 3.2.1 TWO COAT PLASTER
- Clean the wall and remove all loose mortar.PP
 Roughen the wall.PP
 Distemper it.PP
 Rake out joints not over 6 mm depth.PP
 Apply rendering first coat.PP
 Leave it to set.PP
 Float with steel trowelling.PP
 Keep rendering damp.PP
 Comb the surface when the coat starts setting.PP
 Apply second coat and leave it to set.PP
 Cut to plumb and fill where there are holes.PP
 Float the wall using the wooden float to give a smooth finish.PP (24)
- 3.2.2 MIXING MORTAR BY HAND
- The sand and cement are carefully measured.PP
 First the sand is spread out on a platform made of half bricks.PP
 Next the cement is distributed evenly over the sand.PP
 The dry mix is thoroughly mixedPP until it has attained an even greyPP colour.
 Careful mixing follows.PP (12)

3.3 MANUFACTURING OF PORTLAND CEMENT FLOW-CHART



(10)

QUESTION 4

- | | | |
|-------|-----------------------|------|
| 4.1.1 | Semicircular archP | |
| 4.1.2 | Segmental archP | |
| 4.1.3 | Semi-elliptical archP | (3) |
| 4.2 | Drawing | (12) |
| 4.3 | Drawing | (21) |

QUESTION 5

- | | | |
|-------|---------|------|
| 5.1 | Drawing | (30) |
| 5.2.1 | ConPP | |
| 5.2.2 | MHCPP | |
| 5.2.3 | IEPP | |
| 5.2.4 | GPP | |
| 5.2.5 | ILPP | (10) |

QUESTION 6

- | | | |
|-----|---|------|
| 6.1 | Draw to scale of 1:10 a vertical section through the roof eaves and ceiling of a building by using the following specifications:
General impression
Roof-truss detail
Roof covering detail
Rainwater goods
Eaves batters
Ceiling detail
External wall
Scale | (40) |
|-----|---|------|

QUESTION 7

$$\begin{aligned}
 7.1 \\
 7.1.1 \quad \text{Volume} &= 20 (\text{Length} \times \text{Width} \times \text{Height})P \\
 &= 20 (0,3 \text{ m} \times 0,225 \text{ m} \times 3 \text{ m})PPP \\
 &= 20 (0,201 \text{ m}^3)PPP \\
 &= 4,02 \text{ m}^3 \qquad (11)
 \end{aligned}$$

$$\begin{aligned}
 7.1.2 \quad \text{Cement} &= \frac{1}{6} \times 4,02 \text{ m}^3P \\
 &= 0,67 \text{ m}^3
 \end{aligned}$$

Given $0,033 \text{ m}^3$

$$\begin{aligned}
 &= 0,67 \text{ m}^3 / 0,033 \text{ m}^3P \\
 &= 20,3 \\
 &= 21 \text{ bags of cement}P \qquad (3)
 \end{aligned}$$

$$\begin{aligned}
 7.1.3 \quad \text{Sand} &= \frac{2}{6} \times 4,02 \text{ m}^3P \\
 &= 1,34 \text{ m}^3PP \qquad (3)
 \end{aligned}$$

$$\begin{aligned}
 7.1.4 \quad \text{Stones} &= \frac{3}{6} \times 4,02 \text{ m}^3P \\
 &= 2,01 \text{ m}^3PP \qquad (3)
 \end{aligned}$$

7.2 EXTERNAL WALLS

$$\begin{aligned}
 \text{Area A} &= 2 (l \times h)P \\
 &= 2 (22 \text{ m} \times 2,6 \text{ m})P \\
 &= 114,4 \text{ m}^2P
 \end{aligned}$$

$$\begin{aligned}
 \text{Area B} &= 2 (l \times h)P \\
 &= 2 (9,56 \text{ m} \times 2,6 \text{ m})P \\
 &= 49,71 \text{ m}^2P
 \end{aligned}$$

$$\begin{aligned}
 \text{Total area of external walls A + B} &= 114,4 \text{ m}^2 + 49,71 \text{ m}^2P \\
 &= 164,11 \text{ m}^2P
 \end{aligned}$$

Area of Openings

$$\begin{aligned}
 \text{Windows A \& B} &= 2 (l \times h)P \\
 &= 2 (1,6 \text{ m} \times 1,3 \text{ m})P \\
 &= 4,16 \text{ m}^2P
 \end{aligned}$$

$$\begin{aligned}
 \text{Windows C \& D} &= 2 (l \times h)P \\
 &= 2 (1,2 \text{ m} \times 1,0 \text{ m})P \\
 &= 2,4 \text{ m}^2P
 \end{aligned}$$

$$\begin{aligned}
 \text{External Doors} &= 2 (l \times h)P \\
 &= 2 (0,8 \text{ m} \times 2,1 \text{ m})P \\
 &= 3,36 \text{ m}^2P \\
 \\
 \text{Total area of openings} &= 4,16 \text{ m}^2 + 2,4 \text{ m}^2 + 3,36 \text{ m}^2P \\
 &= 9,92 \text{ m}^2P \\
 \\
 \text{Total area of bkwk} &= 164,11 \text{ m}^2 - 9,92 \text{ m}^2P \\
 &= 154,19 \text{ m}^2P \\
 \\
 &108 \text{ bricks per m}^2 \\
 \\
 \text{Total no. of bricks external} &= \text{area} \times 108/\text{m}^2 \\
 &= 108/\text{m}^2 \times 154,19 \text{ m}^2P \\
 &= 16\,652,52P \\
 &= 16\,653 \text{ bricks}P
 \end{aligned}$$

INTERNAL WALLS

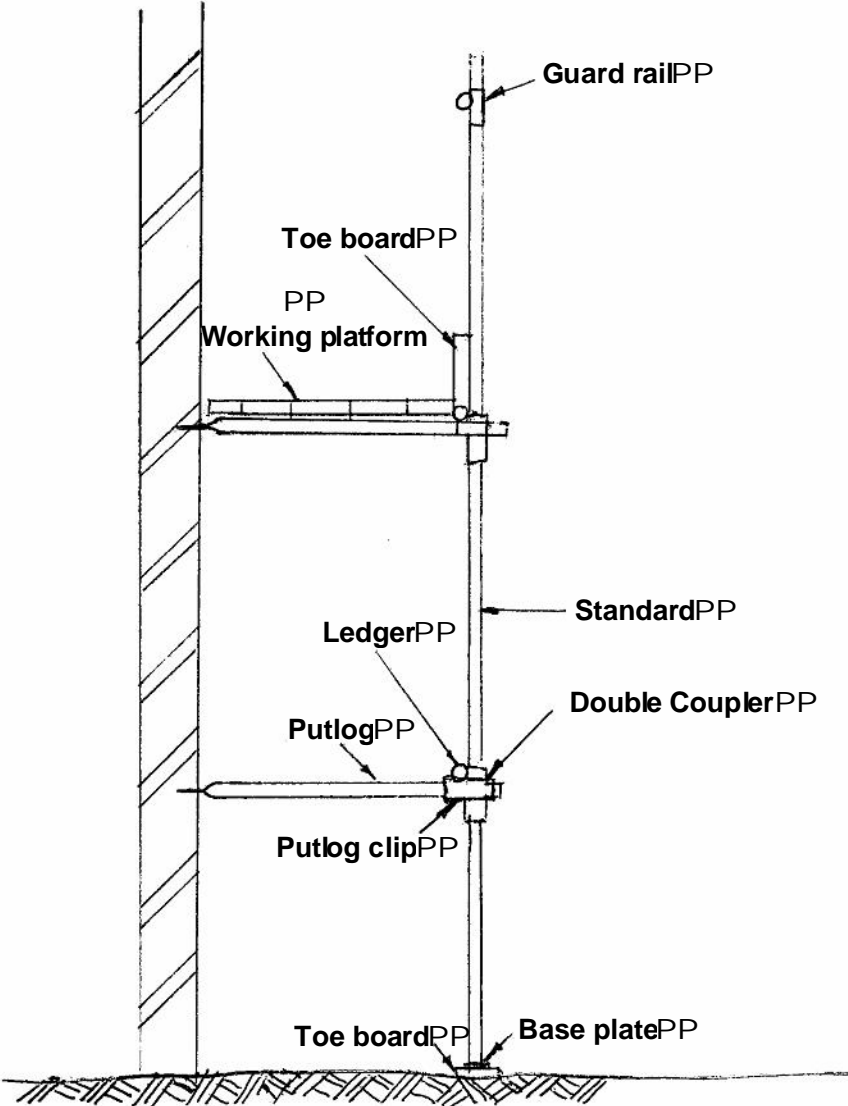
$$\begin{aligned}
 \text{Area A} &= l \times hP \\
 &= 3,56 \text{ m} \times 2,6 \text{ m}P \\
 &= 9,26 \text{ m}^2P \\
 \\
 \text{Area B} &= l \times hP \\
 &= 10,56 \text{ m} \times 2,6 \text{ m}P \\
 &= 27,46 \text{ m}^2P \\
 \\
 \text{Area A + Area B} &= 9,26 \text{ m}^2 + 27,456P \\
 &= 36,72 \text{ m}^2P \\
 \\
 \text{Doors} &= 2 (l \times h)P \\
 &= 2 (0,8 \text{ m} \times 2,1 \text{ m})P \\
 &= 3,36 \text{ m}^2P \\
 \\
 \text{Total area of bkwk – area} &= 36,72 \text{ m}^2 - 3,36 \text{ m}^2P \\
 \text{of openings} &= 33,36 \text{ m}^2P
 \end{aligned}$$

Given 54 bricks/m² for halfbrick wall

$$\begin{aligned}
 \text{Total no of bricks internal} &= 54 \text{ bricks/m}^2 \times 33,36 \text{ m}^2P \\
 &= 1\,801,44 \text{ bricks}P \\
 &= 1\,802 \text{ bricks}P \\
 \\
 \text{Total no. of bricks} &= 1\,802 \text{ bricks} + 16\,653 \text{ bricks}P \\
 &= 18\,455 \text{ bricks}P
 \end{aligned}$$

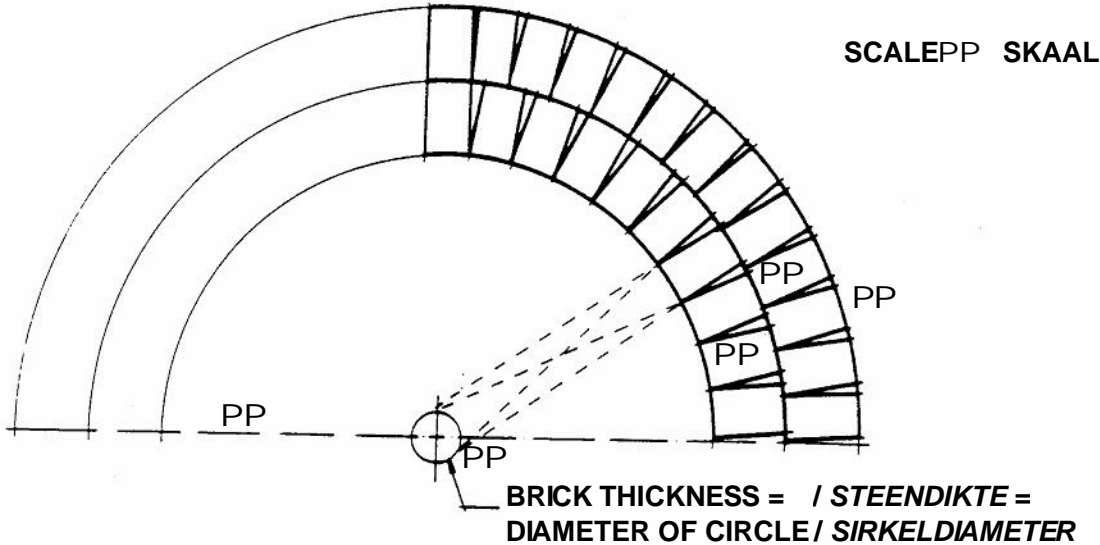
(40)

QUESTION 2.2



(20)

**QUESTION 4.2 ANSWER
VRAAG 4.2 ANTWOORD**

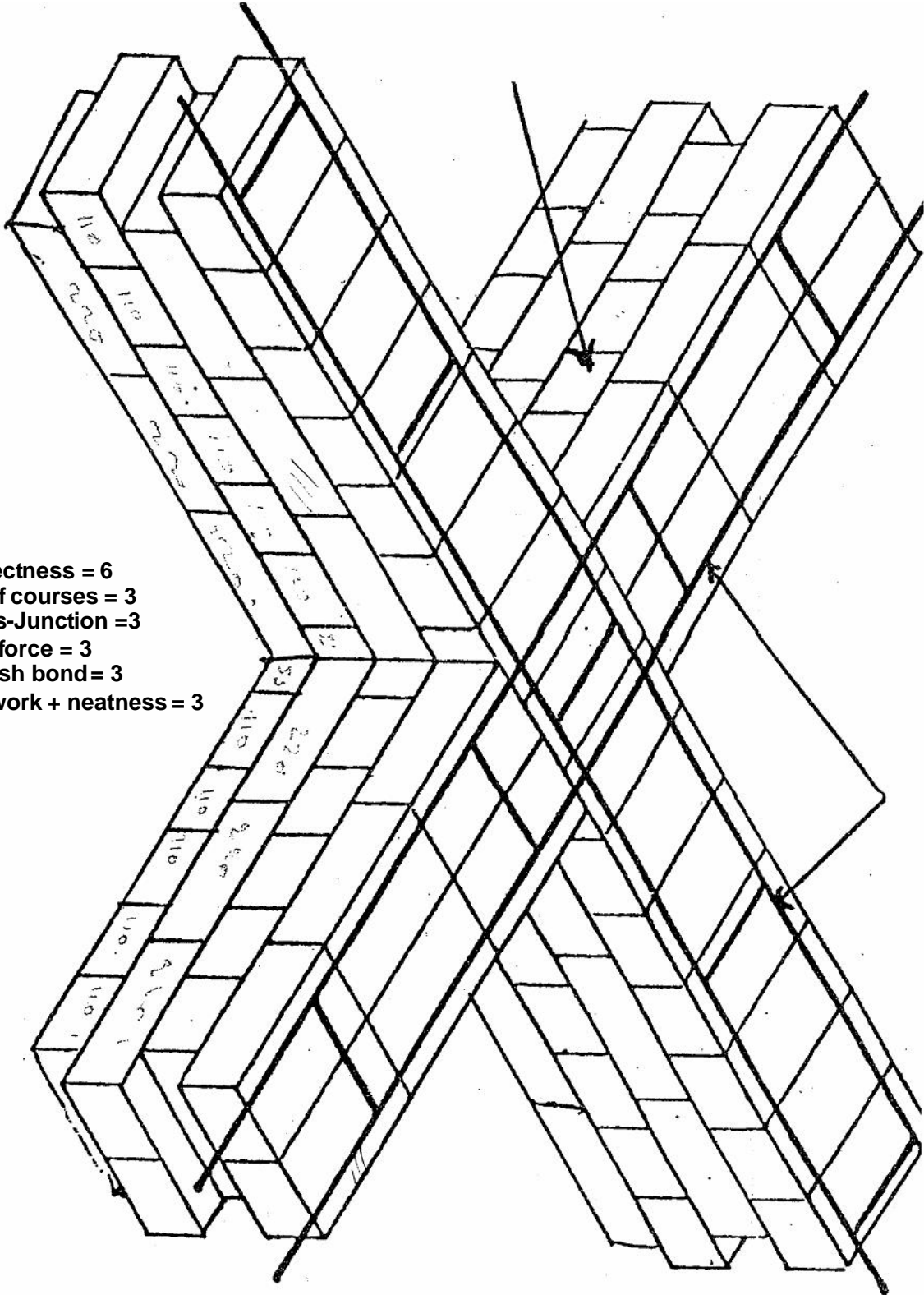


**FRONT ELEVATION OF A TWO-RINGED SEMICIRCULAR ARCH
VOORAANSIG VAN 'N TWEERING-HALFSIRKEL-BOOG**

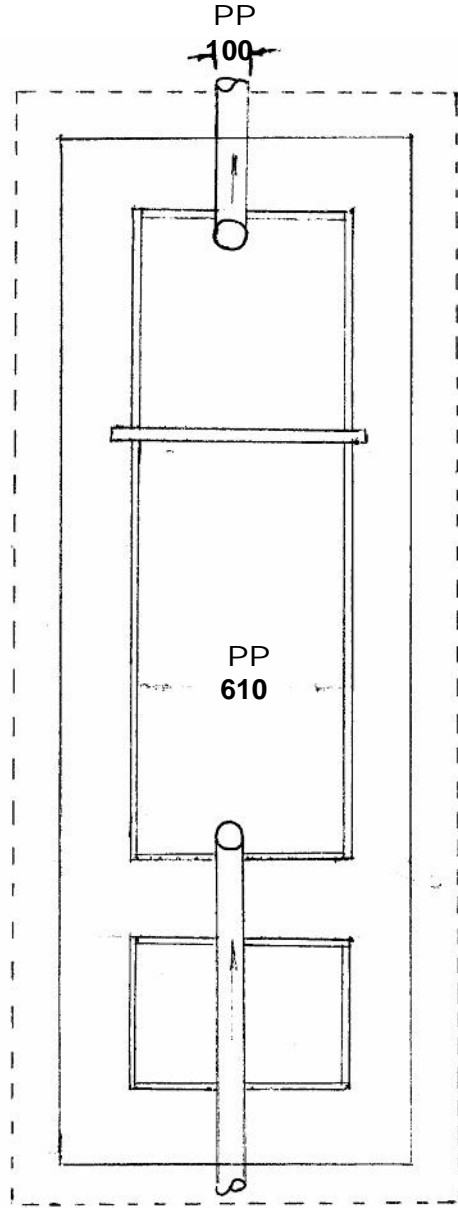
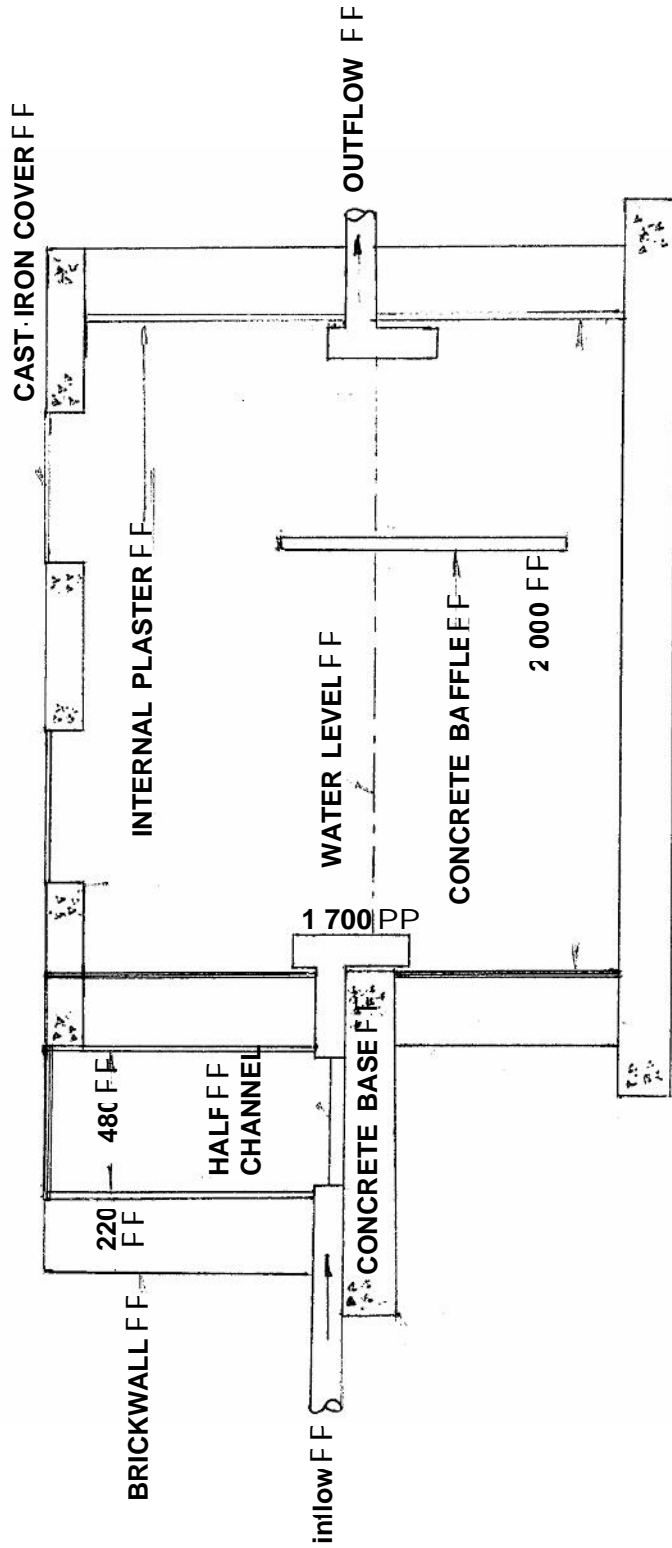
(12)

QUESTION 4.3

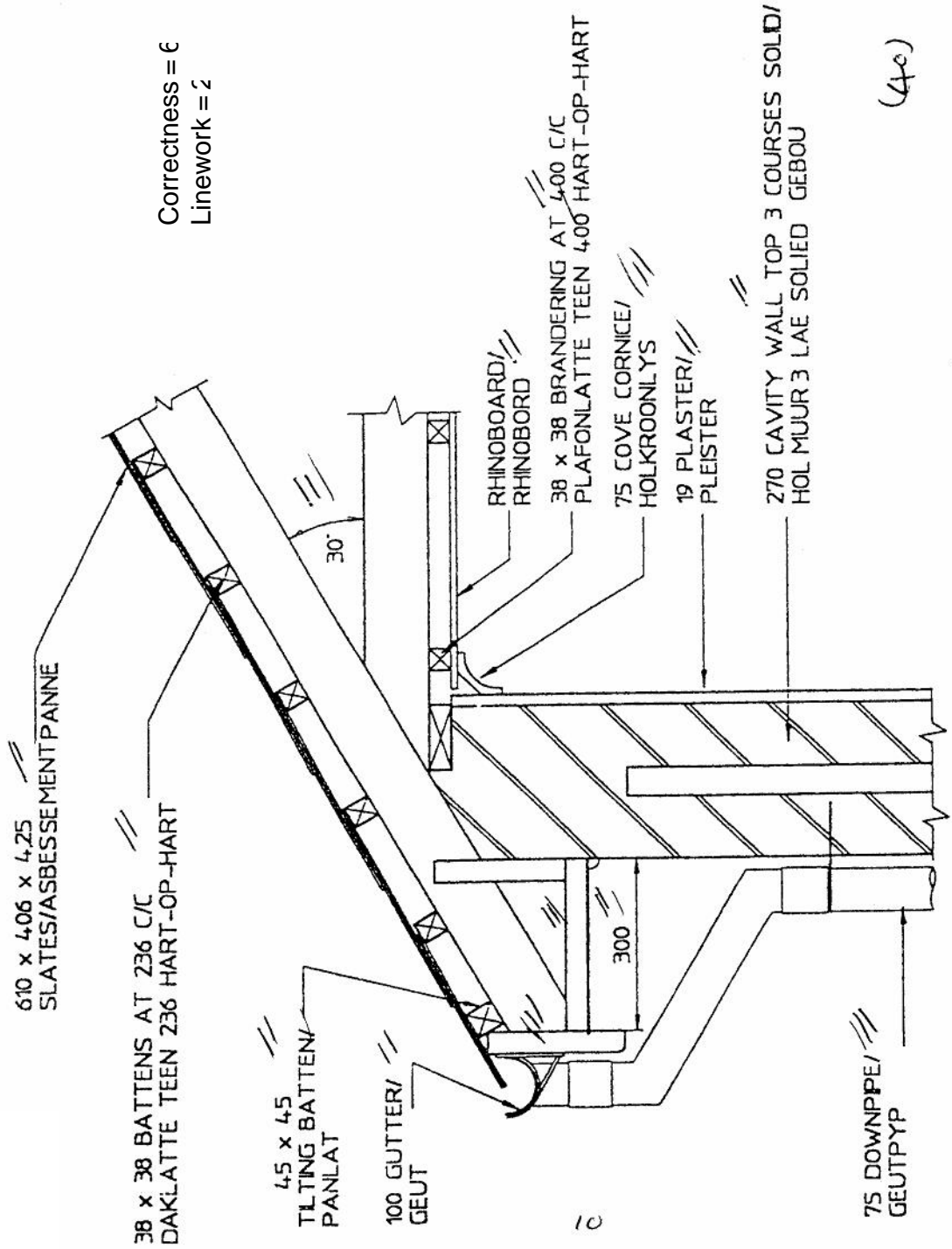
Correctness = 6
No. of courses = 3
Cross-Junction = 3
Brickforce = 3
English bond = 3
Linework + neatness = 3



QUESTION 5.1



QUESTION 6



Correctness = 6
Linework = 2

SECTION THROUGH ROOF WITH CEMENT SLATE SCALE 1:10
DEURSNEE DEUR DAK MET ASBESSEMENT-PANNE SKAAL 1:10

(40)