



Province of the  
**EASTERN CAPE**  
EDUCATION

**NATIONAL  
SENIOR CERTIFICATE**

**GRADE 12**

**SEPTEMBER 2014**

**CIVIL TECHNOLOGY  
MEMORANDUM**

**MARKS:            200**

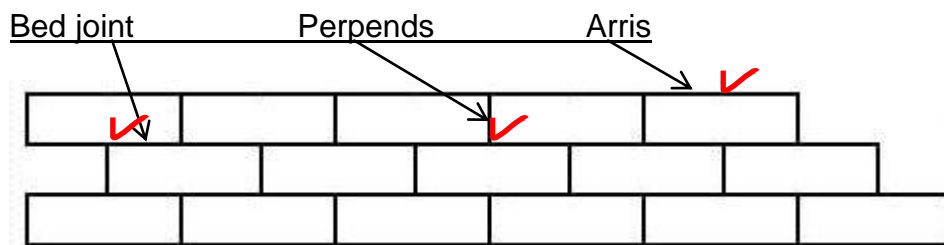
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This memorandum consists of 10 pages.

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**QUESTION 1: CONSTRUCTION PROCESSES**

- 1.1 1.1.1 300 mm (1)  
 1.1.2 600 mm (1)  
 1.1.3 1 320 mm (1)  
 1.1.4 Kick plate (1)  
 1.1.5 Prevent bumping foot against cupboard (1)
- 1.2 Any FOUR safety measures – safe storage of materials.  
 • Stacked on strong floors  
 • Not higher than 3x the width of the stack  
 • Piles must be interlocked/strapped  
 • Protruding material must be avoided  
 • Not obstruct fire fighting equipment, light or ventilation  
 • Flammable materials/liquids stored in special containers  
 • Not obstruct routes  
 • Gases in special containers (4 x 1) (4)
- 1.3 (1) When tools are blunt  
 (2) more pressure must be placed – cause injury (2)
- 1.4 1.4.1 Level or Plumb bob (1)  
 1.4.2 Belt sander (1)
- 1.5 1.5.1 TRUE (1)  
 1.5.2 FALSE (1)  
 1.5.3 TRUE (1)  
 1.5.4 FALSE (1)  
 1.5.5 FALSE (1)  
 1.5.6 FALSE (1)  
 1.5.7 TRUE (1)  
 1.5.8 TRUE (1)
- 1.6 Make a neat line sketch in good ratio to illustrate the elevation of the following brickwork:



- 1.6.1 - Three brick courses ✓✓✓  
 - Tothing on the left hand side ✓✓✓  
 - Raking back on the right hand side ✓✓✓ (6)
- 1.6.2 Labels (3)

**[30]**

**QUESTION 2: ADVANCED CONSTRUCTION PROCESSES**

- |     |       |  |         |     |
|-----|-------|--|---------|-----|
| 2.1 | 2.1.1 | TRUE   |         | (1) |
|     | 2.1.2 | FALSE  |         | (1) |
|     | 2.1.3 | TRUE   |         | (1) |
|     | 2.1.4 | FALSE  |         | (1) |
|     | 2.1.5 | TRUE   |         | (1) |
|     | 2.1.6 | FALSE  |         | (1) |
|     | 2.1.7 | TRUE   |         | (1) |
|     | 2.1.8 | FALSE  |         | (1) |
| 2.2 | 2.2.1 | A – Step foundation<br>B – Strip foundation<br>C – Pile foundation<br>D – Raft/Floating foundation | (4 x 1) | (4) |
|     | 2.2.2 | Inclining sites  |         | (1) |
|     | 2.2.3 | C – Pile foundation  |         | (1) |
| 2.3 | (1)   | Cement   |         |     |
|     | (2)   | Sand   |         |     |
|     | (3)   | Stone  |         |     |
|     | (4)   | Water  |         | (4) |
| 2.4 |       | Any THREE methods of curing concrete:  |         |     |
|     |       | • Retaining formwork   |         |     |
|     |       | • Covers   |         |     |
|     |       | • Ponding  |         |     |
|     |       | • Sprinkling   |         |     |
|     |       | • Curing compounds   | (Any 3) | (3) |
| 2.5 | 2.5.7 | Spread the sand approximately 100 mm thick.  |         |     |
|     | 2.5.4 | Spread the cement over the sand.   |         |     |
|     | 2.5.6 | Mix properly.  |         |     |
|     | 2.5.8 | Make a pile with a depression on top.  |         |     |
|     | 2.5.2 | Add water while mixing continuously.   |         |     |
|     | 2.5.5 | Mix until a thick paste.   |         |     |
|     | 2.5.3 | Add the stone.   |         |     |
|     | 2.5.1 | Mix thoroughly.  |         | (8) |
| 2.6 | 2.6.1 | (1) Better binding/bond (2) with concrete  |         | (2) |
|     | 2.6.2 | 16 mm  |         | (1) |
|     | 2.6.3 | 04   |         | (1) |
| 2.7 | 2.7.1 | Formwork boards  |         |     |
|     | 2.7.2 | Yoke   |         |     |
|     | 2.7.3 | Clamp  |         |     |
|     | 2.7.4 | Wedge  |         | (4) |

- 2.8 Any THREE requirements which formwork must comply to:
- Strong enough
  - Not deflect under load
  - Accurately set out
  - Grout-tight joints
  - Easily assembled
  - Easily dismantled
  - Easily fixed
- (Any 3) (3)  
**[40]**

### QUESTION 3: CIVIL SERVICES

- 3.1 3.1.1 3.1.4 3.1.5 3.1.8 3.1.10 (5)
- 3.2 Any FOUR factors which determine the maximum water temperature in a solar heating system.
- Extent of exposure to sun
  - Time of year
  - Amount of cloud coverage
  - Amount of day light
  - Time of day
- (Any 4) (4)
- 3.3 Insufficient water pressure/Many draw-of points (taps) (1)
- 3.4 3.4.1 Storage tanks/Geysers/Cistern (1)  
3.4.2 Cistern (1)
- 3.5 (1) A trench (2) filled with stones (3) and covered with a layer of soil (4) to soak away soiled water/septic tank outflow. (4)
- 3.6 3.6.1 Manhole/Inspection hole (1)
- 3.6.2 Any TWO places in drainage system where the structure will occur.
- Drainpipes change direction
  - Where several drains meet
  - Each 90 m for straight drains (25 m when no other access opening)
  - Before connection to municipal drainage
- (Any 2) (2)
- 3.7 (1) Testing/inspection of drains (2) Cleaning of drains (2)
- 3.8 (1) To act as a waterlock (2) to keep bad odours out. (2)
- 3.9 3.9.1 FALSE (1)  
3.9.2 TRUE (1)  
3.9.3 TRUE (1)  
3.9.4 FALSE (1)  
3.9.5 TRUE (1)
- 3.10 Advantage of wind power generating above coal power generating.  
(1) Wind – no pollution  
(2) Less labour intensive (2)
- [30]**

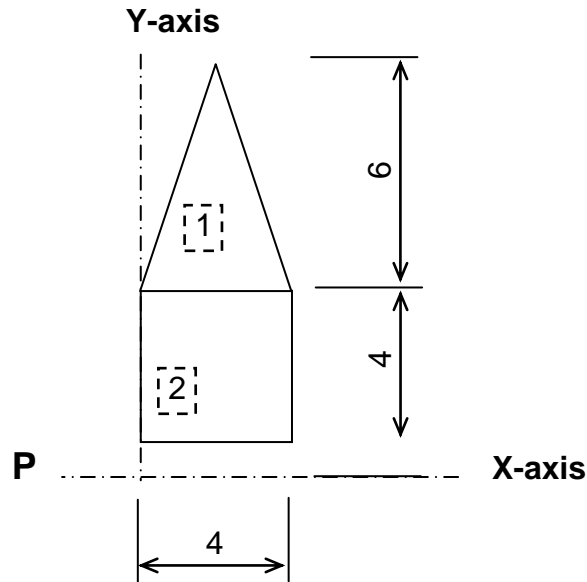
**QUESTION 4: MATERIALS AND QUANTITIES**

- 4.1 4.1.1 • Working surfaces  
• Shop fitting  
• Kitchen cupboards  
• Partitions  
• Panelling (Any 2) (2)
- 4.1.2 • Working surfaces  
• Shop fitting  
• Kitchen cupboards  
• Partitions  
• Panelling (Any 2) (2)
- 4.1.3 • Site huts  
• Fences  
• Formwork  
• Soffits (Any 2) (2)
- 4.2 (1) Higher density (2) causes better strength (2)
- 4.3 (1) Higher humid conditions causes (2) swelling which (3) leads to enlarged size (3)
- 4.4 Any SIX advantages of concrete:  
• Easy to handle  
• Can be cast into any shape  
• Strong, clean and hygienic  
• Low maintenance  
• Has a long life and is durable  
• Resistant to fire, weather and degradation  
• Not affected by water  
• Can be made impermeable  
• Smooth surfaces can be obtained (Any 6) (6)
- 4.5 Any FOUR factors which can influence the workability of concrete.  
• Sizes of aggregates  
• Graded aggregates  
• Finer aggregates  
• Smooth, rounded aggregate  
• Additives  
• Quantity water (Any 4) (4)
- 4.6 Determine the centre line of the 220 mm cavity brick wall structure  
 $(9\ 000 \times 2) + (6\ 000 \times 2) - (220 \times 4) = 29,12\ m\ (29\ 120\ mm)$  (5)
- 4.7 Explain the purpose of each column:  
A – Indicates number by which an item must be multiplied (Number of items)  
B – All measurements of an item  
C – Results of column A and B  
D – Full description (4)

**[30]**

**QUESTION 5: APPLIED MECHANICS**

- 5.1 Calculate the centroid of the body in FIGURE 5.1 from point P.  
(The table on answer sheet A can be used for the calculations.)

**FIGURE 5.1**

Area 1: $\frac{1}{2} \times 4 \times 6 = 12$ ✓ Area 2: $4 \times 4 = 16$ ✓ Total: = 28	Moments around X ✓ $(28 \times X) = (12 \times 2) + (16 \times 2)$ ✓ $28X = 24 + 32$ $= 56 \div 28$ ✓ $= 2$ from P ✓	Moments around Y ✓ $(28 \times X) = (12 \times 6) + (16 \times 2)$ ✓ $28X = 72 + 32$ $= 104 \div 28$ ✓ $= 3,71$ from P ✓
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(12)

- 5.2 FIGURE 5.2 on ANSWER SHEET A shows a beam with pointed loads.  
Calculate on ANSWER SHEET A the following:

5.2.1 The shear force values (4)

5.2.2 Complete the shear force diagram according to the shear force values (4)

- 5.3 FIGURE 5.3 on ANSWER SHEET B shows a space diagram of a roof truss.  
Determine graphically on ANSWER SHEET B the sizes and nature of the parts  
of the truss by completing the force diagram and the table.

(10)  
**[30]**

**QUESTION 6**

- 6.1 FIGURE 6.1 on ANSWER SHEET C shows the north elevation of a part of a floor plan. Answer the following questions with regard to the floor plan:
- 6.1.1 Complete the measurement writing of the north elevation according to the standard building drawing practice. (10)
- 6.1.2 Draw the outer door at opening **D1**. (3)
- 6.1.3 Draw a water closet in good ratio at the eastern side of room **B**. (3)
- 6.1.4 Draw a hand wash basin in good ratio at the northern side of room **B**. (3)
- 6.1.5 Draw a shower in good ratio at the western side of room **B**. (3)
- 6.2 Answer the following questions with regard to the structure in FIGURE 6.2:
- 6.2.1 A – Purlin  
 B – Beam filling  
 C – DPC  
 D – Air brick/drip joint  
 E – Tie beam  
 F – Wall plate  
 G – Cavity  
 H – Wall tie  
 I – Lintel (10 x 1) (10)
- 6.2.2 Prevent water to enter to inner wall (1)
- 6.2.3 Draining of damp in cavity (1)
- 6.2.4 38 x 38 mm (2)
- 6.2.5 114 x 38 (2)
- 6.2.6 Wood (1)
- 6.2.7 Concrete (1)
- [40]**
- TOTAL: 200**

ANSWER SHEET ANTWOORDBLAD	A	CIVIL TECHNOLOGY	NAME: _____
		SIVIELE TEGNOLOGIE	NAAM: _____

**QUESTION/VRAAG 5.1**

Shape / Vorm	Area	X	mX	Y	mY
1	$\frac{1}{2}b \times h$ $= \frac{1}{2}4 \times 6$ $= 12$ ✓	$\frac{b}{2} = \frac{4}{2} = 2$ ✓	24	$\frac{h}{3} = \frac{6}{3} = 2$ $2+4 = 6$ ✓	72
2	$L \times b$ $= 4 \times 4$ $= 16$ ✓	$\frac{b}{2} = \frac{4}{2} = 2$ ✓	32	$\frac{h}{2} = \frac{4}{2} = 2$ ✓	32
TOTAAL/TOTAL	28		56 ✓		104 ✓
X = $\frac{56}{28} = 2$ ✓		Y = $\frac{104}{28} = 3.71$ ✓			

(12)

**QUESTION/VRAAG 5.2**

5.2.1 Die skuifkragwaardes/The shear force values

a = ...-10 N ✓

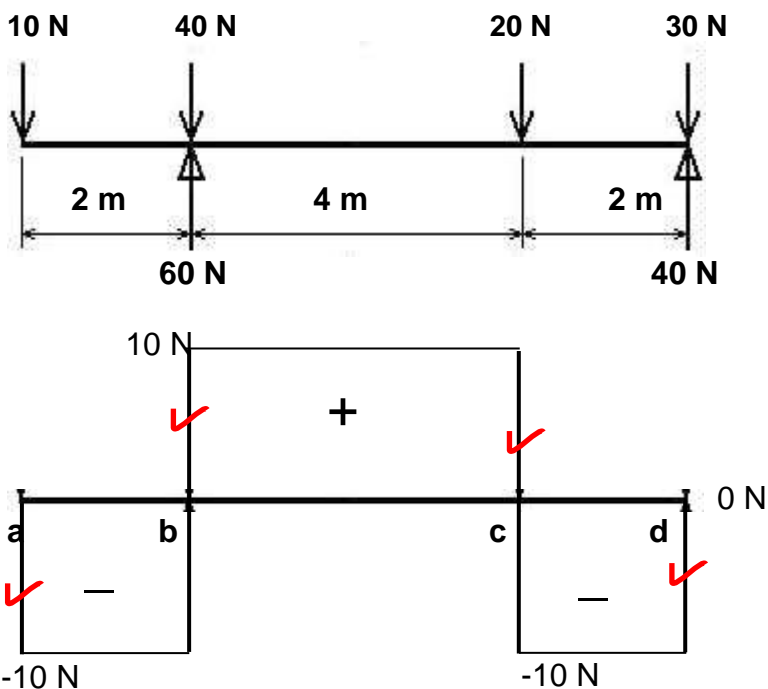
b = ...-10 N - 40 N + 40 N = 10 N ✓

c = ...10 N - 20 N = -10 N ✓

d = ...-10 N - 30 N + 40 N = 0 N ✓

(4)

5.2.2 FIGURE 5.2: The shear force diagram/Die skuifkrag-diagram

**SCALE/SKAAL: 1 N = 2 mm**

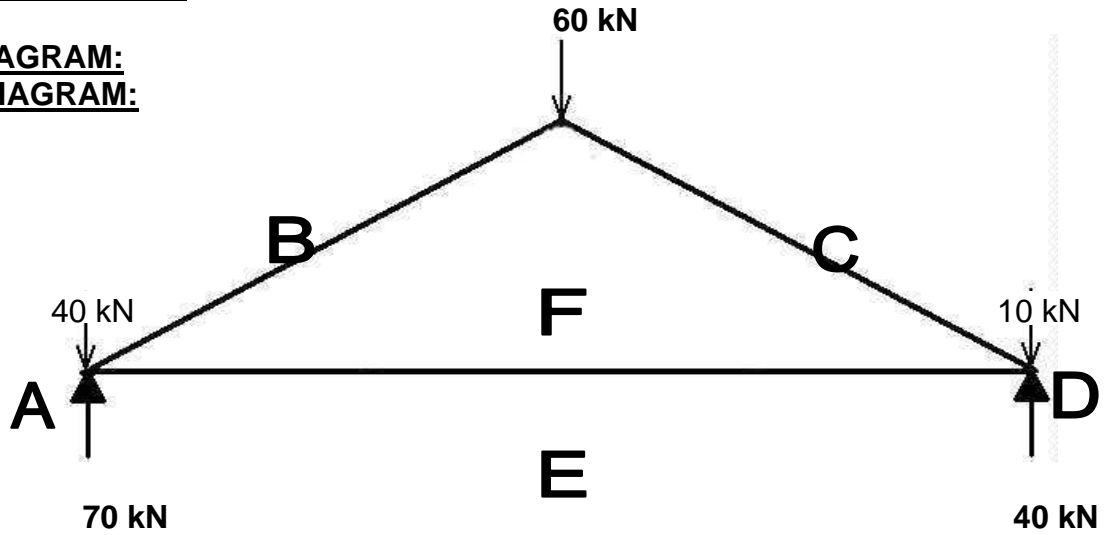
(4)



ANSWER SHEET ANTWOORDBLAD	<b>B</b>	CIVIL TECHNOLOGY SIVIELE TEGNOLOGIE	NAME: NAAM:
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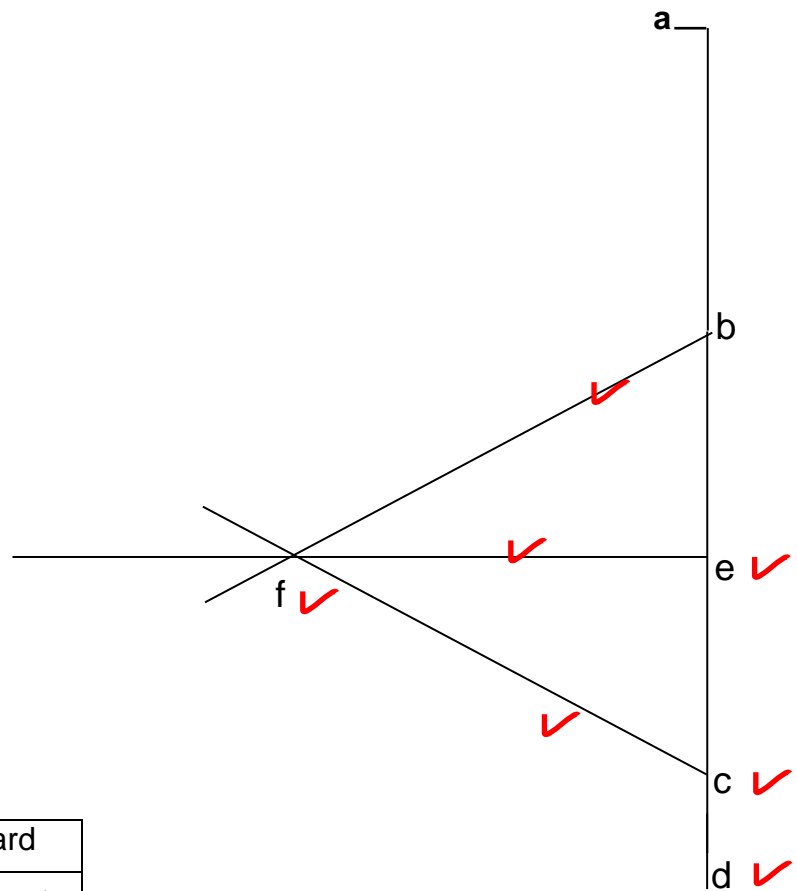
**QUESTION/VRAAG 5.3**

**SPACE DIAGRAM:  
RUIJTE-DIAGRAM:**



**FORCE DIAGRAM  
KRAGTEDIAGRAM**

Scale/Skaal: 1 mm = 1 kN

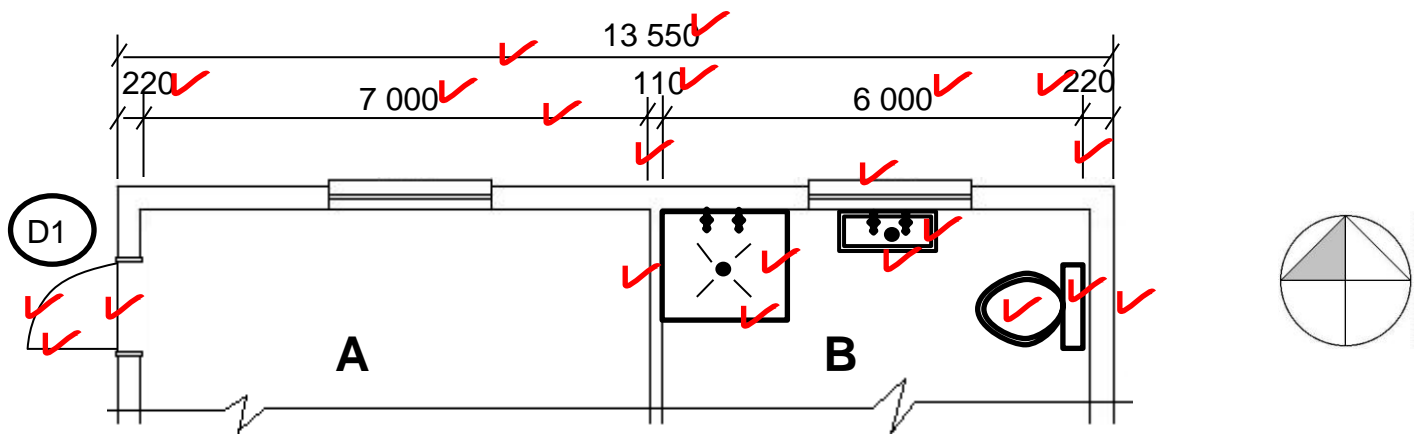


PART DEEL/	Size/ Grootte	Nature/Aard	
		↔	→←
BF	64 kN	X	
CF	64 kN	X	
EF	56 kN		X

✓  
✓  
✓

(10)

ANSWER SHEET ANTWOORDBLAD	<b>C</b>	CIVIL TECHNOLOGY SIVIELE TEGNOLOGIE	NAME: _____ NAAM: _____
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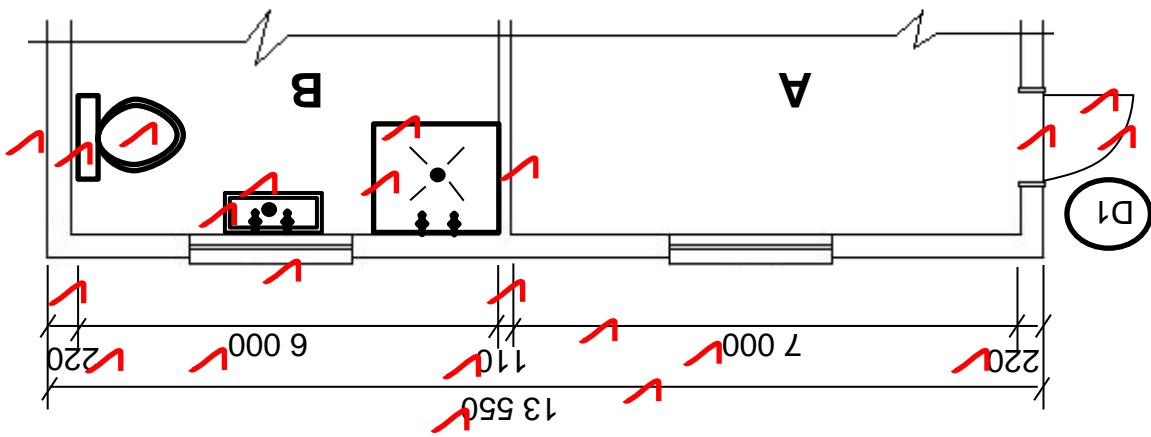
**VRAAG/QUESTION 6.1**

(22)

Outer walls/Buitemure	= 220 mm
Inner wall/Binnemuur	= 110 mm
Room A/Kamer A	= 7 m
Room B/Kamer B	= 6 m

ANTWOORDBLAD	SIVIELE TECHNOLOGIE	NAAM:
ANSWER SHEET	CIVIL TECHNOLOGY	NAME:
<b>C</b>		

VRAAG/QUESTION 6.1



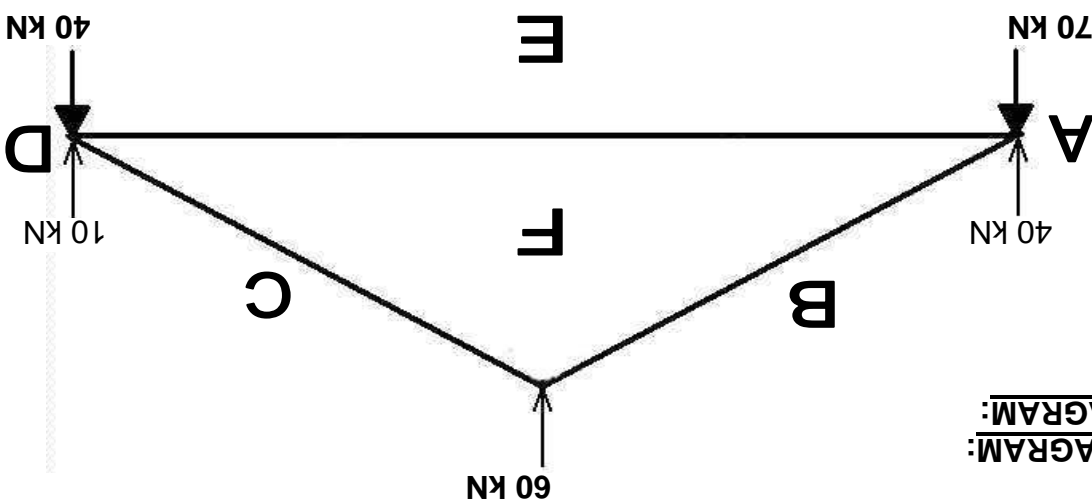
- Buitenuur/Outer walls = 220 mm
- Binnenuur/Inner wall = 110 mm
- Kamer A/Room A = 7 m
- Kamer B/Room B = 6 m

(22)

ANTWOORDBLAD	<b>B</b>	SIVIELE TECHNOLOGIE	NAAM: _____
ANSWER SHEET		CIVIL TECHNOLOGY	NAME: _____

VRAAG/QUESTION 5.3

RUIMTE-DIAGRAM:  
SPACE DIAGRAM:

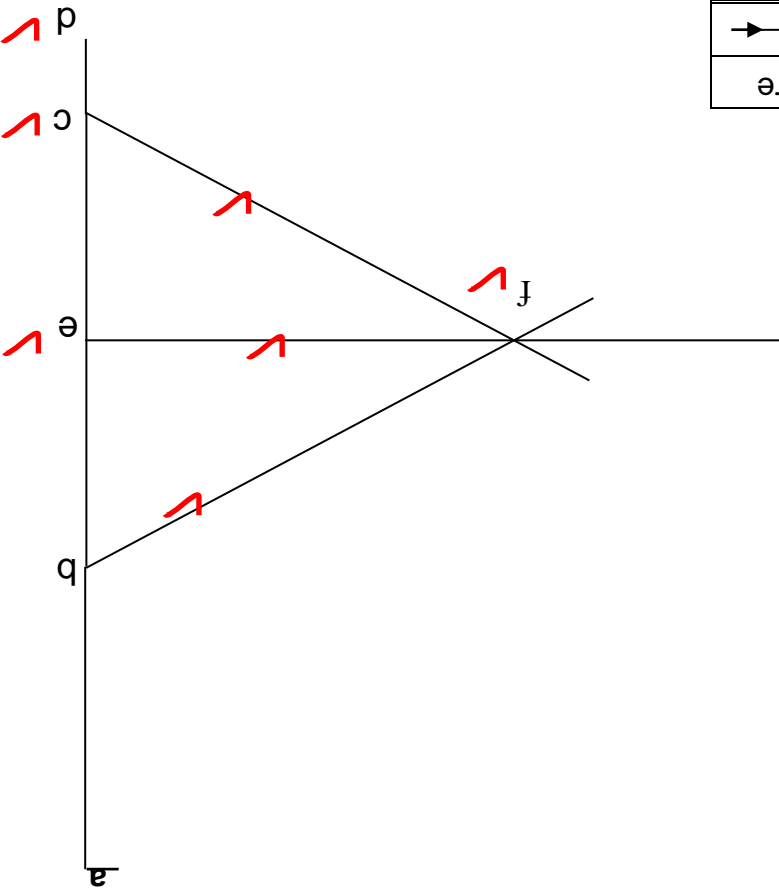


KRAGTEDIAGRAM  
FORCE DIAGRAM

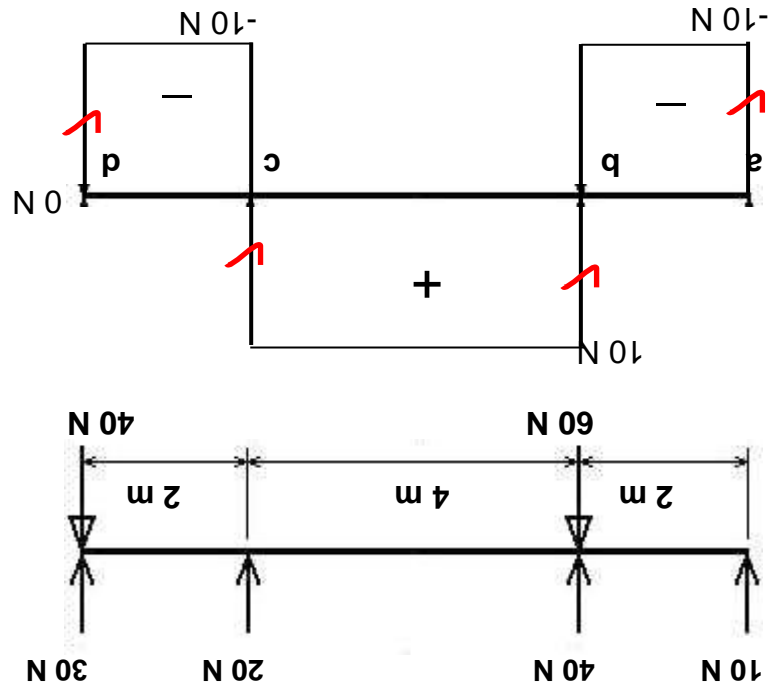
Skaal/Scale: 1 mm = 1 kN

DEEL/ Grootte/	Aard/Nature	Size	↔	↔
PART				
BF	64 kN	X		
CF	64 kN	X		
EF	56 kN	X		

✓  
✓  
✓



(10)



SCALE/SKAAL: 1 N = 2 mm

5.2.2 Die skuifkrag diagram/The shear force diagram

$$\begin{aligned}
 a &= \dots -10 \text{ N} \quad \checkmark \\
 b &= \dots -10 \text{ N} + 40 \text{ N} = 10 \text{ N} \quad \checkmark \\
 c &= \dots 10 \text{ N} - 20 \text{ N} = -10 \text{ N} \quad \checkmark \\
 d &= \dots -10 \text{ N} - 30 \text{ N} + 40 \text{ N} = 0 \quad \checkmark
 \end{aligned}$$

5.2.1 Die skuifkragwaardes/The shear force values

**VRAAG/QUESTION 5.2**

(12)

Vorm / Shape	Area	X	mX	Y	mY
1	$\frac{1}{2}b \times h = \frac{1}{2} \times 4 \times 6 = 12$	$\bar{b} = \frac{2}{4} = 2$	24	$\bar{h} = \frac{3}{6} = 2$	72
2	$L \times b = 4 \times 4 = 16$	$\bar{b} = \frac{2}{4} = 2$	32	$\bar{h} = \frac{2}{4} = 2$	32
TOTAAL/TOTAL	28	56	104	$Y = \frac{56}{104} = 3.71$	104

**VRAAG/QUESTION 5.1**

ANTWOORBLAD	<b>A</b>	CIVIL TECHNOLOGY	NAME:
SIVIELE TEGNOLOGIE		NAAM:	

**VRAAG 6: GRAFIEKA EN KOMMUNIKASIE**

6.1 FIGUR 6.1 op ANTWOORDBLAD C toon die noordaansig van 'n gedeelte van 'n vloerplan. Beantwoord die volgende vrae ten opsigte van die vloerplan:

6.1.1 Voltooi die maatskrywing van die noordaansig volgens die standaard boutekenpraktyk. (10)

6.1.2 Teken die buite deur in by opening D1. (3)

6.1.3 Teken 'n waterkloset in goeie verhouding aan die oostelike kant van vertrek B. (3)

6.1.4 Teken 'n handewasbak in goeie verhouding aan die noordelike kant van vertrek B. (3)

6.1.5 Teken 'n stort in goeie verhouding aan die westelike kant van vertrek B. (3)

6.2 Beantwoord die volgende vrae ten opsigte van die struktuur in FIGUR 6.2:

- 6.2.1 A – Daklat
  - B – Balkvulling
  - C – VWL
  - D – Lugsteen/drupvoeg
  - E – Bindbalk
  - F – Muurplaat
  - G – Spou
  - H – Muurbint
  - I – Latei
- (10) (10 x 1)

6.2.2 Voorkom dat water na binne muur deurdring (1)

6.2.3 Vog in spou na buite dreineer (1)

6.2.4 38 x 38 mm (2)

6.2.5 114 x 38 (2)

6.2.6 Hout (1)

6.2.7 Beton (1)

**TOTAAL: 200**

**[40]**

(1)

(1)

(2)

(2)

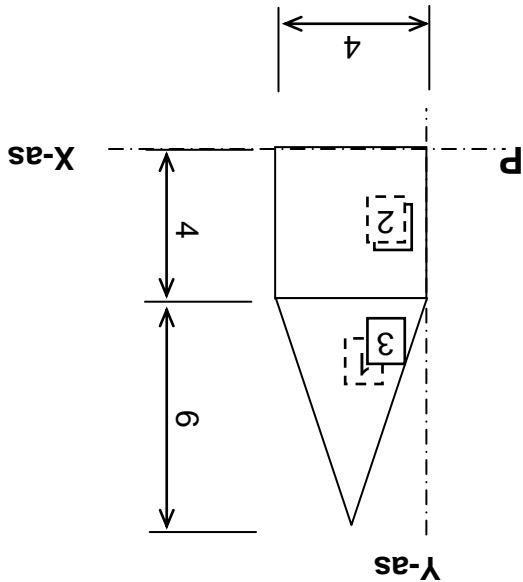
(1)

(1)

(10)

**VRAAG 5: TOEGEPASTE MEGANIKA**

5.1 Bereken die sentroïed van die liggam in FIGUR 5.1 vanaf punt P. (Die tabel op vel A kan vir die berekeninge gebruik word.)



**FIGUR 5.1**

<p>Momente om Y</p> $(28 \times X) = (12 \times 6) + (16 \times 2)$ $28X = 72 + 32$ $= 104 \div 28$ $= 3,71$ vanaf P ✓	<p>Momente om X</p> $(28 \times X) = (12 \times 2) + (16 \times 2)$ $28X = 24 + 32$ $= 56 \div 28$ $= 2$ vanaf P ✓	<p>Area 1: <math>\frac{1}{2} \times 4 \times 6 = 12</math> ✓                  Area 2: <math>4 \times 4 = 16</math> ✓                  Totaal: <math>= 28</math></p>
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(12)

5.2 FIGUR 5.2 op ANTWOORBLAD A toon 'n balk met puntbelasting. Bereken op ANTWOORBLAD B die volgende:

5.2.1 Die skuifkragwaardes (4)

5.2.2 en voltooi die skuifkragdiagram volgens die skuifkragwaardes (4)

5.3 FIGUR 5.3 op ANTWOORBLAD B toon die ruimtediagram van 'n dakkap. Bepaal grates op ANTWOORBLAD B die grootte en aard van die kragte in die onderdele van die kap deur die kragediagram te teken en die tabel te voltooi.

(10) [30]

## VRAAG 4: MATERIALE EN HOEVEELHEDE

- 4.1 4.1.1 • Werpoppervlakes  
• Winkeluitrusting  
• Kombuiskeste  
• Afskortings  
• Paneeelwerk
- 4.1.2 • Werpoppervlakes  
• Winkeluitrusting  
• Kombuiskeste  
• Afskortings  
• Paneeelwerk
- 4.1.3 • Terreinhuutte  
• Heiings  
• Bekisting  
• Soffieplanke
- 4.2 (1) Hoër digtheid het (2) beter sterkte tot gevolg (2)
- 4.3 (1) Hoër humiditeitstoestande veroorsaak (2) swelling en lei tot (3) vergrootte mate (3)
- 4.4 Enige SES voordele van beton:  
• Hanteer maklik  
• In enige vorm gegiet word  
• Sterk, skoon en higiënies  
• Lae onderhoud  
• Lang lewe en duursaam  
• Bestand teen vuur, weer en verrotting  
• Nie deur water geaffekteer  
• Waterdig  
• Gladde oppervlakes kan verkry word
- 4.5 Enige VIER faktore wat die bewerkbaarheid van beton beïnvloed.  
• Grootte van aggremaat  
• Gegradeerde aggremaat  
• Fyner aggremaat  
• Gladde, ronde aggremaat  
• Bymiddels  
• Hoëveelheid water
- (Enige 4) (4)
- 4.6 Bereken die sentrielyn van die 220 mm eensteenmuur van die struktuur.  
 $(9\ 000 \times 2) + (6\ 000 \times 2) - ((220 \times 4) = 29,12\ m (29\ 120\ mm))$  (5)
- 4.7 Verduidelik die doel van elke kolom:  
A – Dui getal waarmee item vermenigvuldig moet word (Aantal items)  
B – Alle mates van item  
C – Resultaat van kolom A en B  
D – Volledige beskrywing
- (4) [30]



2.8 Enige DRIE vereistes waaraan bekisting moet voldoen:

- Sterk genoeg wees
- Nie buig onder lading
- Akkuraat uitgele
- Lekvry lasse
- Maklik opgerig kan word
- Maklik afgetakel kan word
- Maklik aanmekaar geheg kan word

[40]  
(3) (Enige 3)

### VRAAG 3: SIVIELE DIENSTE

3.1 3.1.1 3.1.4 3.1.5 3.1.8 3.1.10 (5)

3.2 Enige VIER faktore wat die maksimum watertemperatuur van 'n sonverhittingstelsel bepaal.

- Mate van blootstelling aan son
- Tyd van jaar
- Hoëteheid wolkebedekking
- Hoëteheid daglig
- Tyd van dag

(4) (Enige 4)

3.3 Onvoldoende waterdruk/Baie tappunte

(1)

3.4 3.4.1 Opgaatens/Geisers/Spoelbakke

(1)

3.4.2 Spoelbakke

(1)

3.5 (1) 'n Sloot wat (2) met klippige geul is en (3) met 'n laag grond bedek is (4) vir wegdoening van vuilwater/septiese-tenkuitvloesel.

(4)

3.6 3.6.1 Mangat/Inspeksiegat

(1)

3.6.2 Enige TWEË plekke in 'n rioolstelsel waar die struktuur voorkom.

- Riole van rigting verander
- Waar vertakkings bymekaarkom
- Elke 90 m in reguitriole (25 m indien nie ander toegangsoopening)
- Vooraansluiting na munisipale-riool

(Enige 2)

(2)

3.7 (1) Toets/inspeksie van riole (2) Skoonmaak van riole

(2)

3.8 Dien as waterslot (2) om slegte reuke uit gebou te hou

(2)

3.9 3.9.1 ONWAAR

(1)

3.9.2 WAAR

(1)

3.9.3 WAAR

(1)

3.9.4 ONWAAR

(1)

3.9.5 WAAR

(1)

3.10 Voordeel van wind kragopwekking bo steenkoolkragopwekking.  
(1) Wind – geen besoedeling  
(2) Minder arbeidsintensief

[30]  
(2)

**VRAAG 2: GEVORDERDE KONSTRUKSIEPROSESSE**

2.1	2.1.1	WAAR	(1)
	2.1.2	ONWAAR	(1)
	2.1.3	WAAR	(1)
	2.1.4	ONWAAR	(1)
	2.1.5	WAAR	(1)
	2.1.6	ONWAAR	(1)
	2.1.7	WAAR	(1)
	2.1.8	ONWAAR	(1)
2.2	2.2.1	A – Trapfondament B – Strookfondament C – Heipaalfondament D – Vlofondament	(4 x 1)
	2.2.2	Hellende terrein	(1)
	2.2.3	C – Heipaalfondament	(1)
2.3	(1)	Sement	
	(2)	Sand	
	(3)	Klip	
	(4)	Water	(4)
2.4		Enige DRIE metodes vir die nabehandeling van beton:	
		• Bekisting behou	
		• Bedekkings	
		• poelvorming	
		• Besprinkeling	
		• Nabehandelingsmengsels	(3)
2.5	2.5.7	Strooi die sand ongeveer 100 mm dik.	
	2.5.4	Strooi die sement oor die sand.	
	2.5.6	Meng deeglik.	
	2.5.8	Maak 'n hoop met 'n hofte aan die bokant.	
	2.5.2	Voeg water by en meng gedurig.	
	2.5.5	Meng tot 'n dik pap.	
	2.5.3	Voeg die klip by.	
	2.5.1	Meng deeglik.	(8)
2.6	2.6.1	(1) Beter binding/verband (2) met beton	(2)
	2.6.2	16 mm	(1)
	2.6.3	04	(1)
2.7	2.7.1	Bekistingplanke	
	2.7.2	Juk	
	2.7.3	Klamp	
	2.7.4	Wig	(4)

**VRAAG 1: KONSTRUKSIEPROSESSE**

- 1.1 1.1.1 300 mm (1)
- 1.1 1.1.2 600 mm (1)
- 1.1 1.1.3 1 320 mm (1)
- 1.1 1.1.4 Voetplaat (1)
- 1.1 1.1.5 Voorkom dat voet teen kas stamp (1)

1.2 Enige VIER veiligheidsmaatreëls – veilige berging van materiale.

- Op sterk vloere gestapel
  - Nie hoër as 3x van wydte van stapel
  - Stapels in mekaar sluit/gebind
  - Materiale nie uitsteek
  - Nie brandbestryding, lig of ventilasie versper nie
  - Vlambare materiale/vloeristowwe in spesiale houers
  - Nie roetes versper
  - Gasse in spesiale houers
- (4) (Enige 4 x 1)

1.3 (1) Wanneer gereedskap stomp is moet (2) meer druk op geplaas word – veroorsaak beserings

1.4 1.4.1 Waterpas of Skietlood (1)

1.4.2 Bandskuurder (1)

1.5 1.5.1 WAAR (1)

1.5.2 ONWAAR (1)

1.5.3 WAAR (1)

1.5.4 ONWAAR (1)

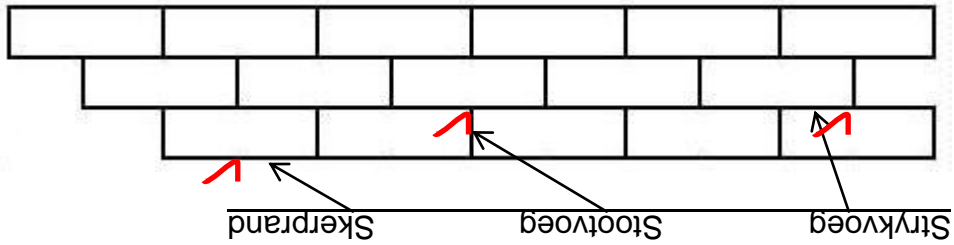
1.5.5 ONWAAR (1)

1.5.6 ONWAAR (1)

1.5.7 WAAR (1)

1.5.8 WAAR (1)

1.6 Maak 'n netjiese lynskets in goeie verhouding om die aansig van die volgende steenwerk te illustreer:



1.6.1 - Drie steenlae (1)

- Verandering aan die linkerkant (1)

- Trumesselwerk aan die regterkant (1)

1.6.2 Byskritte (3)

[30]

Hierdie memorandum bestaan uit 10 bladsye.

PUNTE: 200

**SIVIELE TEGNOLOGIE  
MEMORANDUM**

**SEPTEMBER 2014**

**GRAAD 12**

**NASIONALE  
SENIOR SERTIFIKAAT**

