



education

Department of
Education
FREE STATE PROVINCE

GRADE 10 / *GRAAD 10*

PROVINCIAL FORMAL
ASSESSMENT TASK

*PROVINSIALE FORMELE
ASSESSERINGSTAAK*

MARCH 2016/ *MAART 2016*

MEMORANDUM

TECHNICAL SCIENCES /
TEGNIIESE WETENSKAPPE
CONTROL TEST 1 / *KONTROLETOETS 1*

TIME: 2 hours

TYD: 2 ure

MARKS: 100

PUNTE: 100

This memorandum consists of SEVEN pages.
Hierdie memorandum bestaan uit SEWE bladsye.

QUESTION 1 / VRAAG 1

- 1.1 D ✓✓ 1.2 D ✓✓ 1.3 B ✓✓ 1.4 C ✓✓
1.5 C ✓✓ 1.6 D ✓✓ 1.7 A ✓✓ 1.8 A ✓✓
1.9 B ✓✓ 1.10 C ✓✓

[20]

QUESTION 2 / VRAAG 2

- 2.1.1 kg✓ (1)
2.1.2 $\text{m} \cdot \text{s}^{-1}$ ✓ (1)
2.1.3 N✓ (1)

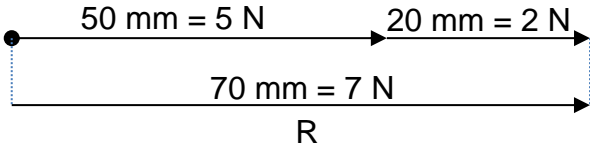
2.2 $1 \text{ mg} = 1 \times 10^{-3} \text{ g}$
 $10 \text{ mg} = 10 \times 10^{-3} \text{ g} \checkmark$
 $= 0,01 \text{ g} \checkmark$

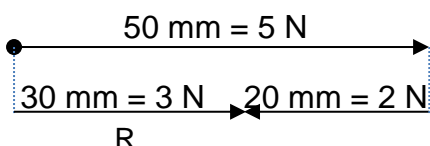
$$\begin{aligned} \text{mass in g} &= \frac{\text{mass in mg}}{1000} \\ &= \frac{10}{1000} \checkmark \\ &= 0,01 \text{ g} \end{aligned}$$

(2)

[5]

QUESTION 3 / VRAAG 3

- 3.1.1  (4)

- 3.1.2  (4)

Marking criteria/Merk desiderata	Mark
Correct measurements of the two vectors (magnitude). <i>Korrekte afmetings van die twee vektore (grootte).</i>	1
Each vector has correct direction and label. <i>Elke vektor het regte rigting en byskrif.</i>	1
Correctly drawn resultant with label (includes direction). <i>Korrek getekende resultant met byskrif (insluitende rigting).</i>	1
Correct final answer. <i>Korrekte finale antwoord.</i>	1

Accept for final answer/Aanvaar vir finale antwoord

3.1.1 Magnitude between 69 mm and 71 mm

Grootte tussen 69 mm en 71 mm

3.1.2 Magnitude between 29 mm and 31 mm

Grootte tussen 29 mm en 31 mm

3.2.1

$$\begin{aligned} \text{Thickness} &= \frac{5,3}{500} \checkmark \\ \text{Dikte} &= 0,01 \text{ cm} \checkmark \end{aligned}$$

Accept/Aanvaar 0,0106 cm or 0,011 cm

(2)

3.2.2 **POSITIVE MARKING FROM 3.2.1/ POSITIEWE NASIEN VANAF 3.2.1**

$1,0 \times 10^{-2} \text{ cm}$ **Accept/ Aanvaar** $1,06 \times 10^{-2} \text{ cm}$ / $1,1 \times 10^{-2} \text{ cm}$ (1)

3.2.3 **POSITIVE MARKING FROM 3.2.1/ POSITIEWE NASIEN VANAF 3.2.1**

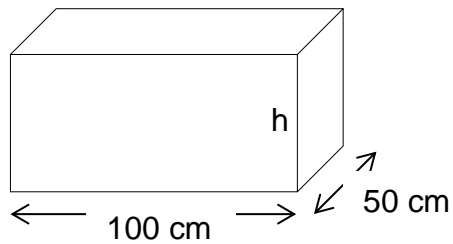
$\begin{aligned} 1 \text{ cm} &= 10 \text{ mm} \\ 0,01 \text{ cm} &= x \\ x &= \frac{0,01 \times 10}{1} \checkmark \\ &= 0,1 \text{ mm} \checkmark \end{aligned}$	$\begin{aligned} \text{mm} &= \text{cm} \times 10 \\ &= 0,01 \times 10 \checkmark \\ &= 0,1 \text{ mm} \checkmark \end{aligned}$
---	--

(2)

[13]

QUESTION 4 / VRAAG 4

4.1



Volume = side x side x side ✓
Volume = sy x sy x sy

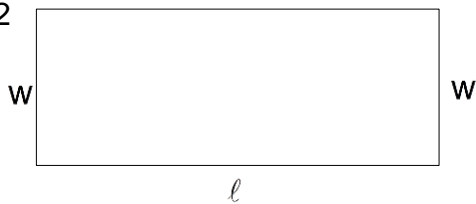
$$V = \ell \times w \times h$$

$$7,5 \times 10^5 = 100 \times 50 \times h \quad \checkmark$$

$$h = 150 \text{ cm} \quad \checkmark$$

(3)

4.2



Perimeter = $2\ell + 2w$ ✓
Omtrek $220 \checkmark = 2 \times 40 + 2w \checkmark$
 $w = 70 \text{ m} \checkmark$

(4)

4.3

Area = side x side / *Oppervlakte* = sy x sy ✓

Area of 1 tile = $\ell \times w$

$$= 30 \times 30 \quad \checkmark$$

$$= 900 \text{ cm}^2$$

$$\text{no of tiles} = \frac{\text{area of floor}}{\text{area of 1 tile}}$$

$$= \frac{1,2 \times 10^5}{900} \quad \checkmark$$

$$= 133,33$$

$$\therefore \text{The number of tiles needed} = 134 \quad \checkmark$$

(4)

- 4.4 Area = $\frac{1}{2}(\text{sum of parallel sides}) \times \text{perpendicular distance in between/}$
Oppervlakte = $\frac{1}{2}(\text{som van ewewydige sye}) \times \text{loodregte afstand tussen-in}$

$\begin{aligned} \text{A of base} &= \frac{1}{2}(\ell + b)h \\ &= \frac{1}{2}(1,2 + 2,4) \times 25 \checkmark \\ &= 45 \text{ m}^2 \\ V &= \text{Area of base} \times h \\ &= 45 \times 10 \checkmark \\ &= 450 \text{ m}^3 \checkmark \end{aligned}$	$\begin{aligned} \text{A of base} &= \ell b + \frac{1}{2}bh \\ &= 25 \times 1,2 + \frac{1}{2} \times 1,2 \times 25 \checkmark \\ &= 45 \text{ m}^2 \\ V &= \text{Area of base} \times h \\ &= 45 \times 10 \checkmark \\ &= 450 \text{ m}^3 \checkmark \end{aligned}$
---	---

Accept/Aanvaar

$\begin{aligned} \text{A of base} &= \frac{1}{2}(\ell + b)h \\ &= \frac{1}{2}(1,2 + 2,4) \times 10 \checkmark \\ &= 18 \text{ m}^2 \\ V &= \text{Area of base} \times h \\ &= 18 \times 25 \checkmark \\ &= 450 \text{ m}^3 \checkmark \end{aligned}$	
---	--

(4)

- 4.5

$\begin{aligned} \text{Volume of cube} &= \ell \times w \times h \\ &= 1,5 \times 1,5 \times 1,5 \checkmark \\ &= 3,375 \text{ cm}^3 \end{aligned}$	
$\begin{aligned} \text{Density of copper} &= \frac{\text{Mass}}{\text{Volume}} \\ \text{Digtheid van koper} &= \frac{30,11}{3,375} \\ &= 8,92 \text{ g} \cdot \text{cm}^{-3} \checkmark \end{aligned}$	$\begin{aligned} \text{Density of gold} &= \frac{\text{Mass}}{\text{Volume}} \\ \text{Digtheid van goud} &= \frac{65,21}{3,375} \\ &= 19,32 \text{ g} \cdot \text{cm}^{-3} \checkmark \end{aligned}$

Copper will float. / Koper sal dryf. ✓

(6)
[21]

QUESTION 5 / VRAAG 5

- 5.1 A substance which has both metallic and non-metallic properties. ✓✓
'n Stof wat beide metaal- en nie-metaaleienskappe het. (2)
- 5.2.1 Silicon / *Silikon* ✓ (1)
- 5.2.2 Paper clip / *Skuifspeld* ✓ (1)
- 5.2.3 Iodine / *Jodium* ✓ (1)
- 5.3.1 Decreases / *Afneem* ✓ (1)
- 5.3.2 No effect / *Geen effek* ✓ (1)
- [7]**

QUESTION 6 / VRAAG 6

- 6.1.1 Water✓ (1)
- 6.1.2 Ethene / *Eteen* ✓ (1)
- 6.2 Low density / *Lae digtheid* ✓✓ (2)
- 6.3 Copper / *Koper* ✓ (1)
- 6.4 High electrical conductivity. / *Goeie elektriese geleidingsvermoë.* ✓✓ (2)
- 6.5.1 Physical / *Fisies* ✓ (1)
- 6.5.2 No new substances are formed. / *Geen nuwe stowwe is gevorm nie.* ✓✓ (2)
- 6.6 An element is a pure substance✓ that cannot be broken down into simpler substances.✓
A compound is a pure substance✓ that can be broken down into elements.✓
'n Element is 'n suiwer stof ✓ wat nie in eenvoudiger stowwe opgebreek kan word nie. ✓
'n Verbinding is 'n suiwer stof ✓ wat in eenvoudiger elemente opgebreek kan word. ✓ (4)
- [14]**

QUESTION 7 / VRAAG 7

- 7.1.1 B ✓ (Accept / *Aanvaar* Na) (1)
- 7.1.2 H ✓ (Accept / *Aanvaar* Cl) (1)
- 7.1.3 E ✓ (Accept / *Aanvaar* OH⁻) (1)
- 7.1.4 F ✓ (**Accept G / *Aanvaar* G**) (Accept / *Aanvaar* CaCO₃ / H₂S) (1)
- 7.1.5 A or/of C ✓ (Accept / *Aanvaar* Na₄⁺ or/of Cu²⁺) (1)
- 7.1.6 D or/of E ✓ (Accept / *Aanvaar* NO₃⁻ or/of OH⁻) (1)
- 7.2.1 Cu ✓ (NO₃)₂ ✓ (2)
- 7.2.2 NH₄ ✓ OH ✓ (2)
- 7.3.1 Calcium ✓ carbonate ✓ *Kalsium ✓ karbonaat ✓* (2)
- 7.3.2 Hydrogen ✓ sulphide ✓ *waterstof ✓ sulfied ✓* (2)
- 7.4.1 2Cu ✓ + O₂ → 2CuO ✓ (2)
- 7.4.2 N₂ + 3H₂ ✓ → 2NH₃ ✓ (2)
- 7.4.3 4Fe + 3O₂ ✓ → 2Fe₂O₃ ✓ (2)

[20]

TOTAL/TOTAAL: 100