



Access fun Grade 8–12 quizzes, matric past papers, K53 learner mock tests, and NBT prep!

*All in one easy-to-use app.*

**DOWNLOAD GO STUDY NOW**



Tap on the buttons above to download the app

 [www.gostudy.club](http://www.gostudy.club)



**NATIONAL SENIOR CERTIFICATE/  
NASIONALE SENIOR SERTIFIKAAT**

**GRADE/GRAAD 10**

**NOVEMBER 2019**

**TECHNICAL SCIENCES P2/TEGNIESE WETENSKAPPE V2  
MARKING GUIDELINE/NASIENRIGLYN**

**MARKS/PUNTE: 150**

---

This marking guideline consists of 7 pages./  
*Hierdie nasienriglyn bestaan uit 7 bladsye.*

---

## QUESTION/VRAAG 1

- |      |      |             |
|------|------|-------------|
| 1.1  | B ✓✓ | (2)         |
| 1.2  | D ✓✓ | (2)         |
| 1.3  | D ✓✓ | (2)         |
| 1.4  | B ✓✓ | (2)         |
| 1.5  | A ✓✓ | (2)         |
| 1.6  | C ✓✓ | (2)         |
| 1.7  | C ✓✓ | (2)         |
| 1.8  | C ✓✓ | (2)         |
| 1.9  | B ✓✓ | (2)         |
| 1.10 | A ✓✓ | (2)         |
|      |      | <b>[20]</b> |

## QUESTION/VRAAG 2

- |     |       |  |     |
|-----|-------|--|-----|
| 2.1 | 2.1.1 | Copper and Nickel ✓✓<br><i>Koper en Nikkel ✓✓</i>  | (2) |
|     | 2.1.2 | Silicon and Boron ✓✓<br><i>Silikon en Boron ✓✓</i>   | (2) |
| 2.2 |       | NO ✓<br>NEE ✓  | (1) |
| 2.3 |       | Dull, does not shine<br>Most of them are gasses<br>Breaks easily<br>Mostly does not conduct electricity<br>(ANY TWO)<br><i>Dof, nie blink nie</i><br><i>Meeste van hulle is gasse</i><br><i>Hulle is bros, breek indien hulle gebuig word</i><br><i>Meestal van hulle gelei nie elektrisiteit nie.</i><br>(ENIGE TWEE) | (2) |
| 2.4 |       | 2 Cu ✓ + O <sub>2</sub> ✓ → 2 CuO ✓ Balanced ✓ / Gebalanseer ✓   | (4) |
| 2.5 | 2.5.1 | Material A ✓/<br><i>Materiaal A ✓</i>  | (1) |
|     | 2.5.2 | They are insulators. They do not conduct electricity ✓✓/<br><i>Hulle is insulators. Hulle gelei nie elektrisiteit nie. ✓✓</i>  | (2) |
|     | 2.5.3 | Cells / Battery ✓/<br><i>Selle / Battery ✓</i>   | (1) |
|     | 2.5.4 | To determine the electrical conductivity of various materials. ✓✓/<br><i>Om die elektriese geleidingsvermoë van verskillende materiale te bepaal ✓✓</i>  | (2) |

2.6 2.6.1

<b>Materials</b> <i>Materiale</i>	<b>Attracted / Repelled</b> <i>Aantrekkend / Afstotend</i>
Copper <i>Koper</i>	Repelled ✓ <i>Afstotend</i> ✓
Silicon <i>Silikon</i>	Repelled ✓ <i>Afstotend</i> ✓
Boron <i>Boron</i>	Repelled ✓ <i>Afstotend</i> ✓
Nickel <i>Nikkel</i>	Attracted ✓ <i>Aantrekkend</i> ✓
Material A <i>Materiaal A</i>	Repelled ✓ <i>Afstotend</i> ✓
Material B <i>Materiaal B</i>	Repelled ✓ <i>Afstotend</i> ✓
Iron <i>Yster</i>	Attracted ✓ <i>Aantrekkend</i> ✓
Second bar magnet <i>Tweedemagneet</i>	Attracted ✓ <i>Aantrekkend</i> ✓

(8)

2.6.2 FALSE ✓  
VALS ✓(1)  
[26]**QUESTION/VRAAG 3**3.1 3.1.1 The simplest type of pure substance ✓✓  
*Die eenvoudigste tipe suiwer stof* ✓✓

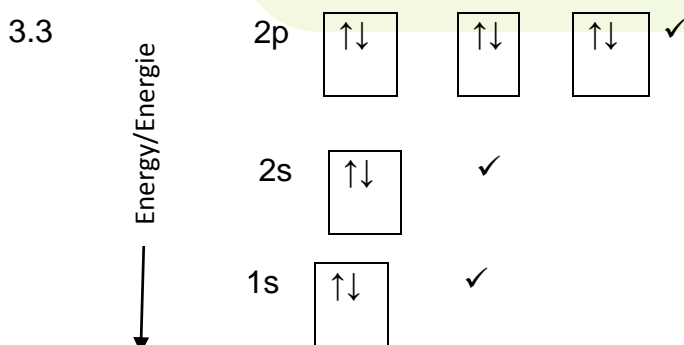
(2)

3.1.2 **Valence electrons** are those occupying the outermost (highest energy) shell of an atom. ✓✓**Valensie-elektrone** is daardie elektrone wat die uiterste (hoogste energie) laag van 'n atoom beslaan. ✓✓

(2)

3.2 Carbon dioxide ✓✓  
*Koolstofdioksied* ✓✓

(2)




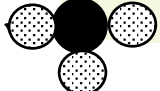
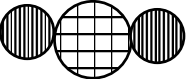

(3)

3.4 LOWEST ✓/  
LAAGSTE ✓

(1)

- 3.5 4 ✓ (1)
- 3.6  $1s^2 \checkmark 2s^2 \checkmark 2p^4 \checkmark$  (3)
- 3.7 3.7.1 Atoms with the same atomic number ✓ but different mass numbers. ✓  
*Atome met dieselfde atoomgetal ✓ maar verskillende massagetalle. ✓* (2)
- 3.7.2 Negative [Accept negative sign ( - )] ✓  
*Negatief [ Aanvaar die minusteken (-)] ✓* (1)
- 3.7.3 Protons ✓; neutrons ✓  
*Protone ✓; neutrone ✓* (2)
- 3.7.4 (a) 6 ✓  
 (b) 7 ✓  
 (c) 8 ✓  
 (d) 6 ✓  
 (e) 6 ✓  
 (f) 6 ✓ (6)

**[25]****QUESTION/VRAAG 4**

- 4.1 4.1.1 A substance made up of two or more elements in the exact ratio ✓✓/  
*'n Stof wat uit twee of meer elemente bestaan in presiese verhouding.* ✓✓ (2)
- 4.1.2 The atomic number of an element as the number of protons in the atom. ✓✓  
*Die atomiese getal van 'n element as die aantal protone in die atoom.* ✓✓ (2)
- 4.2 4.2.1  ✓✓ (2)
- 4.2.2  ✓✓ (2)
- 4.2.3  ✓✓ (2)
- 4.3 4.3.1  ✓✓ (2)
- 4.3.2  $2 \text{NO}_2 \rightarrow \text{N}_2 + 2 \text{O}_2$  ✓ ✓  
 ✓ Balanced / Gebalanseerd (3)

- 4.3.3 Exhaust pipes of vehicles ✓✓  
*Uitlaatingspype van motors* ✓✓ (2)
- 4.4 4.4.1 Calcium ✓ carbonate ✓  
*Kalsium* ✓ *karbonaat* ✓ (2)
- 4.4.2 Iron II ✓ oxide ✓  
*Iron II* ✓ *oksied* ✓ (2)
- 4.5 4.5.1  $\text{Li}_2\text{SO}_4$  ✓ (1)
- 4.5.2  $\text{Al}(\text{OH})_3$  ✓ (1)
- 4.6 4.6.1  $\text{MgO}$  ✓✓ (2)
- 4.6.2  $\text{CuCO}_3$  ✓✓ (2)
- 4.7  $2 \text{NH}_4^+ + \text{PO}_4^{3-} \rightarrow (\text{NH}_4)_3\text{PO}_4$   
 ✓ ✓ ✓ (3)
- [30]

## QUESTION/VRAAG 5

- 5.1 It is a single type of material (element or compound) ✓✓  
*Dit is 'n enkele tipe materiaal (element of verbinding)* ✓✓ (2)
- 5.2 1 – Compound / *Verbinding*  
 2 – Element / *Element*  
 3 – Element / *Element*  
 4 – Compound / *Verbinding*  
 5 – Compound / *Verbinding* (5)
- 5.3  $\text{Cu}(\text{NO})_3 \rightarrow \text{Cu}^{2+} + \text{NO}_3^-$   
 ✓ ✓ ✓ (3)
- 5.4
- | Substances/<br><i>Stowwe</i> | Group number/<br><i>Groep nommer</i> | Period number /<br><i>Periode nommer</i> | Group name /<br><i>Groep naam</i>                    |
|------------------------------|--------------------------------------|--|--|
| 2                            | (a) 2                                | (c) 2                                    | (e) Alkali-earth metals<br><i>Alkali-aard metale</i> |
| 3                            | (b) 17                               | (d) 3                                    | (f) Halogens /<br><i>Halogene</i>                    |
- (6)
- 5.5 5.5.1 Glucose ✓ ; Sucrose ✓  
*Glukose* ✓ ; *Sukrose* ✓ (2)
- 5.5.2  $\text{KCl}$  ✓✓ (2)
- 5.5.3 Cation / *Katione*:  $\text{Na}^+$  ✓  
 Anion / *Anione*:  $\text{Cl}^-$  ✓ (2)

[22]

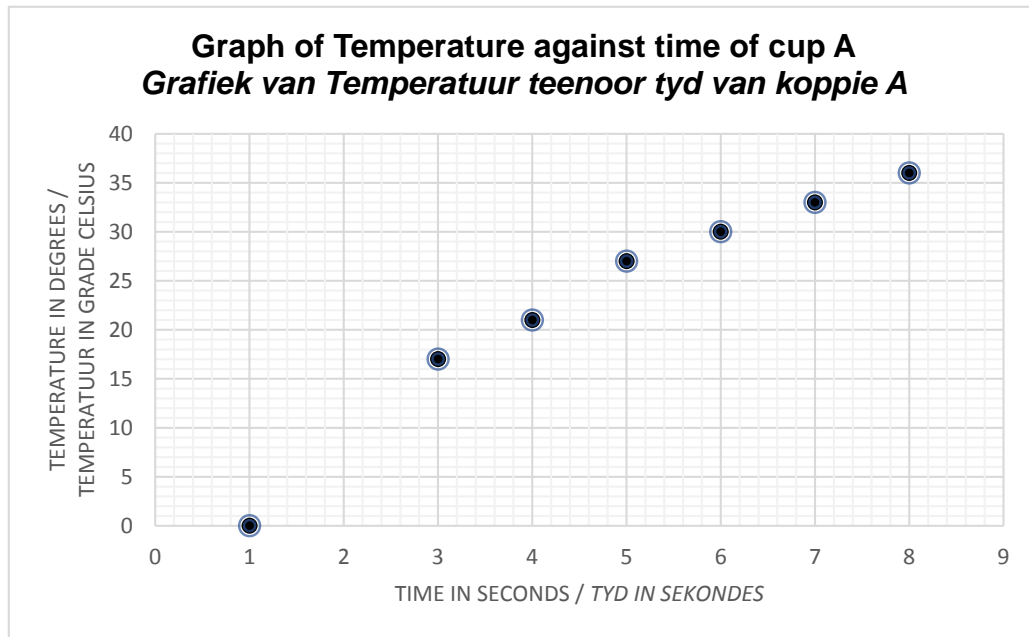
**QUESTION/VRAAG 6**

- 6.1 Mg ✓ (1)
- 6.2 Neon ✓ (1)
- 6.3 They are unreactive ✓✓  
*Hulle is onreaktief* ✓✓ (2)
- 6.4 6.4.1 Br / Bromine ✓  
*Br / Broom* ✓ (1)
- 6.4.2 He / Helium ✓  
*He / Helium* ✓ (1)
- 6.5 Noble gasses ✓  
*Edelgasse* ✓ (1)
- [7]**

**QUESTION/VRAAG 7**

- 7.1 Stopwatch ✓ ; Thermometer ✓  
*Stop horlosie* ✓ ; *Termometer* ✓ (2)
- 7.2 **Cup A / Koppie A**  
 $\Delta T = T_f - T_i$   
 $= 46 - 17$  ✓  
 $= 29\text{ }^{\circ}\text{C}$  ✓
- Cup B / Koppie B**  
 $\Delta T = T_f - T_i$   
 $= 86 - 20$  ✓  
 $= 66\text{ }^{\circ}\text{C}$  ✓ (4)
- 7.3 7.3.1  $40\text{ }^{\circ}\text{C}$  ✓ (1)
- 7.3.2  $90\text{ }^{\circ}\text{C}$  ✓ (1)
- 7.4  $T_k = 40 + 273$  ✓ =  $313\text{ K}$  ✓  
 $T_k = 90 + 273$  ✓ =  $363\text{ K}$  ✓ (4)
- 7.5 Bulb thermometer  
 Mercury thermometer  
 Bimetallic thermometer  
 Thermoelectric thermometer  
 (ANY TWO)
- Boltermometers*  
*Kwik termometer*  
*Termoëlektriesetermometers*  
*Bimetaaltermometers*  
 (ENIGE TWEE) (2)

7.6



- ✓ Chart title
- ✓ Titles on Axis
- ✓ Appropriate scale on x-axis and y-axis
- ✓✓ All dots correctly plotted

- ✓ *Titel van grafiek*
- ✓ *Titels op asse*
- ✓ *Geskikteskaal x-as en y-as*
- ✓✓ *Alle punte korrek voorgestel*

(5)

- 7.7 Hot plate ✓  
Warm plaat ✓

(1)  
[20]**TOTAL/TOTAAL: 150**