Province of the
EASTERN CAPE
EDUCATION

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)
[20]

QUESTION/*VRAAG* 2

2.1 2.1.1 Copper and Nickel ✓✓
Koper en Nikkel ✓✓ (2)

2.1.2 Silicon and Boron ✓ ✓
Silikon en Boron ✓ ✓ (2)

2.2 NO ✓
NEE ✓ (1)

2.3 Dull, does not shine
Most of them are gasses
Breaks easily
Mostly does not conduct electricity
(ANY TWO)
Dof, nie blink nie
Meeste van hulle is gasse
Hulle is bros, breek indien hulle gebuig word
Meestal van hulle gelei nie elektrisiteit nie.
(ENIGE TWEE) (2)

2.4 2 Cu ✓ + O_2 ✓→ 2 CuO ✓ Balanced ✓ / *Gebalanseer* ✓ (4)

2.5 2.5.1 Material A ✓/
Materiaal A ✓ (1)

2.5.2 They are insulators. They do not conduct electricity ✓✓/
Hulle is insulators. Hulle gelei nie elektrisiteit nie. ✓✓ (2)

2.5.3 Cells / Battery ✓/
Selle / Battery ✓ (1)

2.5.4 To determine the electrical conductivity of various materials. ✓✓/
Om die elektriese geleidingsvermoë van verskillende materiale te bepaal ✓✓ (2)

2.6 2.6.1

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

(8)

2.6.2 FALSE ✓
VALS ✓ (1)

[26]

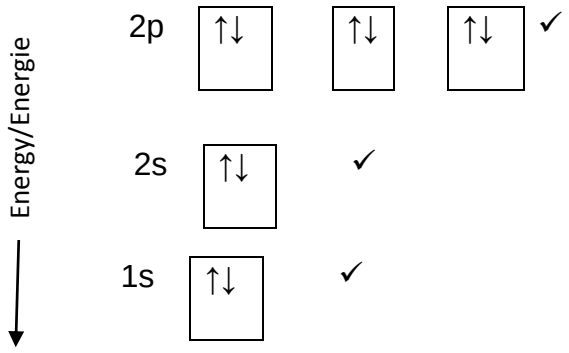
QUESTION/*VRAAG* 3

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



(3)

3.4 LOWEST ✓/
LAAGSTE ✓ (1)

3.5 4 ✓ (1)

3.6 $1s^2$ ✓ $2s^2$ ✓ $2p^4$ ✓ (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]

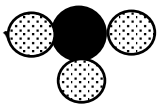
QUESTION/*VRAAG* 4

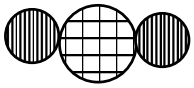
4.1 4.1.1 A substance made up of two or more elements in the exact ratio ✓✓/
'n Stof wat uit twee of meer elemente bestaan in presiese verhouding. ✓✓ (2)

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 $\underline{NO_2} \rightarrow \underline{N_2 + 2\ O_2}$
✓ ✓ ✓ 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 Li_2SO_4 ✓ (1)

4.5.2 $A\ell(OH)_3$ ✓ (1)

4.6 4.6.1 MgO ✓✓ (2)

4.6.2 $CuCO_3$ ✓✓ (2)

4.7 $2\ NH_4^+ + PO_4^{3-} \rightarrow (NH_4)_3PO_4$
✓ ✓ ✓ (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 $\underline{Cu(NO)_3} \rightarrow Cu^{2+} + NO_3^-$
✓ ✓ ✓ (3)

5.4

Substances/ *Stowwe*	Group number/ *Groep nommer*	Period number / *Periode nommer*	Group name / *Groep naam*
2	(a) 2	(c) 2	(e) Alkali-earth metals *Alkali-aard metale*
3	(b) 17	(d) 3	(f) Halogens / *Halogene*

(6)

5.5 5.5.1 Glucose ✓ ; Sucrose ✓
Glukose ✓ ; *Sukrose* ✓ (2)

5.5.2 $KC\ell$ ✓✓ (2)

5.5.3 Cation / *Katione*: Na^+ ✓
Anion / *Anione*: $C\ell^-$ ✓ (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**
$\Delta T = T_f - T_i$
$= 46 - 17$ ✓
$= 29\ ^\circ C$ ✓

Cup B / *Koppie B*
$\Delta T = T_f - T_i$
$= 86 - 20$ ✓
$= 66\ ^\circ C$ ✓ (4)

7.3 7.3.1 40 ˚C ✓ (1)

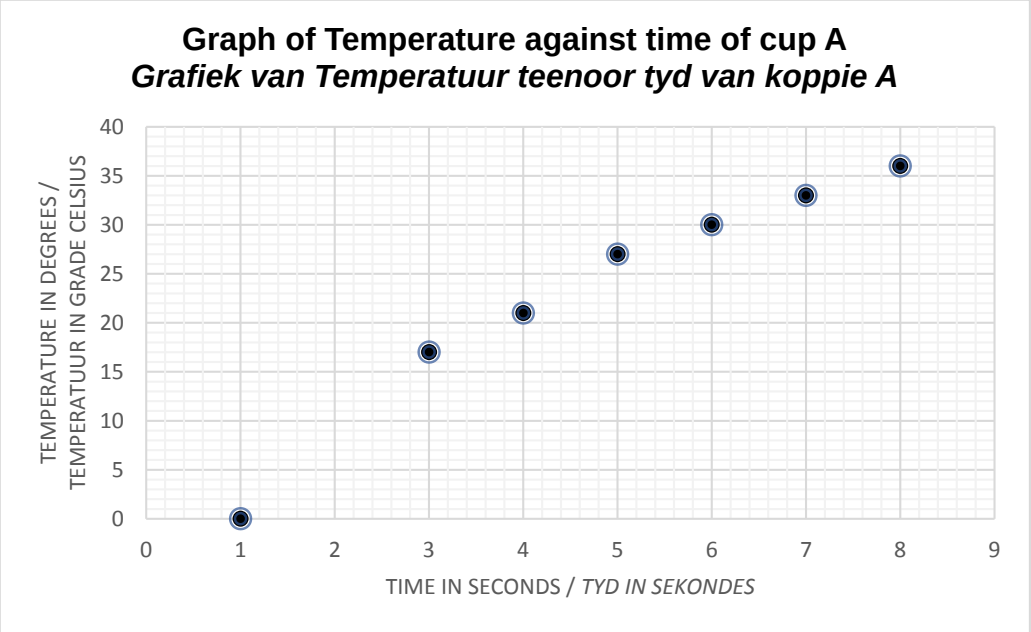
7.3.2 90 ˚C ✓ (1)

7.4 $T_k = 40 + 273$ ✓ $= 313$ K ✓
$T_k = 90 + 273$ ✓ $= 363$ 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