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**NATIONAL
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GRADE/GRAAD 10

NOVEMBER 2020

**TECHNICAL SCIENCES P2/TEGNIJSE WETENSKAPPE V2
MARKING GUIDELINE/NASIENRIGLYN
(EXEMPLAR/EKSEMPLAAR)**

MARKS/PUNTE: 150

This marking guideline consists of pages 5./
Hierdie nasienriglyn bestaan uit 5 bladsye.

QUESTION/VRAAG 1

- 1.1 D ✓✓ (2)
 1.2 B ✓✓ (2)
 1.3 C ✓✓ (2)
 1.4 A ✓✓ (2)
 1.5 B ✓✓ (2)
 1.6 D ✓✓ (2)
 1.7 A ✓✓ (2)
 1.8 C ✓✓ (2)
 1.9 C ✓✓ (2)
 1.10 A ✓✓ (2)

[20]**QUESTION/VRAAG 2**

- 2.1 2.1.1 Melting point/*smeltpunt* ✓✓ (2)
 2.1.2 Density/*Digtheid* ✓✓ (2)
 2.1.3 Malleable/*Smeebaar* ✓✓ (2)
 2.1.4 Ductile/*Buigbaar* ✓✓ (2)
 2.1.5 Thermal conductivity/*Termiese geleidingsvermoë* ✓✓ (2)
 2.2 2.2.1 FALSE. ✓ Carbon is not a metal. ✓/
 VALS. ✓ *Koolstof is nie 'n metaal nie.* ✓ (2)

2.2.2

Substance/ <i>Stof</i>	Repel/Attract/ <i>Aantrek/Afstoot</i>
Aluminum	Repel / <i>Afstoot</i> ✓
Carbon/ <i>Koolstof</i>	Repel / <i>Afstoot</i> ✓
Iron / <i>Yster</i>	Attract / <i>Aantrek</i> ✓
Copper / <i>Koper</i>	Repel / <i>Afstoot</i> ✓
Zinc / <i>Sink</i>	Repel / <i>Afstoot</i> ✓
Nickel / <i>Nikkel</i>	Attract / <i>Aantrek</i> ✓

(6)

- 2.2.3 Magnetic properties/*Magnetiese eienskappe* ✓ (1)
 2.3 2.3.1 Material that cannot conduct electricity/*Materiaal wat nie elektrisiteit kan gelei nie* ✓✓ (2)
 2.3.2 Polyester/*Poliëster* ✓
Air/Lug ✓ (2)
 2.3.3 They have the lowest thermal conductivity values./*Hulle het die laagste termiese geleidingsvermoë waardes.* ✓ (1)

[24]

QUESTION/VRAAG 3

3.1 Simplest type of a pure substance/*Eenvoudigste tipe van suiwer stof* ✓✓ (2)

3.2 Group 15, ✓ Period 3 ✓/*Groep 15, Periode 3* (2)

3.3 15 ✓ (1)

3.4 $1s^2$ ✓ $2s^2 2p^6$ ✓ $3s^2 3p^3$ ✓ (3)

3.5 Phosphorus ✓ – P ✓/*Fosfor – P* (2)

3.6 5 ✓ (1)

3.7

		↑↓	↑↓	↑↓
n = 3	↑↓	↑↓	↑↓	↑↓
n = 2	↑↓	↑↓	↑↓	↑↓
n = 1	↑↓			

(3)

3.8 Anion / *anioon* ✓ (1)

3.9 3.9.1 Isotope / *Isotope* ✓ (1)

3.9.2 2 ✓ (1)

3.9.3 Negative / *negatief* ✓ (1)

3.9.4 (a) Na ✓
 (b) 12 ✓
 (c) Lithium ion / *Litiumioon* ✓ ✓
 (d) 2 ✓
 (e) K ✓
 (f) 20 ✓
 (g) Argon ✓
 (h) Ar ✓ (9)

3.10 Number of protons and electrons ✓ ✓ / *Aantal protone en elektrone* (2)

3.11 (a) $\text{CH}_4 + \text{2 O}_2 \rightarrow \text{CO}_2 + \text{2 H}_2\text{O}$ ✓ (2)

(b) $\text{N}_2 + \text{2 O}_2 \rightarrow \text{2 NO}_2$ ✓ (2)

3.12 3.12.1 A substance made out of two or more elements in the exact ratio/
'n Stof wat bestaan uit twee of meer elemente wat in 'n spesifieke verhouding met mekaar verbind is. ✓✓ (2)

3.12.2 D. $\text{KNO}_3 \rightarrow \text{K}^+ + \text{NO}_3^-$ ✓✓ (4)

3.12.3 I ✓; C ✓ (2)

3.12.4 Zinc sulphate ✓✓ / Sinksulfaat ✓✓ and/en Hydrogen/Waterstof ✓✓ (4)

3.12.5 H: NaOH ✓✓
J: NO₂ ✓✓ (4)

[49]

QUESTION/VRAAG 4

4.1 Pure substance as a single type of material/Suiwer stof is 'n stof as 'n enkele tipe materiaal ✓✓ (2)

4.2 4.2.1 Wool or wood ✓ (Any 1)/Wol of hout (Enige 1) (1)

4.2.2 Steel/ wires/ copper ✓ (Any 1)/Staal/ drade/ koper (Enige 1) (1)

4.3 Cations—ions with positive charges/Katione—ione met positiewe ladings ✓✓ (2)

4.4 4.4.1 C⁴⁺ ✓ (2)

4.4.2 O²⁻ ✓ (2)

4.5 4.5.1 Fe(III)O₃ ✓✓ (2)

4.5.2 Cu(II)Cl₂ ✓✓ (2)

4.6 4.6.1 (d); (e) ✓✓ (2)

4.6.2 (j) ✓ (1)

4.6.3 (a) or (i) ✓ (1)

4.6.4 (b) ✓ (1)

4.6.5 (k) ✓ (1)

4.6.6 (b) ✓ (1)

4.6.7 (a) ✓ (1)

4.6.8 (j) or (g) ✓ (1)

4.6.9 (g) ✓ (1)

4.7 (b) – Magnesium ✓ Mg ✓
(f) – Carbon / Koolstof ✓ C ✓
(i) – Hydrogen / Waterstof ✓ H ✓ (6)

4.8 Diatomic – molecules contain two identical atoms /
Diatomies – molekules wat uit twee identiese atome bestaan ✓✓ (2)

4.9 (i), (f) and/en (k) (3)

[35]

QUESTION/VRAAG 5

- 5.1 An indication of how hot or cold a body is. /Aanduiding van hoe koud of warm 'n voorwerp is. ✓✓ (2)
- 5.2 Thermometer/*Termometer* ✓ (1)
- 5.3 Celsius Scale/skaal ✓ (1)
- 5.4 Alcohol thermometer/*Alkohol-termometer*
Mercury thermometer/*Kwiktermometer*
Thermoelectric thermometer/*Termo-elektriese termometer* (Any/*Enige* 2) (2)
- 5.5 5.5.1 $T_K = T_c + 273$
 $= -219 + 273$ ✓
 $= 54$ K ✓ (2)
- 5.5.2 $T_K = T_c + 273$
 $= 2\,900 + 273$ ✓
 $= 3\,173$ ✓ (2)
- 5.6 5.6.1 Diamond, ✓ sulphur, sodium, sulphur of glass (Any 1)/*Diamant, swawel, natrium of swawel. (Enige 1)* (1)
- 5.6.2 Ethanol/*Etanol* ✓ (1)
- 5.7 5.7.1 Heat is defined as a form of energy. /*Hitte word as 'n vorm van energie gedefinieer* ✓✓ (2)
- 5.7.2 0–360 s ✓ (1)
- 5.7.3 46 °C ✓ (1)
- 5.7.4 Bunsen burner/*Bunsen-brander* ✓ (1)
- 5.7.5 Paraffin is highly flammable/*Paraffien is hoogs vlambaar* ✓✓ (2)
- 5.7.6 A: Test tube/*Proefbuis* ✓✓
B: Tripod stand/*Driepoot-staander* ✓
D: Retort stand/*Retort-staander* ✓ (3)
- [22]**

TOTAL/TOTAAL: 150