



Province of the  
**EASTERN CAPE**  
EDUCATION

**NATIONAL  
SENIOR CERTIFICATE/  
NASIONALE  
SENIOR SERTIFIKAAT**

**GRADE/GRAAD 10**

**NOVEMBER 2020**



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

**MARKS/PUNTE: 150**

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

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**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 / *Isotopie* ✓  (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)  $CH_4 + 2 O_2 \rightarrow CO_2 + 2H_2O$  ✓ ✓ (2)
- (b)  $N_2 + 2 O_2 \rightarrow 2NO_2$  ✓ ✓ (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.  $KNO_3 \rightarrow K^+ + NO_3^-$  ✓✓ ✓✓ (4)

- 3.12.3 I ✓; C ✓ (2)
- 3.12.4 Zinc sulphate ✓✓ / *Sinksulfaat* ✓✓ and/en Hydrogen/Waterstof ✓✓ (4)
- 3.12.5 H: NaOH ✓✓  
J: NO<sub>2</sub> ✓✓ (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 C<sup>4+</sup> ✓ (2)
- 4.4.2 O<sup>2-</sup> ✓ (2)
- 4.5 4.5.1 Fe(III)O<sub>3</sub> ✓✓ (2)
- 4.5.2 Cu(II)Cl<sub>2</sub> ✓✓ (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  $T_K = T_c + 273$   
 $= -219 + 273$  ✓  
 $= 54 \text{ K}$  ✓ (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**