



Province of the
EASTERN CAPE
EDUCATION

**NATIONAL SENIOR CERTIFICATE/
NASIONALE SENIOR SERTIFIKAAT**

GRADE/GRAAD 10

NOVEMBER 2018

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

MARKS/PUNTE: 150

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

QUESTION/VRAAG 1

- 1.1 A ✓✓ (2)
 1.2 B ✓✓ (2)
 1.3 C ✓✓ (2)
 1.4 B ✓✓ (2)
 1.5 D ✓✓ (2)
 1.6 B ✓✓ (2)
 1.7 B ✓✓ (2)
 1.8 D ✓✓ (2)
 1.9 C ✓✓ (2)
 1.10 A ✓✓ (2)
- [20]**

QUESTION/VRAAG 2

- 2.1 Low density, ✓ Unreactive ✓ (2)
Lae digtheid, ✓ onreaktief ✓
- 2.2 2.2.1 Isotopes ✓✓ / *Isotope ✓✓* (2)
- 2.2.2
- | | Electrons e ⁻ | Protons p ⁺ | Neutrons n ⁰ |
|-------------------|--------------------------|------------------------|-------------------------|
| | Elektrone e ⁻ | Protone p ⁺ | Neutrone n ⁰ |
| ${}_1^3\text{H}$ | 1✓ | 1 | 2✓ |
| ${}_1^2\text{H}$ | 1✓ | 1 | 1✓ |
| ${}_2^4\text{He}$ | 2✓ | 1 | 2✓ |
- (6)
- 2.3 2.3.1 Noble gases ✓✓ or Inert gases ✓✓ (2)
Edelgasse ✓✓ of onaktief gasse ✓✓
- 2.3.2 $1s^2 2s^2 2p^6 3s^2 3p^6$ ✓✓ (2)
- [14]**

QUESTION/VRAAG 3

- 3.1 3.1.1 Copper Carbonate ✓ Koperkarbonaat ✓ (1)
- 3.1.2 Sugar water ✓ *Suikerwater ✓* (1)
- 3.1.3 Barium nitrate ✓ *Bariumnitraat ✓* (1)
- 3.1.4 Carbon dioxide ✓ *Koolstofdioksied ✓* (1)
- 3.1.5 Silver iodide ✓ *Silwer jodium ✓* (1)
- 3.1.6 Salt water ✓ *Soutwater ✓* (1)

- 3.2 3.2.1 KCl ✓ (1)
- 3.2.2 Electrons are transferred✓ from one atom (metal) ✓ to another (non-metal) ✓.
This forms positive and negative ions which attract each other.
Elektrone word oorgedra ✓ van een atoom (metaal) ✓ na 'n ander (nie-metaal) ✓. Dit vorm positiewe en negatiewe ione wat mekaar aantrek (3)
- 3.2.3 Dissociation ✓ (Accept: Ionisation ✓) Dissosiasie ✓ (Aanvaar: Ionisation ✓) (1)
- 3.2.4 $KCl(s) \checkmark \rightarrow K^+(aq) \checkmark + Cl^-(aq) \checkmark$
Or/Of
 $KCl(s) \checkmark \rightarrow KOH(aq) \checkmark + HCl(aq) \checkmark$ (3)
- [14]

QUESTION/VRAAG 4

- 4.1 A – Ammeter ✓✓ *Ammeter* ✓✓
B – Battery ✓✓ or Cells ✓✓ *Battery of Selle* ✓✓
C – Switch ✓✓ *Skakelaar* ✓✓ (6)
- 4.2 It must form ions in solution ✓✓ that are free to move./
Dit moet ione in oplossing vorm ✓✓ *wat vry is om te beweeg.* (2)
- 4.3
- | Name of the substance
<i>Naam van stof</i> | Conduct or not: ✓ or X
<i>Leiding of nie (✓ or x)</i> |
|----------------------------------------------------------------|----------------------------------------------------------|
| Potassium Chloride Crystal
<i>Kaliumchloriedkristal</i> | X |
| Distilled water
<i>Gedistilleerde water</i> | X |
| Potassium Chloride solution
<i>Kaliumchloried oplossing</i> | ✓ |
- (3)
- 4.4 Increase in the reading ✓✓ on apparatus **A** as a result of an increase in the concentration of solution.
Toename in die lesing ✓✓ op apparaat A as gevolg van 'n toename in die konsentrasie van oplossing.
- 4.5 Dependent variable- Conductivity ✓ or Ammeter reading ✓ or glowing (brightness of bulb) ✓
Independent variable – type of material used ✓ (to test conductivity)
Control variable- Number of cells (battery) ✓ or type of cells (battery) ✓
Afhanklike veranderlike – Konduktiwiteit ✓ of Ammeterlesing ✓ of gloeiend (gloei van gloeilamp) ✓
Onafhanklike veranderlike – tipe materiaal wat gebruik word ✓ (om geleidingsvermoë te toets)
Beheer veranderlike – Aantal selle (battery) ✓ of tipe selle (battery) ✓ (3)

- 4.6 Light bulb, ✓ the bulb will glow brighter ✓✓ to show conductivity./
Gloeilamp, ✓ die gloeilamp sal helderder gloei ✓✓ om geleidingsvermoë te toon.
- 4.7 4.7.1 Non-magnetic ✓/ *Nie-magneties* ✓ (1)
- 4.7.2 Magnetic ✓/ *Magneties* ✓ (1)
- 4.7.3 Non-magnetic ✓/ *Nie-magneties* ✓ (1)
- 4.8 4.8.1 It is a material that does not allow heat energy to pass through it. ✓✓
Dit is 'n materiaal wat nie toelaat dat hitte-energie daardeur beweeg nie. ✓✓ (2)
- 4.8.2 Plastic, ✓ Wool, ✓ Fibreglass, ✓ Polystyrene ✓ etc. (Any 2)
Plastiek, ✓ Wol, ✓ Veselglas, ✓ Polistireen ✓ ens. (Enige 2) (2)
- 4.9 In ringing bells ✓ / *In klokke wat lui* ✓
In floppy disks ✓ / *in diskette* ✓
In alarm systems ✓ / *In alarmstelsels* ✓
In electric motors ✓ / *In elektriese motors* ✓
Electric cranes with magnets ✓ / *Elektriese hysskrane met magnete* ✓
In sound systems ✓ / *In klankstelsels* ✓ (Any 3 / *Enige 3*) (3)

[29]**QUESTION/VRAAG 5**

- 5.1 A cation is a positive ion ✓ (atom or molecule)
An anion is a negative ion ✓ (atom or molecule)/
'n Katioon is 'n positiewe ioon ✓ (atom of molekule)
'n Anioon is 'n negatiewe ioon ✓ (atoom of molekule) (2)
- 5.2 5.2.1 Potassium ✓ +1 ✓ *Kalium* ✓ +1 ✓ (2)
- 5.2.2 Aluminium ✓ +3 ✓ *Aluminium* ✓ + 3 ✓ (2)
- 5.2.3 Hydroxide ✓ -1 ✓ *hidroksied* ✓ -1 ✓
- 5.3 5.3.1 Iron (II) oxide ✓✓ Yster (II) oksied ✓✓ (2)
- 5.3.2 Calcium (II) Chloride ✓✓ *Kalsium (II) Chloried* ✓✓ (2)
- 5.4 5.4.1 HBr ✓✓ (2)
- 5.4.2 CuO ✓✓ (2)
- 5.4.3 MgCl₂ ✓✓ (2)

- 5.5 5.5.1 Na_2 is incorrect ✓ rather 2Na as Sodium is not a diatomic molecule it is a metal in group 1. ✓
 $(\text{NaOH})_2$ is incorrect ✓ it must be NaOH as Na^+OH^- is an ionic compound ratio is 1 : 1. ✓/ *Na_2 is inkorrek ✓ eerder 2Na aangesien natrium nie 'n diatomiese molekule is nie, dit is 'n metaal in groep 1. ✓*
 $(\text{NaOH})_2$ is inkorrek ✓ dit moet NaOH wees as $\text{Na} + \text{OH}^-$ is 'n ioniese verbinding met 'n verhouding van 1 : 1. ✓ (4)
- 5.5.2 Mg_2Cl_2 is incorrect ✓ it must be MgCl_2 . ✓ Magnesium is a $2+$ ion and Chlorine is $1-$ ion so the ratio is 2 : 1. ✓/ *Mg_2Cl_2 is inkorrek ✓ dit moet MgCl_2 wees. Magnesium is 'n $2+$ ioon en Chloor is $1-$ ioon dus die verhouding is 2 : 1 ✓.* (3)

[25]**QUESTION/VRAAG 6**

- 6.1 $\text{CaCO}_3(\text{s}) \checkmark \rightarrow \text{CaO}(\text{s}) \checkmark + \text{CO}_2(\text{g}) \checkmark$ (3)
- 6.2 Reactant mass *Reaktante massa* = $\{40 + 3(16)\} \checkmark = 100 \text{ amu/g.mol}^{-1} \checkmark$
 Products mass *Produkte massa* = $\{(40 + 16) + (12 + 2(16))\} \checkmark = 100 \text{ amu/g.mol}^{-1} \checkmark$
Reactants mass/Reaktante massa = Product mass/Produkte massa (4)
- 6.3 Heat is needed ✓✓ to break up $\text{CaCO}_3(\text{s})$ into simple compounds.
Hitte is nodig. ✓✓ *Om $\text{CaCO}_3(\text{s})$ op te los in eenvoudige verbindings.* (2)
- 6.4 The gas is passed through lime water ✓ that is clear and a milky colour ✓✓ will be observed.
Die gas word deur kalkwater oorgedra. ✓ Die water helder en 'n melkagtige kleur sal ✓✓ waargeneem word. (3)
- 6.5 Yes ✓ To mix the substances evenly ✓ *Om die stowwe eweredig te meng ✓*
OR To distribute the heat evenly ✓ **OF** *Om die hitte eweredig te versprei ✓*
 To prevent the cement from settling and hardening ✓ *Om te verhoed dat die sement verhard ✓* (2)

[14]

QUESTION/VRAAG 7

7.1 7.1.1 Halogens ✓✓ / Halogene ✓✓ (2)

7.1.2

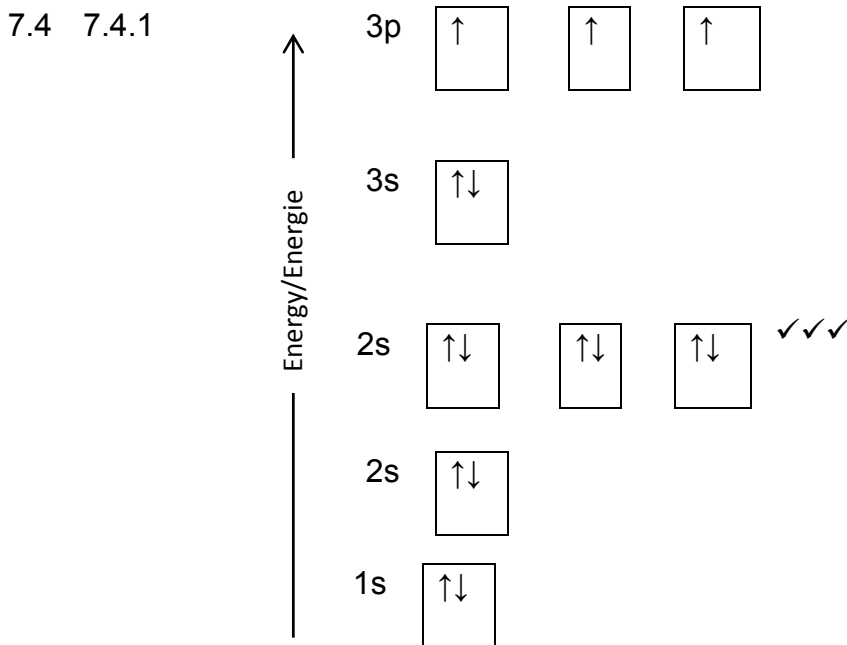
	³⁵ Cl	³⁷ Cl
Number of protons <i>Aantal protone</i>	17	17
Number of electrons <i>Aantal elektrone</i>	a. 17 ✓	b. 17 ✓
Number of neutrons <i>Aantal neutrone</i>	c. 18 ✓	d. 20 ✓
Number of Nucleons <i>Aantal nukleone</i>	35	37

(4)

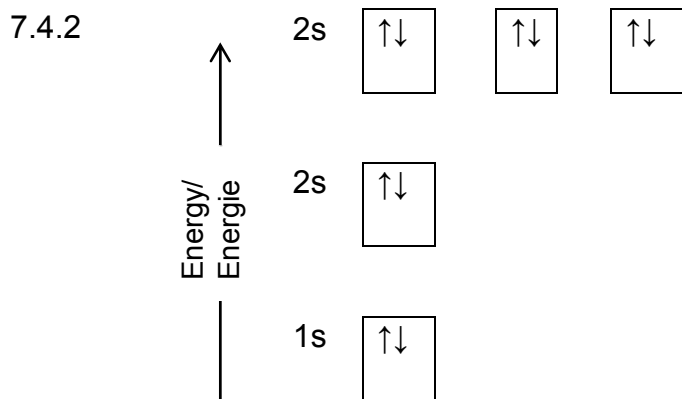
7.2 Nitrogen; ✓ ₇¹⁵N ✓✓ / Stikstof ✓ ₇¹⁵N ✓✓ (3)

7.3 7.3.1 True ✓ / Waar ✓ (1)

7.3.2 False ✓ / Onwaar ✓ (4)



(3)



(2)

[16]

QUESTION/VRAAG 8

- 8.1 Heat is a form of energy (that can give rise to temperature if transferred). ✓✓
 Temperature is a measure of how hot or cold an object/body is. ✓✓/
Hitte is 'n vorm van energie (dit kan aanleiding gee tot temperatuur indien dit oorgedra word). ✓✓
Temperatuur is 'n mate van hoe warm of koud 'n voorwerp / liggaam is. ✓✓ (4)
- 8.2 Alcohol thermometer ✓ / *Alkohol termometer* ✓
 Mercury thermometer ✓ / *Kwiktermometer* ✓
 Thermoelectric thermometer ✓ / *Termo-elektrisiteit* ✓ (3)
- 8.3 It is used in medicine. ✓ / *Dit word in medisyne gebruik.* ✓
 It is used in scientific research ✓ / *science laboratories* ✓
Dit word gebruik in wetenskaplike navorsing ✓ / wetenskaplaboratoriums ✓
 It is used in meteorology ✓ / *study of weather* ✓
Dit word gebruik in meteorologie ✓ / studie van weer ✓
 To control and regulate processes in industry ✓ /
Om prosesse in die bedryf te beheer en te reguleer ✓ (Any 3/Enige 3) (3)
- 8.4 8.4.1 A – Thermometer ✓ / *Termometer* ✓
 B – Glass rod ✓ / *Glasstang* ✓
 C – Test Tube ✓ / *Proefbuis* ✓
 D – Bunsen burner ✓ / *Bunsenbrander* ✓
 E – Glass beaker ✓ / *Glasbeker* ✓ (5)
- 8.4.2 It is used as a stirrer ✓✓ so that heat is evenly distributed./
Dit word gebruik om in mengsel te roer ✓✓ sodat hitte eweredig versprei word. (2)
- 8.4.3 It is flammable. ✓ *Dit is vlambaar.* ✓ (1)
- 8.4 Sound waves/Seismic waves/Earthquake (Any 2) ✓✓/
Klankgolwe/Seismiese golwe/Aardbewings (Enige 2) ✓✓ (2)

[18]**TOTAL/TOTAAL: 150**