



Province of the
EASTERN CAPE
EDUCATION

**NATIONAL
SENIOR CERTIFICATE/
NASIONALE SENIOR
SERTIFIKAAT**

GRADE/GRAAD 12

JUNE/JUNIE 2021

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

MARKS/PUNTE: 75

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

QUESTION/VRAAG 1

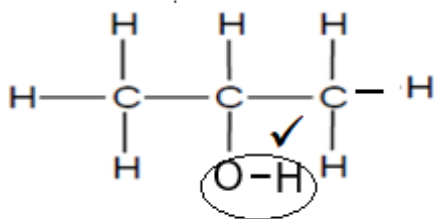
- 1.1 D ✓✓ (2)
 1.2 C ✓✓ (2)
 1.3 B ✓✓ (2)
 1.4 A ✓✓ (2)
 1.5 B ✓✓ (2)

[10]**QUESTION/VRAAG 2**

- 2.1 Combustion / verbranding ✓ (1)
 2.2 Structural isomers / struktuurisomere ✓ (1)
 2.3 Polymers / polimere ✓ (1)
 2.4 n-type (semiconductor) / n-tipe (halfgeleier) ✓ (1)

[4]**QUESTION/VRAAG 3**

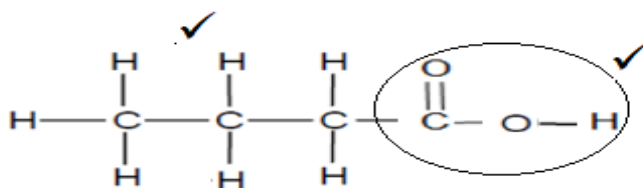
- 3.1 3.1.1 An organic molecule is a molecule which contains carbon atoms. ✓✓
'n Organiese molekule is 'n molekule wat koolstofatome bevat. ✓✓ (2)
 3.1.2 C_nH_{2n} ✓ (1)
 3.1.3 Alcohols / Alkohole ✓ (1)
 3.1.4 Hydroxyl group / Hidroksielgroep ✓ (1)
 3.1.5 ✓



(2)

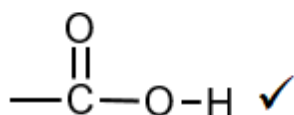
- 3.2 3.2.1 Esters: Dipole-dipole intermolecular forces ✓
Esters: Dipool-dipool intermolekulêre kragte ✓ (1)
 Alcohols: Hydrogen bond ✓
Alkohole: Waterstofbinding ✓ (1)
 3.2.2 Methanoic acid / Metanoësuur ✓ (1)

3.2.3



(2)

3.2.4



(1)

- 3.3 3.3.1 Same molecular formula, C_5H_{12} ✓
Dieselfde molekulêre formule, C_5H_{12} ✓ (1)
- 3.3.2 Different chain length / *Kettinglengte verskil* ✓ (1)
- 3.3.3 Alkanes / *Alkane* ✓ (1)
- 3.4 3.4.1 Pentane / *Pentaan* ✓ (1)
- 3.4.2 2-methyl ✓ butane ✓ / *2-metiel ✓ butaan* ✓ (2)
- 3.4.3 Pentane / *Pentaan* ✓ (1)
- 3.4.4 B ✓ (1)
- 3.4.5 B is branched; ✓ the more branches in the organic compound, the smaller the surface area. ✓
B is vertak; ✓ hoe meer takke die organiese verbinding het, hoe kleiner is die oppervlakarea. ✓ (2)
- 3.5 3.5.1 Plastics are synthetic materials derived from organic compounds. ✓✓
Plastiek is sintetiese materiale afkomstig van organiese verbindings. ✓✓ (2)

3.5.2

	USE / GEBRUIKE
B	Food-packaging plastics / <i>Voedselverpakkings-plastiek</i> ✓
C	Squeezable bottles / <i>Drukbare waterbottels</i> ✓
E	Flexible water pipes / <i>Buigbare waterpype</i> ✓

(Any 2 x 1) (2)

[27]

QUESTION/VRAAG 4

- 4.1 Vapour pressure is the pressure exerted by a vapour at equilibrium with its liquid in a closed system. ✓✓
Dampdruk is die druk wat uitgeoefen word deur 'n damp wat in ewewig is met sy vloeistof in 'n geslote sisteem. ✓✓ (2)
- 4.2 4.2.1 Dipole-dipole intermolecular forces ✓
Dipool-dipool intermolekulêre kragte ✓ (1)
- 4.2.2 Dipole-dipole intermolecular forces ✓
Dipool-dipool intermolekulêre kragte ✓ (1)
- 4.3 Viscosity of chlorohexane is **HIGHER**. ✓
 Chlorohexane has stronger dipole-dipole intermolecular forces.
 Pentane has weaker dispersion / London forces. ✓
Viskositeit van chloro-heksaan is HOËR. ✓
Chloroheksaan het sterker dipool-dipool intermolekulêre kragte.
Pentaan het swakker dispersie / Londonkragte. ✓ (2)
- 4.4 Pentane/ Pentaan ✓
 It has weak London forces. ✓ Less energy will be required to overcome intermolecular forces. ✓
Dit het swak Londonkragte. ✓ Minder energie benodig om intermolekulêre kragte te oorkom. ✓ (3)
- 4.5 London forces / Londonkragte ✓✓ (2)
- [11]**

QUESTION/VRAAG 5

- 5.1 Hydrocarbons are organic compounds that consist only of hydrogen and carbon atoms. ✓
Koolwaterstowwe is organiese verbindings wat slegs uit waterstof- en koolstofatome bestaan. ✓ (1)
- 5.2 5.2.1 $\text{CH}_4 + 2\text{O}_2 \checkmark \longrightarrow \text{CO}_2 + 2\text{H}_2\text{O} \checkmark \checkmark \text{ bal}$ (3)
- 5.2.2 Excess oxygen / Oormaat energie ✓ (1)
- [5]**

QUESTION/VRAAG 6

6.1 6.1.1 Hydrolysis / *Hidrolise* ✓ (1)

6.1.2 Hydration / *Hidrasie* ✓ (1)

6.1.3 Esterification / *Esterifikasie* ✓ (1)

6.2 6.2.1 Hexan-2-ol or 2-hexanol
Heksan-2-ol of 2-heksanol ✓ (1)

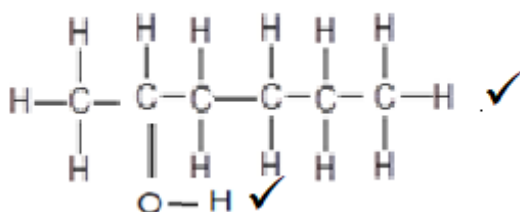
6.2.2 1-bromohexane / *1-bromoheksaan* ✓ (1)

6.2.3 Water ✓ (1)

6.3 6.3.1 Pt/Pd/Ni as a catalyst ✓
Pt/Pd/Ni as 'n katalisator ✓ (1)

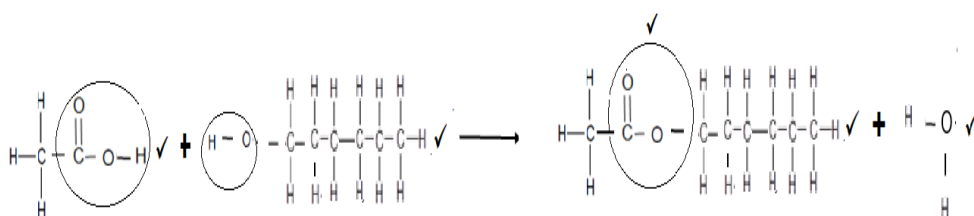
6.3.2 No water added, unreactive solvent, CHCl_2 , CCl_4 ✓
Geen water bygevoeg nie, onreaktiewe oplosmiddel, CHCl_2 , CCl_4 ✓ (1)

6.4



(2)

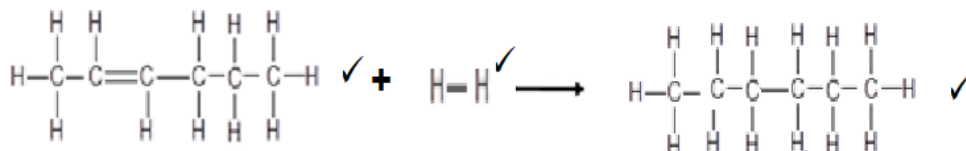
6.5 6.5.1



(4)

6.5.2 Ethyl hexanoate ✓
Etielheksanoaat ✓ (1)

6.5.3



(3)

[18]

TOTAL/TOTAAL: 75