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# education

Department:  
Education  
North West Provincial Government  
**REPUBLIC OF SOUTH AFRICA**

## **PROVINCIAL ASSESSMENT PROVINSIALE ASSESSERING**

**GRADE/GRAAD 12**

**PHYSICAL SCIENCES: CHEMISTRY (P2)  
FISIESE WETENSKAPPE: CHEMIE (V2)  
JUNE/JUNIE 2025  
MARKING GUIDELINES  
NASIENRIGLYNE**

**Marks/Punte: 150**

**These marking guidelines consists of 13 pages.  
Hierdie nasienriglyne bestaan uit 13 bladsye.**



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**QUESTION/VRAAG 1**

- |      |   |    |             |
|------|---|----|-------------|
| 1.1  | C | ✓✓ | (2)         |
| 1.2  | C | ✓✓ | (2)         |
| 1.3  | B | ✓✓ | (2)         |
| 1.4  | C | ✓✓ | (2)         |
| 1.5  | B | ✓✓ | (2)         |
| 1.6  | B | ✓✓ | (2)         |
| 1.7  | C | ✓✓ | (2)         |
| 1.8  | B | ✓✓ | (2)         |
| 1.9  | A | ✓✓ | (2)         |
| 1.10 | C | ✓✓ | (2)         |
|      |   |    | <b>[20]</b> |

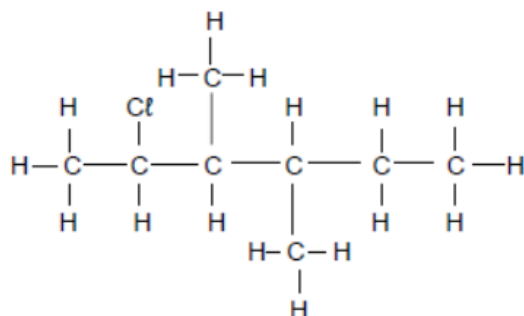


**QUESTION/VRAAG 2**

- 2.1 A chemical formula that indicates the element and numbers of each of the atoms in a molecule. ✓✓  
*'n Chemiese formule wat die element en die aantal atome van elk in 'n molekule aandui.* (2 or 0) (2)

- 2.2.1  $C_8H_{17}Cl$  ✓ (1)

2.2.2



| Marking Criteria/Nasienkriteria                                                                                                       | Allocation/ toekenning |
|---------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| Substituents correctly placed/Vertakkings korrek geplaas                                                                              | ✓                      |
| Six carbons on the parent chain./Ses koolstowwe in die hoofstam                                                                       | ✓                      |
| <b>NOTE:</b> Penalise when any hydrogen or bond is omitted.<br><b>NOTA:</b> Penaliseer indien enige watersof of bindings weggelaat is |                        |

(2)

- 2.2.3 SECONDARY ✓/SEKONDÊR  
The carbon with(bonded to/attached to) the halogen/functional group is bonded/attached to two other carbon atoms. ✓✓  
*Die koolstof met (gebind aan/geheg aan) die halogeen/funksionele groep is gebind/geheg aan twee ander koolstofatome* (3)

- 2.3.1 Carboxyl (group) ✓/Karboksiel (groep) (1)

- 2.3.2 FUNCTIONAL ✓/FUNKSIONEEL  
the organic compounds that have the same molecular formula ✓ but different functional groups ✓/belongs to different homologous series.  
*die organiese verbindings met dieselfde molekulêre formule, maar verskillende funksionele groepe/behoort aan verskillende homoloë reekse* (3)

- 2.3.3 Methyl ✓ ethanoate ✓/Metieletanoaat (2)



2.4.1 2,2,4-trimethylpentane ✓✓ / 2,2,4-trimetielpentaa

| Criteria/Kriteria                                                                                                                                                     | Allocation/<br>Toekenning |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
| Correct stem (Pentane)/Korrekte stam (Pentaa)                                                                                                                         | ✓                         |
| Substituent (trimethyl)/Substituente (trimetiel)                                                                                                                      | ✓                         |
| IUPAC name completely correct including numbering, sequence, hyphens and commas./IUPAC-naam heeltemal korrek insluitende nommering, volgorde, koppeltekens en kommas. | ✓                         |

(3)

2.4.2  $C_nH_{2n+2}$  ✓

(1)

2.4.3  $2C_8H_{18} + 25O_2 \rightarrow 16CO_2 + 18H_2O$  ✓ ✓balancing/balansering

(3)  
[21]

### QUESTION/VRAAG 3

3.1.1 How does chain length affect the boiling point? ✓✓

OR

What is the relationship between chain length/molecular mass/number of carbon atoms and boiling point?

*Hoe sal kettinglengte die kookpunt beïnvloed?*

OF

*Wat is die verhouding tussen kettinglengte/molekulêre massa/aantal koolstof atome en kookpunt?*

(2)

3.1.2 Straight chain alkanes/Reguit keting alkane✓

**Accept/Aanvaar:** Homologous series/Functional group/Alkanes/Homoloë reeks/Funksionele groep/Alkane

(1)

3.2 Yes ✓/Ja

investigation has only one independent variable. ✓/Only chain length was varied/Die ondersoek het net een onafhanklike veranderlike. /Slegs kettinglengte was verander.

(2)

3.3 The pressure exerted by a vapour at equilibrium with its liquid in a closed system. ✓✓

*Die druk uitgeoefen deur 'n damp in ewewig met sy vloeistof in 'n geslote sisteem.*

(2)



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### 3.4 PENTANE✓/PENTAAN

- Pentane has a shorter chain length ✓ than hexane/*Pentaan het 'n korter ketting lengte as hekasaan*
- Pentane has weaker intermolecular forces/London forces ✓ than hexane/*Pentaan het swakker intermolekulêre kragte/Londonkragte as hekasaan*
- Less energy is needed to overcome the intermolecular forces ✓ between pentane molecules than between hexane molecules/*Minder energie is nodig om intermolekulêre kragte tussen pentaan te oorkom as tussen hekasaan molekules.*

**OR/OF**

- Hexane has a longer chain length ✓ than pentane/*Heksaan het 'n langer ketting lengte as pentaan*
- Hexane has stronger intermolecular forces/London forces ✓ than pentane/*Heksaan het sterker intermolekulêre kragte/London kragte as pentaan*
- More energy is needed to overcome the intermolecular forces ✓ between hexane molecules than between pentane molecules/*Meer energie is nodig om intermolekulêre kragte te oorkom tussen hekasaan as tussen pentaan molekules.*

(4)

#### 3.5.1 Butan-1-ol ✓

(1)

- #### 3.5.2
- Butan-1-ol has ONE site of hydrogen bonds ✓ and Butanoic acid has TWO sites of hydrogen bonds. ✓/*Butan-1-ol het een plek vir waterstofbindings en Butanoësuur het TWEE plekke vir waterstofbindings.*
  - Butan-1-ol has weaker intermolecular forces ✓ than Butanoic acid./*Butan-1-ol het swakker intermolekulêre kragte as Butanoësuur.*

**OR/OF**

- Butanoic acid has stronger intermolecular forces than butan-1-ol/*Butanoësuur het sterker intermolekulêre kragte as butan-1-ol.*

(3)

**[15]**



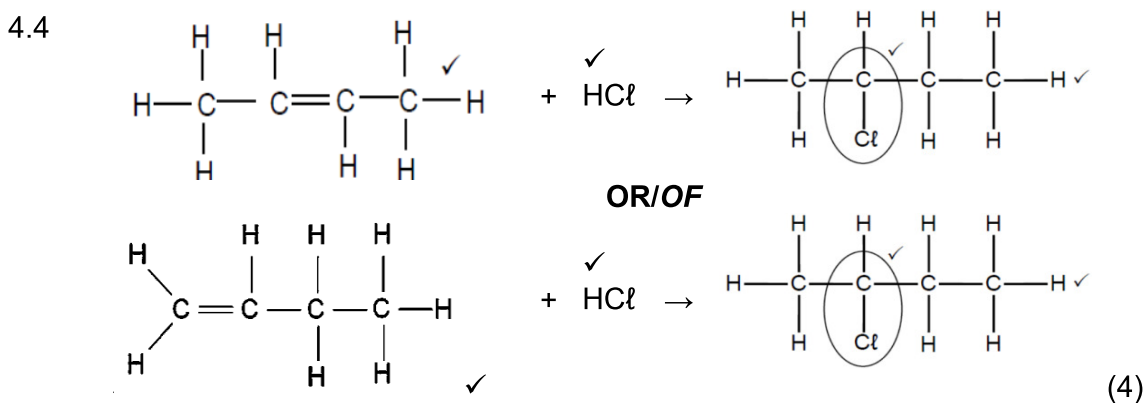
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**QUESTION/VRAAG 4**

4.1.1 Addition/hydration ✓/Addisie/hidrasie (1)

4.1.2 Substitution/hydrolysis ✓/Substitusie/hidrolise (1)

4.1.3 Elimination/dehydrohalogenation ✓/Eliminasie/dehidrohalogenering (1)

4.2 Primary ✓Primêr **Accept/Aanvaar:**  
Secondary/Sekondêr (1)4.3 Elimination/removal of water from an alcohol ✓/  
Eliminasie/ekstraksie van water uit 'n alkohol. (1)4.5.1  $\text{H}_2\text{SO}_4$  ✓ (1)4.5.2  $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{OH}$  ✓ +  $\text{CH}_3\text{CH}_2\text{COOH}$  ✓ →  
 $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{OOCCH}_2\text{CH}_3$  ✓✓ +  $\text{H}_2\text{O}$  ✓ (5)

4.5.3 Propanoic acid ✓✓/Propanoësuur (2)

4.6 • Concentrated strong base/ (NaOH/KOH/LiOH) ✓/ Gekonsentreerde  
sterk basis  
• Strong/More Heat ✓/ Sterk/meer hitte (2)

4.7.1 Ni/Nickel/Nikkel or/of Pd/Palladium ✓ (1)

4.7.2  $\text{C}_4\text{H}_{10}$  ✓ (1)  
**[21]**

**QUESTION/VRAAG 5**

5.1.1 Activated complex ✓/Geaktiveerde kompleks (1)

5.1.2  $\Delta H = 173,2 - 182,8 = -9,6$  (kJ) ✓ (1)

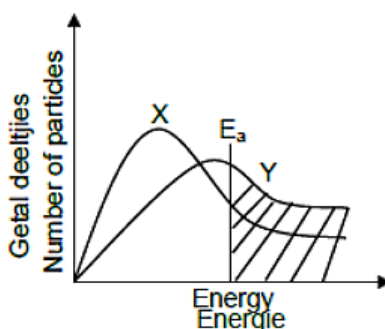
5.1.3 EXOTHERMIC ✓/EKSOTERMIES  
 $\Delta H < 0$  ✓

**OR/OF**

Enthalpy of products is less than that of reactants/Entalpie van die produkte is minder as die van die reaktante (2)

5.1.4 Decrease ✓/Afneem (1)

5.2.1



| Marking Criteria/<br>Nasienkriteria of/van Y                                                      | Allocation/<br>toekenning |
|---------------------------------------------------------------------------------------------------|---------------------------|
| Lower peak/Laer piekwaarde                                                                        | ✓                         |
| Peak shifted to the right/Piek skuif na regs                                                      | ✓                         |
| More particles with sufficient kinetic energy/<br>Meer deeltjies met genoegsame kinetiese energie | ✓                         |

(3)

5.2.2 Higher than ✓/Groter as (1)

**[9]**

**QUESTION/VRAAG 6****6.1 ANY ONE:**

- Change in concentration ✓ of products/reactants per unit time. ✓
- Change in amount/number of mole/volume/mass ✓ of products/reactants per unit time. ✓
- Amount/number of mole/volume/mass of products formed/reactants used ✓ per unit time. ✓
- Rate of change in concentration/amount of moles/number of moles/volume/mass. ✓ ✓

**(2 or 0)****ENIGE EEN:**

- *Verandering in konsentrasie van produkte/reaktanses per eenheid tyd.*
- *Verandering in hoeveelheid/getal mol/volume/massa van produkte/reaktanses per eenheid tyd.*
- *Hoeveelheid/getal mol/volume/massa van produkte gevorm/reaktanses gebruik per eenheid tyd.*
- *Tempo van verandering in konsentrasie/hoeveelheid/getal mol/volume/massa*

**(2 of 0)** (2)6.2 3,0 (dm<sup>3</sup>) ✓ (1)

6.3 Reaction rate/Reaksietempo =  $\frac{\Delta V}{\Delta t}$   
 $= \frac{3,0-0}{20-0}$  ✓  
 $= 0,15 \text{ dm}^3 \cdot \text{s}^{-1}$  ✓ (3)

**Note/Nota:**

Penalize only ONCE if zero (0) is omitted at either the numerator or the denominator.

*Penaliseer slegs EEN keer indien die nul (0) uitgelaat is by die noemer of teller.*

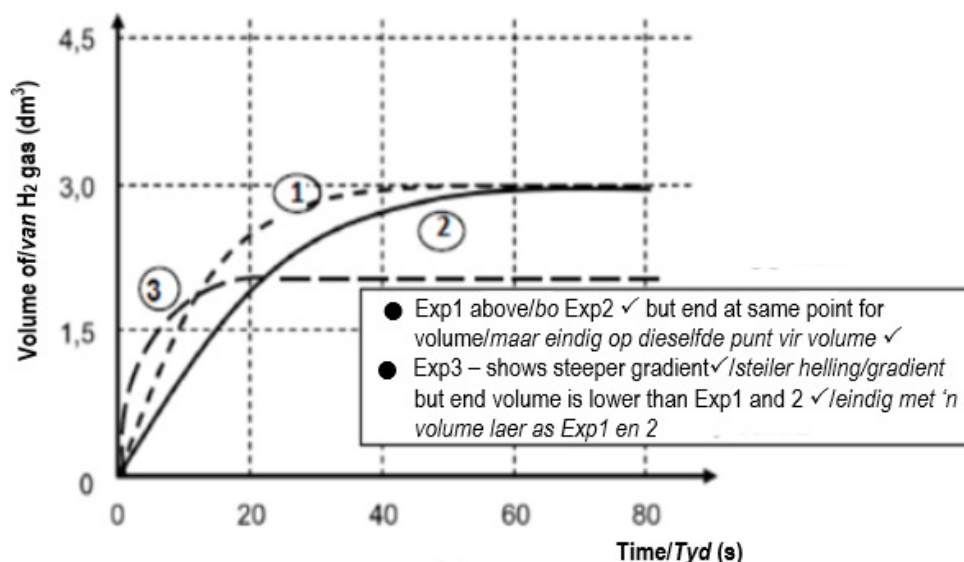
6.4 Increases ✓/Verhoog

- Higher concentration will increase the number of particles per unit volume ✓
- There will be more particles with enough/sufficient kinetic energy ( $E_k$ ) ✓ or more particles with  $E_k \geq E_A$  (Activation energy)
- There will be more effective collisions per unit time ✓ or the frequency of effective collisions increases.
- Hoër konsentrasie verhoog die aantal deeltjies per volume-eenheid
- Daar sal meer deeltjies wees met genoeg/voldoende kinetiese energie ( $E_k$ ) of meer deeltjies met  $E_k \geq E_A$  (aktiveringsenergie)
- Daar sal meer effektiewe botsings per tydseenheid wees of die frekwensie van effektiewe botsings neem toe.

(4)

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6.5



(4)  
[14]

## QUESTION/VRAAG 7

7.1.1 Increases ✓/Vermeerder (1)

7.1.2 Forward ✓/Voorwaarts (1)

7.1.3 **Marking criteria/Nasienkriteria:**  
If any one of the underlined key phrases in the **correct context** is omitted, deduct 1 mark./Indien enige van die onderstreepte frases in die **korrekte konteks** uitgelaat is, trek 1 punt af.  
The underlined phrases must be in the correct context. / Die onderstreepte frases moet in die korrekte konteks wees.

When the equilibrium in a closed system is disturbed, the system will re-instate a new equilibrium by favouring the reaction that will oppose the disturbance. ✓✓

Wanneer die ewewig in 'n geslote sisteem versteur word, sal die sisteem weer 'n nuwe ewewig instel deur die reaksie te bevoordeel wat die versteuring sal teenstaan.

(2)

- 7.1.4
- Increase in temperature increases  $K_c$  ✓
  - Increase in  $K_c$  indicates that the forward reaction has been favoured ✓
  - Increase in temperature favours the endothermic reaction ✓
  - Therefore the forward reaction is ENDOTHERMIC ✓

- Toename in temperatuur verhoog  $K_c$
- Toename in  $K_c$  dui aan dat die voorwaartse reaksie bevoordeel is
- Toename in temperatuur bevoordeel die endotermiese reaksie
- Daarom is die voorwaartse reaksie ENDOTERMIES

(4)

7.1.5 Add a catalyst ✓, increase pressure OR decrease volume. ✓  
Voeg 'n katalisator by, verhoog die druk OF verlaag die volume.

(2)

7.2

|                          | $A_2$   | + | $2B$ | $\rightarrow$ | $2AB$                        |
|--------------------------|---------|---|------|---------------|------------------------------|
| Initial/Aanvangs (mol)   | x       |   | 2    |               | 0 ✓                          |
| Change/Verandering       | -0,2    |   | -0,4 |               | 0,4 ✓ (✓) ← RATIO/VERHOUDING |
| Equilibrium/Ewewig (mol) | x - 0,2 |   | 1,6  |               | 0,4 ✓ ← Addition for all 3   |
| [Equilibrium/Ewewig]     | x - 0,2 |   | 1,6  |               | 0,4 ✓ ← Optel van al 3       |

OR/OF

|                                       | $A_2$   | + | $2B$ | $\rightarrow$ | $2AB$                        |
|---------------------------------------|---------|---|------|---------------|------------------------------|
| Initial/Aanvangs mol.dm <sup>-3</sup> | x       |   | 2    |               | 0 ✓                          |
| Change/Verandering                    | -0,2    |   | -0,4 |               | 0,4 ✓ (✓) ← RATIO VERHOUDING |
| [Equilibrium/Ewewig]                  | x - 0,2 |   | 1,6  |               | 0,4 ✓ ← Addition of all 3    |

Conc only ✓  
Slegs konsentrasie

Addisie van al 3

$$K_c = \frac{[AB]^2}{[A_2][B]^2}$$

$$= \frac{(0,4)^2}{(x - 0,2)(1,6)^2}$$

$$= 0,5$$

$$0,5 [(x - 0,2)(1,6)^2] = (0,4)^2$$

$$\therefore 1,28x - 0,256 = 0,16$$

$$\therefore x = 0,325 \text{ mol}$$

**Marking criteria/Nasien kriteria:**

- Initial mol/conc correctly indicated ✓
  - Mol/conc of AB produced = 0,4 ✓
  - Ratio applied correctly ✓
  - Equilibrium mol: ✓ initial – used  
initial + produced } ✓
  - Equilibrium conc: ✓✓ initial – used  
initial + produced } ✓
  - Equilibrium mol ÷ 1 = eq conc ✓
  - Correct  $K_c$  expression ✓
  - Substitution of eq conc into  $K_c$  expression ✓
  - Final answer ✓
- 
- Aanvanklike mol/kons korrek aangedui
  - Mol/kons van AB geproduseer = 0,4
  - Verhouding korrek toegepas
  - Ewewigs mol: aanvanklik – gebruik  
aanvanklike + geproduseer } ✓
  - Ewewig kons: aanvanklik – gebruik  
aanvanklike + geproduseer } ✓
  - Ewewig mol ÷ 1 = ewewig kons
  - Korrekte  $K_c$ -uitdrukking
  - Vervanging van ewewig kons in  $K_c$ -uitdrukking
  - Finale antwoord

(8)  
[18]

**QUESTION/VRAAG 8**

- 8.1.1 A standard solution is one whose concentration is precisely known ✓✓  
 'n Standaardoplossing is 'n oplossing waarvan die konsentrasie presies bekend is. (2)

|       |                                                                                                                                                                           |                                                                                                                                                           |     |
|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| 8.1.2 | <b>OPTION/OPSIE 1</b><br>$C_1V_1 = C_2V_2$<br>$(0.63 \times 0.05)✓ = C_2 \times 1.0✓$<br>$C_2 = 0.0315 \text{ mol.dm}^{-3}✓$<br><b>(accept/aanvaar: 0,032 or/of 0,03)</b> | <b>OPTION/OPSIE 2</b><br>$n(\text{NaOH}) = c.V✓$<br>$= 0.63 \times 0.05✓$<br>$= 0.0315 \text{ mol.dm}^{-3}✓$<br><b>(accept/aanvaar: 0,032 or/of 0,03)</b> | (3) |
|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|-----|

- 8.1.3 **Positive marking from QUESTION 8.1.2/Positiewe nasien van VRAAG 8.1.2**

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| $n(\text{NaOH}) = C V$<br>$= 0.0315 \times 0.04 ✓$<br>$= 1.26 \times 10^{-3} \text{ mol} ✓$<br><br>$n(\text{NaOH}) = n(\text{C}_2\text{H}_2\text{O}_4)$<br>$2 : 1$<br><br>$n(\text{C}_2\text{H}_2\text{O}_4) = 6.3 \times 10^{-4} \text{ mol} ✓$<br><br>$m(\text{C}_2\text{H}_2\text{O}_4) = n \times M ✓$<br>$= 6.3 \times 10^{-4} \times 90 ✓$<br>$= 0.0567 \text{ g}$<br><br>$\% \text{ purity} = \frac{0.0567}{0.25} ✓ \times \frac{100}{1}$<br>$= 22.68 \% ✓$ | (7) |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|

|       |                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                        |     |
|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| 8.2.1 | <b>OPTION/OPSIE 1</b><br>$K_w = [\text{H}_3\text{O}^+][\text{OH}^-] = 1 \times 10^{-14} ✓$<br>$1 \times 10^{-14} = [\text{H}_3\text{O}^+] (0.20)$<br>$[\text{H}_3\text{O}^+] = 5 \times 10^{-14} ✓$<br><br>$\text{pH} = -\log[\text{H}_3\text{O}^+] ✓$<br>$= -\log(5 \times 10^{-14})$<br>$= 13.3 ✓$ | <b>OPTION/OPSIE 2</b><br>$\text{pOH} = -\log[\text{OH}^-] ✓$<br>$= -\log(0.2)$<br>$= 0.70 ✓$<br><br>$\text{pH} + \text{pOH} = 14 ✓$<br>$\text{pH} + 0.70 = 14$<br>$\text{pH} = 13.3 ✓$ | (4) |
|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|



- 8.2.2 Is the point during titration where the indicator changes colour. ✓✓  
**OR** the exact point of neutralization  
*Die punt tydens titrasie waar die indikator van kleur verander.*  
**OF** die presiese punt van neutralisasie. (2 or/of 0) (2)

8.2.3 **OPTION/OPSIE 1**

|                                                                                                                                                                                                          |                                                                                                                                                                                                      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| $\frac{C_a V_a}{C_b V_b} = \frac{n_a}{n_b}$ $\frac{C_a \times 15 \checkmark}{(0,2)(30,25) \checkmark} = \frac{1}{1} \checkmark \text{ (ratio)}$ $C_a = 0,40 \text{ mol} \cdot \text{dm}^{-3} \checkmark$ | <ul style="list-style-type: none"> <li>Substitution on LHS ✓✓/Vervanging aan linkerkant</li> <li>mol ratio on RHS ✓/mol verhouding aan regterkant</li> <li>Final answer ✓/Finale antwoord</li> </ul> |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**OPTION/OPSIE 2**

|                                                                                                                                                                                                                                  |                                                                                                                                                                                            |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| $n(\text{base}) = cV$ $= 0,2 \times 0,03025 \checkmark$ $= 0,00605 \text{ mol}$ $n(\text{base}) : n(\text{acid})$ $1:1 \checkmark$ $C_a = n/V$ $= 0,00605/0,015 \checkmark$ $= 0,40 \text{ mol} \cdot \text{dm}^{-3} \checkmark$ | <ul style="list-style-type: none"> <li>Substitution of 0,2 X 0,03025 ✓/Vervanging van 0,2 X 0,03025</li> <li>mol ratio ✓/mol verhouding</li> <li>Final answer ✓/Finale antwoord</li> </ul> |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

(4)

- 8.2.4 **POSITIVE MARKING FROM QUESTION 8.2.3/POSITIEWE NASIEN VAN VRAAG 8.2.3**

**OPTION/OPSIE 1**

|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                       |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| $M(\text{CH}_3\text{COOH}) = 2(12) + 4(1) + 2(16)$ $= 60 \text{ g} \cdot \text{mol}^{-1} \checkmark$ $n(\text{CH}_3\text{COOH})_{\text{diluted/verdun}} = C \times V$ $= 0,40 \times 0,25 \checkmark$ $= 0,1 \text{ mol}$ $m(\text{CH}_3\text{COOH})_{\text{diluted/verdun}} = n \times M$ $= 0,1 \times 60$ $= 6,0 \text{ g}$ $\% \text{CH}_3\text{COOH in vinegar/asyn} = \frac{6,0}{25} \checkmark \times \frac{100}{1} \checkmark$ $= 24,0 \% \checkmark$ | <ul style="list-style-type: none"> <li>M of/van <math>\text{CH}_3\text{COOH}</math> ✓</li> <li>Substitution/vervang 0,40 x 0,25 ✓</li> <li>m of/van 25g in vinegar/asyn ✓</li> <li>Substitution/vervang of/van % ✓</li> <li>Final answer/Finale antwoord ✓</li> </ul> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|



| OPTION/OPSIE 2                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                 |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| $M(\text{CH}_3\text{COOH}) = 2(12) + 4(1) + 2(16)$ $= 60 \text{ g} \cdot \text{mol}^{-1} \checkmark$<br>$m(\text{CH}_3\text{COOH})_{\text{diluted/verduun}} = C \times V$ $= 0,40 \times 60 \checkmark \times 0,25 \checkmark$ $= 6,0 \text{ g}$<br>$\% \text{CH}_3\text{COOH in vinegar/asyn} = \frac{6,0}{25} \checkmark \times \frac{100}{1} \checkmark$ $= 24,0 \% \checkmark$ | <ul style="list-style-type: none"> <li>• M of/van <math>\text{CH}_3\text{COOH}</math> ✓</li> <li>• Substitution/vervang 0,40 x 0,25 ✓</li> <li>• m of/van 25g in vinegar/asyn ✓</li> <li>• Substitution/vervang of/van % ✓</li> <li>• Final answer/Finale antwoord ✓</li> </ul> |

(5)

8.3.1 Reaction of a salt with water. ✓✓  
Reaksie van 'n sout met water. (2 or/of 0) (2)

8.3.2 Increases ✓/Toeneem  

$$\text{CH}_3\text{COO}^- + \text{H}_2\text{O} \rightarrow \text{CH}_3\text{COOH} + \text{OH}^-$$
**OR/OF**  

$$\text{CH}_3\text{COONa} + \text{H}_2\text{O} \rightarrow \text{CH}_3\text{COOH} + \text{NaOH}$$
**(reactants ✓/reaktante , products ✓/produkte)**  
**Note/Nota:** It has to be a reaction/dit moet 'n vergelyking wees. (3)  
 [

**TOTAL/TOTAAL: 150**

