

education
MPUMALANGA PROVINCE
REPUBLIC OF SOUTH AFRICA

**NATIONAL
SENIOR CERTIFICATE**

GRADE 11

PHYSICAL SCIENCES: TOPIC TEST
ACIDS AND BASES
MARKING GUIDELINES
2026

MARKS: 30

These marking guidelines consists of 6 pages

QUESTION 1: MULTIPLE CHOICE QUESTIONS

1.1 A ✓✓

(2)

[2]**QUESTION 2**

2.1

2.1.1 A base is proton acceptor ✓✓

(2)

2.1.2 $\text{H}_2\text{SO}_4(\text{aq}) + 2\text{NaOH}(\text{aq}) \checkmark \rightarrow \text{Na}_2\text{SO}_4(\text{aq}) + 2\text{H}_2\text{O}(\text{l}) \checkmark$ balance✓

(3)

2.1.3 Sodium sulphate ✓✓

(2)

2.1.4 HSO_4^- ✓✓

(2)

2.1.5 HSO_4^- and H_2SO_4 ✓✓ H_2O and H_3O^+ ✓✓

(4)

2.2

2.2.1

OPTION 1	OPTION 2
$c = \frac{m}{MV} \checkmark$ $c = \frac{6}{(40)(0,5)} \checkmark$ $c = 0,3 \text{ mol.dm}^{-3} \checkmark$	$n = \frac{m}{M}$ $n = \frac{6}{40} \checkmark$ $n = 0,15 \text{ mole / mol}$ $c = \frac{n}{V} \checkmark$ $c = \frac{0,15}{0,5} \checkmark$ $c = 0,3 \text{ mol.dm}^{-3} \checkmark$

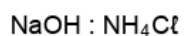
(4)

2.2.2

$$n = \frac{m}{M}$$

$$n = \frac{6}{40} \checkmark$$

$$n = 0,15 \text{ mole/mol NaOH}$$



$$1 : 1 \checkmark$$

$$n = \frac{m}{M}$$

$$0,15 = \frac{m}{53,5} \checkmark$$

$$m = 8,025 \text{ g NH}_4\text{Cl}$$

$$\frac{8,025}{10} \times 100 = 80,25 \% \text{ pure/suiwer} \checkmark$$

$$100 - 80,25 \checkmark = 19,75 \% \text{ impurities/onsuiwerhede} \checkmark$$

OR/OF

$$10 - 8,025 = 1,975$$

$$\frac{1,975}{10} \times 100 = 19,75\% \text{ impurities/onsuiwerhede}$$

(6)

2.3

$$[\text{OH}^-] = [\text{NaOH}] = 0,5 \text{ mol} \cdot \text{dm}^{-3}$$

$$K_w = [\text{H}_3\text{O}^+][\text{OH}^-] \checkmark$$

$$1 \times 10^{-14} = [\text{H}_3\text{O}^+]0,5 \checkmark$$

$$[\text{H}_3\text{O}^+] = 2 \times 10^{-14} \text{ mol} \cdot \text{dm}^{-3}$$

$$\text{pH} = -\log[\text{H}_3\text{O}^+] \checkmark$$

$$= -\log(2 \times 10^{-14}) \checkmark$$

$$= 13,7 \checkmark$$

(5)

[28]**TOTAL:****[30]**

**DATA FOR PHYSICAL SCIENCES GRADE 11
PAPER 2 (CHEMISTRY)****GEGEWENS VIR FISIESE WETENSKAPPE GRAAD 11
VRAESTEL 2 (CHEMIE)****TABLE 1: PHYSICAL CONSTANTS/TABEL 1: FISIESE KONSTANTES**

NAME/NAAM	SYMBOL/SIMBOOL	VALUE/WAARDE
Avogadro's constant <i>Avogadro-konstante</i>	N_A	$6,02 \times 10^{23} \text{ mol}^{-1}$
Molar gas constant <i>Molêre gaskonstante</i>	R	$8,31 \text{ J} \cdot \text{K}^{-1} \cdot \text{mol}^{-1}$
Standard pressure <i>Standaarddruk</i>	p^θ	$1,013 \times 10^5 \text{ Pa}$
Molar gas volume at STP <i>Molêre gasvolume by STD</i>	V_m	$22,4 \text{ dm}^3 \cdot \text{mol}^{-1}$
Standard temperature <i>Standaardtemperatuur</i>	T^θ	273 K

TABLE 2: FORMULAE/TABEL 2: FORMULES

$\frac{p_1 V_1}{T_1} = \frac{p_2 V_2}{T_2}$	$pV = nRT$
$n = \frac{m}{M}$	$n = \frac{N}{N_A}$
$n = \frac{V}{V_m}$	$c = \frac{n}{V}$ OR/OF $c = \frac{m}{MV}$

