

**POSSIBLE ANSWERS**  
**FEB / MARCH 2007**

PHYSICAL SCIENCE SG P2

2

Marking Guideline

SENIOR CERTIFICATE EXAMINATION – Feb/Mar 2007

**PHYSICAL SCIENCE SG**  
**MEMORANDUM FEBRUARY-MARCH 2007**

**SECTION A/AFDELING A**

1.1	C	1.2	D	1.3	C	1.4	B	1.5	A
1.6	D	1.7	D	1.8	B	1.9	D	1.10	D
1.11	B	1.12	C	1.13	A	1.14	B	1.15	D

**SECTION B AFDELING B**  
**QUESTION 2/ VRAAG 2**

2.1.1 Pressure is inversely proportional to volume ✓✓ (2)

*Druk is omgekeerd eweredig aan volume*

2.1.2 Temperature / *Temperatuur* ✓✓ (2)

2.1.3

✓

$$p_1 V_1 = p_2 V_2 \therefore V_2 = \frac{p_1 V_1}{p_2} = \frac{60 \times 24}{75} = 19,20 \text{ cm}^3 \checkmark$$

✓

OR Using any other set of readings/  
Of gebruik enige ander stel lesings

(4)

2.1.4 IMF exist between molecules/ *IMK bestaan tussen molekules* ✓✓ (2)

2.2.1 P ✓✓ (2)

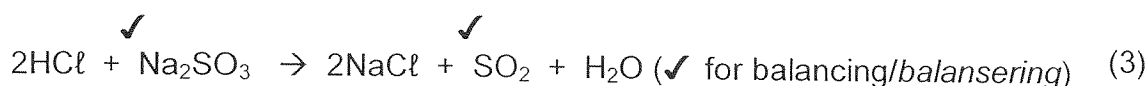
2.2.2 S ✓✓ (2)

2.2.3 S ✓✓ (2)

**QUESTION/VRAAG 3**

**[16]**

3.1



3.2



3.3

SO<sub>2</sub> dissolves causing a partial vacuum. ✓ (2)

*SO<sub>2</sub> los op en veroorsaak 'n gedeeltelike vakuum*

∴ Pressure outside tube is greater than the pressure inside the tube. ✓

*Druk buite die buis is groter as die druk binne in die buis*

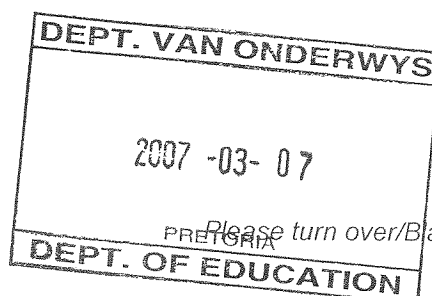
**[8]**

**QUESTION/VRAAG 4**

- 4.1.1  $2\text{NaCl} + \text{H}_2\text{SO}_4 \rightarrow 2\text{HCl} + \text{Na}_2\text{SO}_4$  (✓ for balancing/*balansering*) (3)
- 4.1.2  $\text{NH}_3$ –particles move faster than  $\text{HCl}$  particles. ✓✓ (2)  
*NH<sub>3</sub> deeltjies beweeg vinniger as HCl deeltjies*
- 4.1.3  $\text{NH}_3 + \text{HCl} \rightarrow \text{NH}_4\text{Cl}$  (✓ for balancing) (3)
- 4.2.1 Ostwald process /*Ostwaldproses* ✓✓ (2)
- 4.2.2  $2\text{NO} + \text{O}_2 \rightarrow 2\text{NO}_2$  (✓ for balancing/*balansering*) (3)
- 4.2.3 Catalyst/ *Katalisator* ✓ (1)

**[14]****QUESTION/VRAAG 5**

- 5.1.1 DECREASES/ *NEEM AF* ✓✓ (2)
- 5.1.2 DECREASES/ *NEEM AF* ✓✓ (2)
- 5.1.3 INCREASES/ *NEEM TOE* ✓✓ (2)
- 5.1.4 INCREASES/ *NEEM TOE* ✓✓ (2)
- 5.1.5 INCREASES/ *NEEM TOE* ✓✓ (2)
- 5.2.1 A solution into which no more solute will dissolve in solvent at a given temperature. ✓✓ (2)  
*'n Oplossing waarin geen meer vastestof kan oplos in die oplosmiddel by 'n sekere temperatuur*
- 5.2.2  $\text{Na}_2\text{SO}_4(\text{s}) \rightleftharpoons 2\text{Na}^+(\text{aq}) + \text{SO}_4^{2-}(\text{aq})$  (✓ for balancing/*balansering*) (3)
- 5.2.3 Crystals of sodium sulphate will form. ✓✓ (2)  
*Natriumsulfaat kristalle sal vorm*
- 5.2.4 White precipitate will form ( $\text{BaSO}_4(\text{s})$ )✓ (1)  
*Wit neerslag sal vorm ( $\text{BaSO}_4(\text{s})$ )*
- 5.2.5  $\text{Na}_2\text{SO}_4 + \text{BaCl}_2 \rightarrow 2\text{NaCl} + \text{BaSO}_4(\text{s})$  (✓ for balancing/*balansering*) (3)

**[21]**

**QUESTION/ VRAAG 6**

6.1.1 Bicarbonate of soda/ *Natriumbikarbonaat* ✓✓ (2)

6.1.2 Battery acid/ *Batterysuur* ✓✓ (2)

6.1.3.1 REMAINS THE SAME/ *BLY DIESELFDE* ✓✓ (2)

6.1.3.2 INCREASES/ *NEEM TOE* ✓✓ (2)

6.2.1  $n = c \times V = 0,1 \times 0,25 = 0,025 \text{ mol}$  ✓✓  
 $m = n \times M = 0,025 \times 40 = 1 \text{ g}$  ✓ (4)

6.2.2  $\frac{n_a}{n_b} = \frac{c_a \times V_a}{c_b \times V_b} \therefore c_a = \frac{n_a \times c_b \times V_b}{n_b \times V_a} = \frac{1 \times 0,1 \times 25}{1 \times 21} = 0,12 \text{ mol.dm}^{-3}$  ✓✓ (4)

[16]

**QUESTION /VRAAG 7**

7.1.1 Zn is a stronger reducing agent than Cu . It reduces  $\text{Cu}^{2+}$  to Cu. ✓✓  
*Zn is 'n sterker reduseermiddel as Cu. Dit reduseer  $\text{Cu}^{2+}$  to Cu.*  
 OR  $\text{Cu}^{2+}$  is a stronger oxidizing agent than  $\text{Zn}^{2+}$  . It will oxidize Zn to  $\text{Zn}^{2+}$ .  
*OF  $\text{Cu}^{2+}$  is 'n sterker oksideermiddel as  $\text{Zn}^{2+}$ . Dit sal Zn na  $\text{Zn}^{2+}$  oksideer* (3)

7.1.2 Copper ion/ *Koperioon* ✓✓ ( $\text{Cu}^{2+}(\text{aq})$  ✓ only/slegs) (2)

7.1.3  $\text{Zn} + \text{Cu}(\text{NO}_3)_2 \rightarrow \text{Cu} + \text{Zn}(\text{NO}_3)_2$  ✓✓ (✓ for balancing/balansering) (3)

7.2.1  $\text{Fe}^{2+} + 2\text{e}^- \rightarrow \text{Fe}$  ✓✓ (2)

7.2.2  $\text{Al} \rightarrow \text{Al}^{3+} + 3\text{e}^-$  ✓✓ (2)

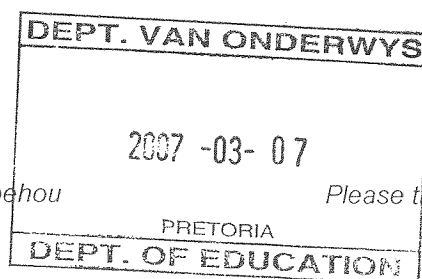
7.2.3 Al ✓✓ (2)

7.2.4 NO ✓ (1)

7.2.5 ✓✓  
 Cu is a weaker reducing agent than Fe and cannot reduce  $\text{Fe}^{2+}$  to Fe  
*Cu is 'n swakker reduseermiddel as Fe en kan nie  $\text{Fe}^{2+}$  na Fe reduseer nie*  
 OR/OF (2)

$\text{Cu}^{2+}$  is a stronger oxidising agent than  $\text{Fe}^{2+}$  and will not reduce  $\text{Fe}^{2+}$  to Fe  
 *$\text{Cu}^{2+}$  is 'n sterker oksideermiddel as  $\text{Fe}^{2+}$  en sal nie  $\text{Fe}^{2+}$  na Fe reduseer nie*

[17]



**QUESTIONVRAAG 8**

8.1

8.1.1 Different boiling points/ *Verskillende kookpunte* ✓✓ (2)8.1.2 Ethane/ *Etaan* ✓ (1)

8.1.3 Ethane has a lower boiling point than butane. ✓✓ (2)

*Etaan het 'n laer kookpunt as butaan*

OR

Ethane is a smaller molecule than butane

*Etaan is 'n kleiner molecule as butaan*

OR

Ethane has a smaller molar mass (less electrons) than butane

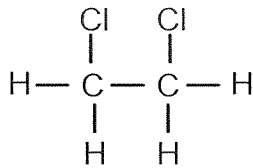
*Etaan het 'n kleiner molêre massa (minder elektrone) as butaan.*

8.2

8.2.1 Ethene/ *Eteen* ✓✓ (2)8.2.2 2-methylpropane/ *2-metielpropaan* ✓✓ (2)

8.3

8.3.1



✓✓

(2)

8.3.2



✓✓

(2)

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