POSSIBLE ANSWERS
FEB / MARCH 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 $p_1V_1 = p_2V_2 \therefore V_2 = \frac{p_1V_1}{p_2} = \frac{60x24}{75} = 19{,}20\ cm^3$ ✓ ✓ ✓ (4)

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

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)

[16]

QUESTION/*VRAAG 3*

3.1 $2HC\ell + Na_2SO_3 \rightarrow 2NaC\ell + SO_2 + H_2O$ (✓ ✓ for balancing/*balansering*) (3)

3.2 $SO_2 + H_2O \rightarrow H_2SO_3$ (✓ ✓ for balancing/ *balansering*) (3)

3.3 SO_2 dissolves causing a partial vacuum. ✓
SO_2 los op en veroorsaak 'n gedeeltelike vakuum (2)
∴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 ✓ ✓
$2NaCl + H_2SO_4 \rightarrow 2HCl + Na_2SO_4$ (✓ for balancing/*balansering*) (3)

4.1.2 NH_3 –particles move faster than HCℓ particles. ✓✓ (2)
NH_3 deeltjies beweeg vinniger as HCℓ deeltjies

4.1.3 ✓ ✓
$NH_3 + HCl \rightarrow NH_4Cl$ (✓ for balancing) (3)

4.2.1 Ostwald process /*Ostwaldproses* ✓✓ (2)

4.2.2 ✓$2NO + O_2 \rightarrow$ ✓$2NO_2$ (✓ 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 ✓ ✓
$Na_2SO_4(s) \rightleftharpoons 2Na^+(aq) + SO_4^{2-}(aq)$ (✓ 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 ($BaSO_4$ (s))✓ (1)
Wit neerslag sal vorm ($BaSO_4(s)$)

5.2.5 ✓ ✓
$Na_2SO_4 + BaCl_2 \rightarrow 2NaCl + BaSO_4$ (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

$n = cxV = 0,1x0,25 = 0,025$ mol ✓ ✓

$m = nxM = 0,025x40 = 1$ g ✓ (4)

6.2.2

$\frac{n_a}{n_b} = \frac{c_a xV_a}{c_b xV_b} \therefore c_a = \frac{n_a xc_b xV_b}{n_b xV_a} = \frac{1x0,1x25}{1x21} = 0,12$ mol.dm^{-3} ✓ ✓ ✓ (4)

[16]

QUESTION /*VRAAG 7*

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

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

7.1.3

$Zn + Cu(NO_3)_2 \rightarrow Cu + Zn(NO_3)_2$ (✓ for balancing/*balansering*) (3)

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

7.2.2 $Al \rightarrow Al^{3+} + 3e^-$ ✓✓ (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 Fe^{2+} to Fe ✓✓
Cu is 'n swakker reduseermiddel as Fe en kan nie Fe^{2+} na Fe reduseer nie

OR/*OF* (2)

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

[17]

QUESTION*VRAAG* 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.

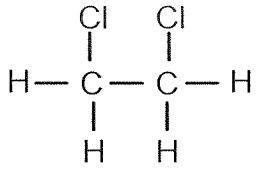
8.2

8.2.1 Ethene/ *Eteen* ✓✓ (2)

8.2.2 2-methylpropane/ *2-metielpropaan* ✓✓ (2)

8.3

8.3.1



✓✓ (2)

8.3.2 H—C≡C—H ✓✓ (2)

[13]

TOTAL/*TOTAAL*: 150