



GAUTENG PROVINCE

EDUCATION
REPUBLIC OF SOUTH AFRICA

**GAUTENG DEPARTMENT OF EDUCATION
PROVINCIAL EXAMINATION
NOVEMBER 2020
GRADE 10**

PHYSICAL SCIENCES (CHEMISTRY)

PAPER 2

MARKING GUIDELINES

5 pages

QUESTION 1: MULTIPLE CHOICE QUESTIONS

- 1.1 A✓✓ (2)
- 1.2 A✓✓ (2)
- 1.3 B✓✓ (2)
- 1.4 C✓✓ (2)
- 1.5 D✓✓ (2)
- [10]**

QUESTION 2

- 2.1 2.1.1 liquid ✓ (1)
- 2.1.2 Is the temperature of a liquid at which its vapour pressure equals the external (atmospheric) pressure.✓✓ (2)
- 2.1.3 32 ✓ ° C✓ (marks may be given for 30 to 35° C) (2)
- 2.1.4 (a) increase ✓ (1)
(b) remains the same ✓ (1)
- 2.1.5 During this interval the particles have the same temperature.✓
Temperature is a measure of the average kinetic energy of the particles.✓ The energy from the heat is used for potential energy to have a phase change. ✓ (3)
- [10]**

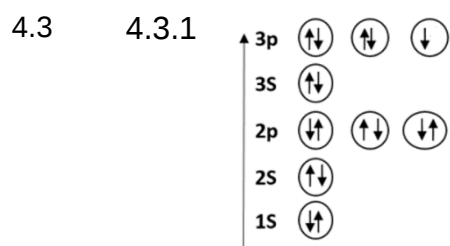
QUESTION 3

- 3.1 3.1.1 19 ✓
- 3.1.2 20 ✓
- 3.1.3 19 ✓
- 3.1.4 24 ✓
- 3.1.5 10 ✓ (5)
- 3.2 Atoms of the same element having the same number of protons, but different number of neutrons.✓✓ (2)
- 3.3
$$A_r(\text{Li}) = \frac{(7)(6) + (93)(7)}{100} = 6,93$$
 ✓ (3)
- [10]**

QUESTION 4

4.1 The transfer of electrons to form cations and ions that attract each other to form a formula-unit. ✓✓ (2)

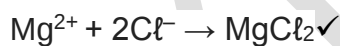
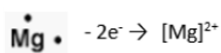
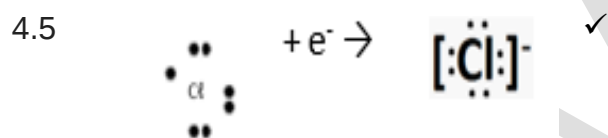
4.2 MgCl_2 ✓✓ (2)



✓ 3 energy levels ✓ Level 1 and 2 complete ✓ 7 valence electrons in level 4 (3)

4.3.2 $3s^2 3p^5$ ✓ (1)

4.4 $1s^2 2s^2 2p^6 3s^2$ ✓✓ (2)



(4)
[14]

QUESTION 5

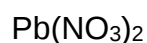
5.1 The simplest whole number ratio of atoms in a compound. ✓✓ (2)

5.2 $n = \frac{m}{M}$ ✓

$n = \frac{62,5}{207}$ ✓

$n = 0,302 \text{ mol Pb}$

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



$n = \frac{8,45}{14}$ ✓

$n = 0,604 \text{ mol N}$

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

$n = \frac{29,05}{16}$ ✓

$n = 1,816 \text{ mol O}$

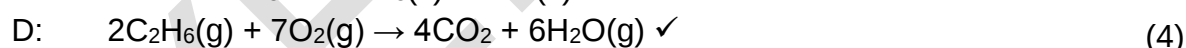
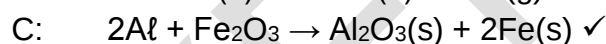
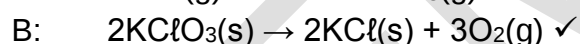
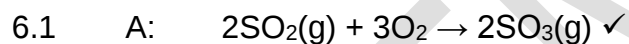
Pb : N : O

$\frac{0,302}{0,302} : \frac{0,604}{0,302} : \frac{1,816}{0,302}$ ✓

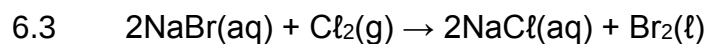
1 : 2 : 6 ✓ or

(6)
[8]

QUESTION 6



6.2 The Law of constant composition states that different samples of a pure compound always contain the same elements in the same mass proportion. ✓✓ (2)



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

$$2 = \frac{m}{103} \checkmark$$

$$m = 206 \text{ g NaBr}$$

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

$$1 = \frac{m}{71} \checkmark$$

$$m = 71 \text{ g Cl}_2 \quad 206 + 71 = 277 \text{ g reactants}$$

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

$$2 = \frac{m}{58,5} \checkmark$$

$$m = 117 \text{ g NaCl}$$

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

$$1 = \frac{m}{160} \checkmark$$

$$m = 160 \text{ g Br}_2 \quad 117 + 160 = 277 \text{ g products}$$

Mass of reactants equal mass of products $\checkmark$; mass is conserved.

(5)

[11]

QUESTION 7

7.1 aqueous solution or solution in which water is the solvent $\checkmark$

(1)

7.2 $n = \frac{m}{M} \checkmark$

$$n = \frac{33,5}{106} \checkmark$$

$$n = 0,316 \text{ mol Na}_2\text{CO}_3 \checkmark$$

(3)

7.3 1 mol Na_2CO_3 reacts with 2 mol $\text{HCl} \checkmark$

0,316 mol Na_2CO_3 reacts with 0,632 mol $\text{HCl} \checkmark$

(2)

7.4 To test for $\text{CO}_2 \checkmark$

(1)

[7]

TOTAL: 70