GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

PROVINCIAL EXAMINATION

JUNE 2023

GRADE 10

MARKING GUIDELINES

| PHYSICAL SCIENCES (CHEMISTRY) (PAPER 2) |

4 pages

QUESTION 1: MULTIPLE-CHOICE QUESTIONS

1.1   D   ✓✓   (2)

1.2   C   ✓✓   (2)

1.3   C   ✓✓   (2)

1.4   A   ✓✓   (2)
                                                                              [8]

QUESTION 2

2.1   A compound is a pure substance consisting of two or more different
        elements. ✓✓   (2)

2.2   2.2.1   Homogeneous mixture ✓   (1)

        2.2.2   The mixture of uniform composition in which all the components are in the
                  same phase. ✓✓   (2)

        2.2.3   Crystallisation ✓   (1)
                                                                              [6]

QUESTION 3

3.1   The temperature at which a solid, given sufficient heat, becomes a liquid. ✓✓   (2)

3.2   Solid ✓   (1)

3.3   Boiling/Evaporation ✓   (1)

3.4   The temperature is constant meaning that the solid is changing into liquid. ✓
        The kinetic energy stays constant. ✓
        The potential energy is increasing.   (2)

3.5 H_2O ✓   (1)
                                                                              [7]

QUESTION 4

4.1 Atoms of the same element having the same number of protons, but different numbers of neutrons. ✓✓ (2)

4.2 8 ✓ (1)

4.3

(2)
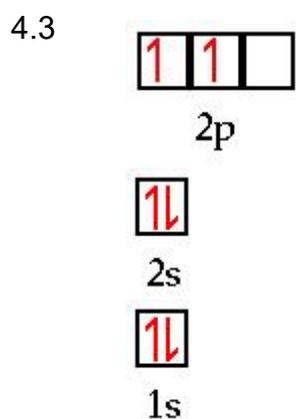
4.4 $1s^2\ 2s^2\ 2p^2$ ✓✓ (2)

[7]

QUESTION 5

5.1 $2H_2 + O_2 \rightarrow 2H_2O$ ✓✓ (2)

5.2 gas ✓ (1)

5.3 5.3.1

✓✓ (2)

5.3.2

✓✓ (2)
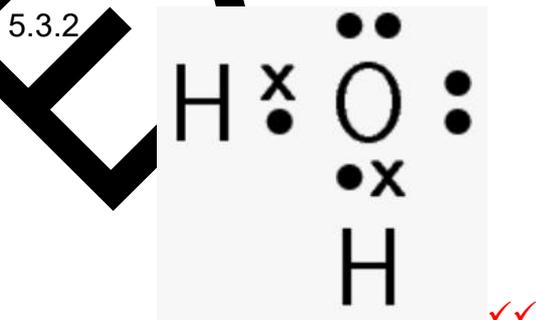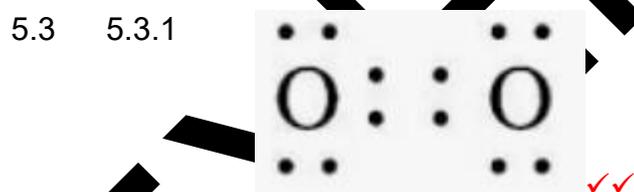
5.4 exothermic ✓ (1)

5.5 $M(H_2O) = 2(1) + (16) = 18\ \text{g·mol}^{-1}$ ✓✓ (2)

[10]

QUESTION 6

6.1   Aqueous solution or a solution where water is the solvent. ✓   (1)

6.2   One mole is the amount of substance having the same number of particles as there are atoms in 12 g carbon-12. ✓✓   (2)

6.3   6.3.1 $n = \dfrac{m}{M}$ ✓ $= \dfrac{30}{461}$ ✓ $= 0,065$ mol PbI_2 ✓

$n(PbI_2) : n(I^-)$

$\quad\quad 1 \quad : 2$ ✓

$\quad 0,065 \quad : 0,13$ mol I^-

$n = \dfrac{N}{N_A} = 0,31 = \dfrac{N}{6,02 \times 10^{23}}$ ✓ $\quad N = 1,866 \times 10^{23}$ ✓   (6)

6.3.2 $n(PbI_2) : n(KI)$

$\quad\quad 1 \quad : 2$ ✓

$\quad 0,065 \quad : 0,13$ mol KI

$n = \dfrac{m}{M} = 0,13 = \dfrac{m}{166}$ ✓ $\quad m = 2\ldots 8$ g KI ✓   (3)

[12]

TOTAL: 50