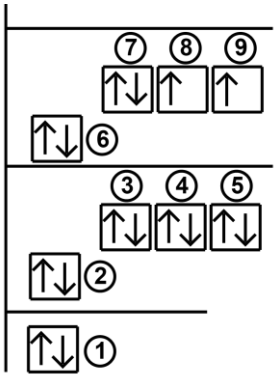
PHYSICAL SCIENCE
GRADE 10
November 2024
CHEMISTRY PAPER 2
MARKS: 100
MARKING GUIDELINE

QUESTION 1 **REASON:**

1.1 B ✓✓ (2)

1.2 D ✓✓



(2)

1.3 A ✓✓ (2)

1.4 D ✓✓ $\%O = \frac{Mr(O)}{Mr(K_2SO_4)} \times 100$

$= \frac{4(16)}{2(39)+32+4(16)} \times 100$

$= 36{,}78\ \%$ (2)

1.5 B ✓✓ (2)

[10]

QUESTION 2

2.1 A mixture of non-uniform composition and of which the components can be easily identified ✓✓ (2)

2.2.1 B ✓& C ✓ (2)

2.2.2 A ✓ (1)

2.2.3 F ✓ (1)

2.2.4 E ✓ (1)

2.3 $AlBr_3$ ✓✓ (2)

[9]

QUESTION 3

3.1 The substance undergoes a phase change. ✓
(The substance is in the process of freezing.) (1)

3.2 REMAINING CONSTANT ✓ (1)

3.3 – 40°C ✓ (1)

3.4 0 °C ✓ (1)

3.5 0 °C is warmer than – 80 °C. ✓ The warmer the particles of a substance are, the higher is the kinetic energy ✓ (energy of motion). (2)

3.6 Mercury ✓ (1)

3.7 The specific temperature at which the vapor pressure of a substance is equal to atmospheric pressure. ✓✓ (2)

3.8 357°C ✓ (1)

[10]

QUESTION 4

4.1 number of protons =number of electrons ✓ (1)

4.2 $1s^2$✓$2s^2 2s^1$ ✓ (2)

4.3.1 2 ✓ (1)

4.3.2 3 ✓ (1)

4.4 Boron ✓ (1)

4.7 6 ✓ (1)

4.8 +3 ✓ (1)

[8]

QUESTION 5

5.1	Isotopes ✓	(1)
5.2	Br ✓	(1)
5.3	Group 17 ✓ (VI); Period 4 ✓	(2)
5.4	Halogens ✓	(1)
5.5	NON-METAL ✓	(1)
5.6	Occurs to the right of the zigzag line.✓	(1)
5.7	The mass of a particle on a scale where an atom of carbon-12 has a mass of 12.✓✓	(2)
5.8	80 ✓	(1)
5.9	NO ✓	(1)
5.10	Shiny ✓ ; high boiling point ✓ ; high melting point ✓ ; conduct heat; conduct electricity; malleable; ductile	(3)

[14]

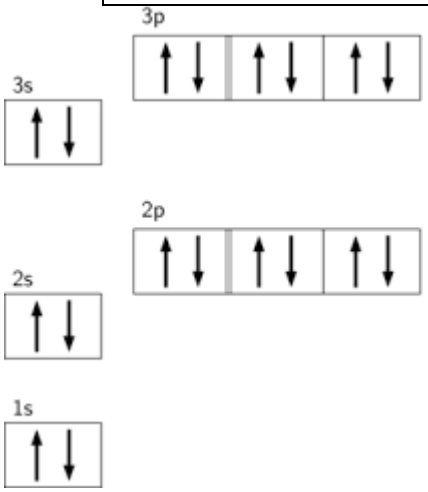
QUESTION 6

6.1.1 1 ✓ (1)

6.1.2 Hydrogen has donated an electron ✓ / given off / there are one fewer electrons than protons. (1)

6.2.1

Criteria for marking	
Orbitals are fully filled up to 3p.	✓
Arrows (electron spin) are in opposite direction.	✓
Orbitals are named / labelled.	✓



(3)

6.2.2 8 ✓ (1)

6.3 COVALENT ✓
Electron sharing ✓ between two non metals. ✓ (3)

6.4



✓✓ (2)

[11]

QUESTION 7

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

7.2 $6{,}022\times10^{23}$✓ sulphur atoms (1)

7.3.1 $S(s)$✓ $+ Zn(s)$✓ $\xrightarrow{\Delta} ZnS(s)$ ✓ (3)

7.3.2 $m_{sulphur} = nM$ ✓
$= 2(32)$ ✓
$= 64\ g$ ✓ (3)

7.3.3 $n_{zinc} : n_{sulphur} = 1:1 \quad \therefore 2\ mol\ zinc$ ✓

$m_{zinc} = nM$
$= 2(65)$ ✓
$= 130\ g$ ✓ (3)

7.3.4 $m_{ZnS} = nM$
$= 2(65 + 32)$ ✓
$= 194\ g$ ✓ (2)

7.3.5 $\%\ yield = \frac{actual\ yield}{theoretical\ yield} \times 100$ ✓

$= \frac{175}{194}$✓ $\times 100$
$= 90{,}02\ \%$ ✓ (3)

[17]

QUESTION 8

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

8.2 $n_{(Fe)} = \frac{m}{M} = \frac{63,52}{56}$ ✓ $= 1,13\ mol$

$n_{(S)} = \frac{m}{M} = \frac{36,48}{32}$ ✓ $= 1,14\ mol$

$n_{(Fe)} : n_{(S)}$

$\frac{1,13}{1,13} : \frac{1,14}{1,13}$ ✓

$1 : 1$

$\therefore FeS$ ✓ (4)

8.3.1 $Fe_2(CO_3)_3(s) + 6HCl(aq) \rightarrow 2FeCl_3(aq)$ ✓ + $3CO_2(g)$ ✓ + $3H_2O(l)$ ✓ (3)

8.3.2.1 $n_{(Fe2(CO3)3)} = \frac{m}{M}$ ✓ $= \frac{146}{292}$ ✓ $= 0,5\ mol$ ✓ (3)

8.3.2.2 1:6 ✓ ✓ (2)

8.3.2.3 $C_{(HCl)} = \frac{n}{V}$ ✓ $= \frac{3}{30}$ ✓ $= 0,1\ mol.dm$ ✓ (3)

8.4 1:3 ✓
0,5 = 1,5
V = n x V_0 ✓
V = 1,5 x 22,4 ✓
V = 33,6 dm^3 ✓ (4)

[21]

TOTAL: 100