KWAZULU-NATAL PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 10

PHYSICAL SCIENCES

COMMON TEST

MARCH 2022

MARKING GUIDELINE

MARKS: 75

This marking guideline consists of 6 pages.

QUESTION 1: MULTIPLE- CHOICE

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

QUESTION 2

2.1	It is not magnetic ✓	(1)
2.2.1	Aluminium / E ✓	(1)
2.2.2	Mercury ✓	(1)
2.2.3	Boron /C ✓	(1)
2.3	$Mg(NO_3)_2$ ✓✓	(2)
2.4	Yes ✓	(1)
2.5	Sulphur /B ✓	(1)
		[8]

QUESTION 3

3.1
- The temperature of a liquid ✓
- at which its vapour pressure equals the atmospheric pressure ✓ (2)

3.2 Tripod stand ✓ (1)

3.3 Ensures an even distribution of heat ✓ **OR**
Prevents the glass beaker from cracking ✓ (1)

3.4.1
- No ✓
- The water is in the solid phase ✓ (2)

3.4.2 Increase ✓ (1)

3.4.3 The water is in the gaseous phase ✓ (1)

3.4.4 Evaporation ✓ (1)

3.4.5 Remains the same ✓ (1)

[10]

QUESTION 4

4.1 The mass of particle on a scale where an atom of carbon -12 has a mass of 12 ✓✓ (2)

4.2.1 100 – (90 + 0,27) = 9,73% ✓ (1)

4.2.2 **Positive marking from 4.2.1**

$$A_R(Ne)=\left(\frac{90}{100}\times 20\right)+\left(\frac{0,27}{100}\times 21\right)+\left(\frac{9,73}{100}\times 22\right) \checkmark\checkmark$$

$$=20,20 \checkmark$$

(3)

4.3.1 14 ✓

4.3.2 18 ✓ (2)

4.4 $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6$ ✓✓ (2)

4.5 Halogens ✓ (1)

4.6
- From left to right atomic number increase causing an increase in the nucleus charge ✓
- This causes the atomic radius to decrease leading to a stronger force of attraction on the outer electrons ✓
- More energy is required to remove an electron from the atom ✓

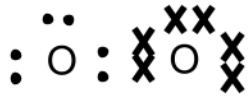
(3)

[14]

QUESTION 5

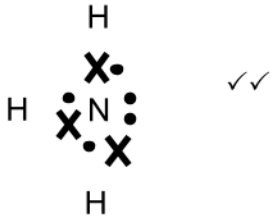
5.1. Sharing of electrons between atoms to form a molecule. ✓ (1)

5.2.1



✓✓ (2)

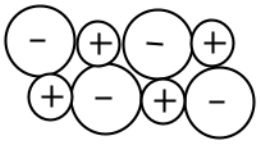
5.2.2



✓✓ (2)

5.2.3 2 ✓ (1)

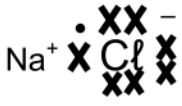
5.3.1



✓✓ (1)

5.3.2 Na^+✓/sodium ion (1)

5.3.3



✓✓ (2)

[10]

QUESTION 6

6.1 Tribo-electric charging ✓ (1)

6.2 To prevent the excess electrons from moving into the earth/ground ✓✓ (2)

6.3

$$n = \frac{Q}{Q_e} \quad \checkmark$$

$$= \frac{3{,}2\times10^{-6}}{1{,}6\times10^{-19}} \quad \checkmark$$

$$= 2\times10^{13} \quad \checkmark$$

(3)

6.4 It consists of an ~~integer / whole number multiple~~ of the charge on one electron. ✓✓ (2)

6.5 Number of electrons equals number of protons. ✓✓ (2)

6.6 A to B✓. A has excess electrons✓ (2)

6.7

$$Q_{new} = \frac{Q_1 + Q_2}{2} \quad \checkmark$$

$$= \frac{(-3{,}2 \text{ x } 10^{-6})}{2} \quad \checkmark$$

$$= -1{,}6 \text{ x } 10^{-6} \quad \checkmark$$

(3)

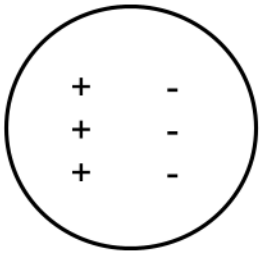
6.8
- The net charge in an isolated system ✓
- remains constant (during any physical process) ✓ (2)

6.9 Negatively ✓ (1)

6.10
- The partial or complete polar separation ✓
- of positive and negative electric charge in a system ✓ (2)

6.11 Towards C ✓ (1)

6.12



✓✓

(2)

[23]