



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**

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

$$= 20,20 \checkmark \quad (3)$$

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)

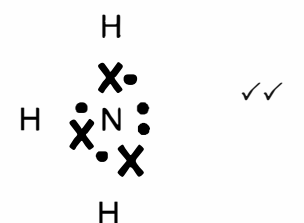
[14]**QUESTION 5**

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

5.2.1

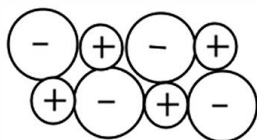


5.2.2



5.2.3 2 ✓ (1)

5.3.1



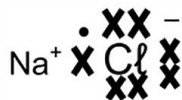
✓✓

(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 $n = \frac{Q}{Q_e}$ ✓

$$= \frac{3,2 \times 10^{-6}}{1,6 \times 10^{-19}} \quad \checkmark$$

$$= 2 \times 10^{13} \quad \checkmark \quad (3)$$

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 $Q_{\text{new}} = \frac{Q_1 + Q_2}{2}$ ✓

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

$$= -1,6 \times 10^{-6} \quad \checkmark \quad (3)$$

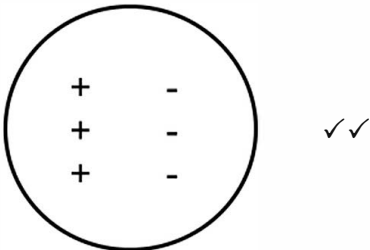
- 6.8
- The net charge in an isolated system ✓
 - remains constant (during any physical process) ✓
- (2)

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]