GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

# GAUTENG DEPARTMENT OF EDUCATION

## PROVINCIAL EXAMINATION

# JUNE 2019

## GRADE 10

## PHYSICAL SCIENCES

## PAPER 2

## MARKING GUIDELINE

**6 pages**

**GAUTENG DEPARTMENT OF EDUCATION**
**PREPARATORY EXAMINATION**

**PHYSICAL SCIENCES**
**(Paper 2)**

**MARKING GUIDELINE**

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**QUESTION 1: MULTIPLE CHOICE QUESTIONS**

1.1 B✓✓ (2)

1.2 C✓✓ (2)

1.3 C✓✓ (2)

1.4 B✓✓ (2)

1.5 B✓✓ (2)

1.6 D✓✓ (2)

1.7 A✓✓ (2)

1.8 C✓✓ (2)

1.9 A✓✓ (2)

1.10 D✓✓ (2)
**[20]**

**QUESTION 2**

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

2.2 Element is a pure substance consisting of only one type of atom✓ and particles cannot be broken down any further. ✓
Compound is a pure substance consisting of two or more types of atoms that are chemically bonded. ✓✓ (4)

2.3 2.3.1 (a) Evaporation ✓
(b) Filtration✓
(c) Sand ✓
(d) Sugar solution / sugar and water✓ (4)

2.3.2 Physical (process) ✓ (1)

2.3.3 No new substance is formed ✓/ water changes phase (1)
**[12]**

## QUESTION 3

3.1 What is the effect of an increase in temperature over a period of time? ✓✓

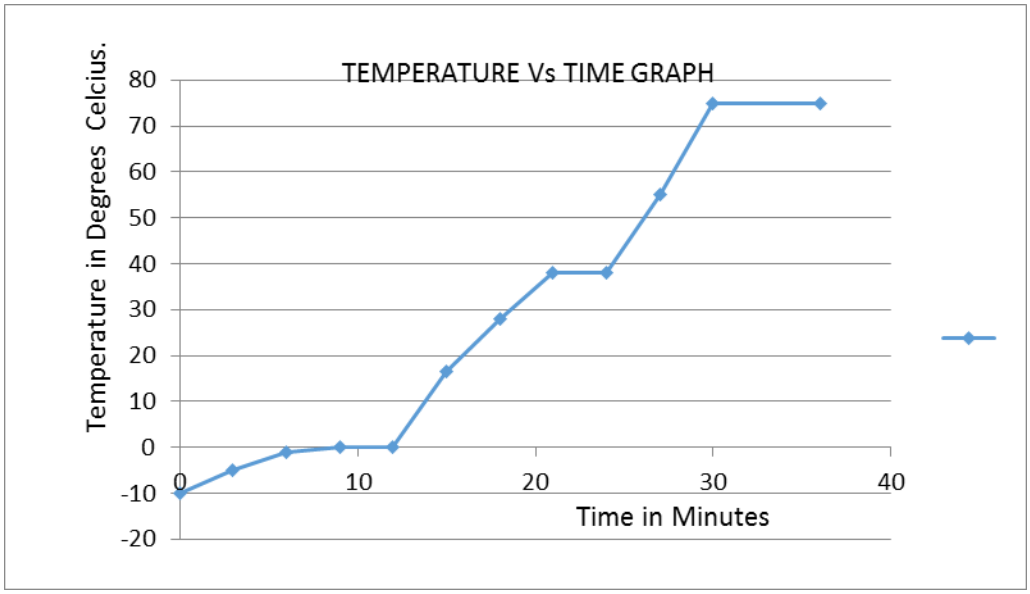
**NOTE:** ✓ The dependent and independent variable must be mentioned.✓
The relationship between the variables must be identified.
The question should **not** be answered with a Yes or No.

(2)

3.2 3.2.1 TIME✓ (1)

3.2.2 TEMPERATURE ✓ (1)

3.3 On the graph paper:




- Correct scale for both axes ✓
- Both axes labelled with units ✓
- 3 points correctly plotted ✓✓✓

(5)

3.4 All the energy is used to overcome the intermolecular forces between the molecules ✓✓ (2)

**[11]**

## QUESTION 4

4.1 Isotopes are atoms of the same element having the same atomic number but a different mass number✓✓

OR

Isotopes are atoms of the same element having the same number of protons but different numbers of neutrons ✓✓ (2)

4.2 Ar (Br) =

$$\frac{(50,69\ X\ 79)✓ + (49,31\ X\ 81)✓}{100\ ✓}$$

$$= 79,99✓$$

= 80 (4)

4.3 4.3.1 10 ✓

4.3.2 12 ✓

4.3.3 17 ✓

4.3.4 18,5 ✓

4.3.5 Aℓ (Aluminium) ✓

4.3.6 13 ✓ (6)

**[12]**

## QUESTION 5

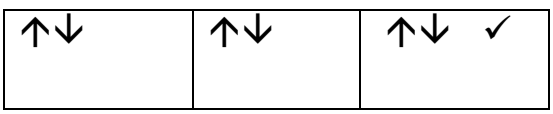
5.1 5.1.1 Electrons in the outermost energy level of an atom ✓✓ (2)

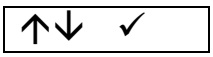
5.1.2 4✓ (1)

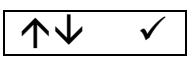
5.1.3 $1s^2 2s^2 2p^6 3s^2 3p^2$ ✓✓ (2)

5.1.4 Silicon ✓ (Si) ✓ (2)

5.2

2p 

2s 

1s 

(3)

**[10]**

**QUESTION 6**

6.1 $S_{(s)}$ + ✓ $O_{2(g)}$ → $SO_{2(g)}$ ✓ Bal ✓

**NOTE:** Reactants ✓ products ✓balancing ✓ (3)

6.2 6.2.1 It is correct✓ (1)

6.2.2 $S_{(s)}$ + $O_{2(g)}$ → $SO_{2(g)}$

32✓ + 2(16) ✓= 32 + 2(16) ✓

32 + 32 = 32 + 32

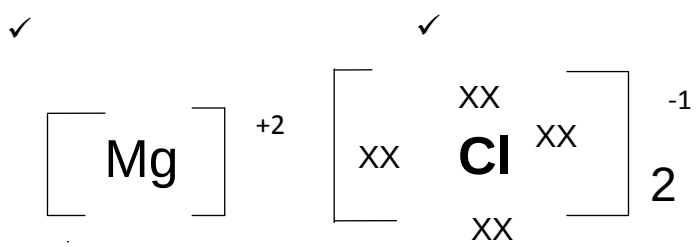
64 = 64 ✓ (4)

6.3. Covalent bonding✓✓ (2)

**[10]**

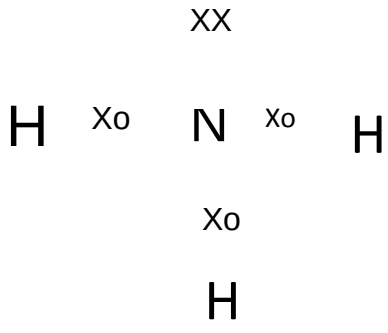
**QUESTION 7**

7.1.1



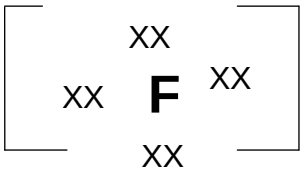

Oxidation numbers correct ✓ (3)

7.1.2 Nitrogen with 5 electrons✓ Hydrogen with one✓ structure correct✓




(3)

7.1.3 ✓




-1

(1)

7.2 7.2.1 Sodium oxide ✓✓ (2)

7.2.2 Hydrogen peroxide ✓ ✓ (2)

7.3 7.3.1 $K_2SO_4$✓ (1)

7.3.2 Fe $C\ell_3$ ✓ (1)

7.4 $N_2(g)$ + ✓$3H_2(g)$ $\rightarrow$2 $NH_3$✓ (g) (2)

7.5 Synthesis ✓ (reaction) (1)

**[16]**

**QUESTION 8**

8.1 Electronegativity is the measure of the attractive force of an atom for the bonding pair of electrons. ✓✓ (2)

8.2 8.2.1 Ionisation energy increases from left to right across the periodic table. ✓✓ (2)

8.2.2 Non-metals have higher first ionisation energy than metals✓✓ therefore non-metals would gain electrons to form negative ions (anions) (2)

8.2.3 When sodium loses its first electrons it attains a stable electron configuration✓ hence more energy is needed to remove the second electron ✓ (2)

8.2.4 increases✓ (1)

**[9]**

**TOTAL SECTION B: 80**

**TOTAL: 100**