GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

PROVINCIAL EXAMINATION

JUNE 2023

GRADE 9

MARKING GUIDELINES

NATURAL SCIENCES

6 pages

SECTION A

QUESTION 1

1.1 A ✓

1.2 C ✓

1.3 C ✓

1.4 B ✓

1.5 C ✓

1.6 D ✓

1.7 D ✓

[7]

QUESTION 2

2.1 Molecule ✓

2.2 Gold/Silver ✓

2.3 Chemical bond ✓

2.4 Fermentation ✓

2.5 Sulphur dioxide ✓

2.6 Phosphorus ✓

2.7 Dependent variable ✓

[7]

QUESTION 3

3.1 H – Sulphide ✓

3.2 [illegible] Alkali ✓

3.3 B – Combustion ✓

3.4 D – Products ✓

3.5 A – Chemical reaction ✓

3.6 C – Formula ✓

[6]

TOTAL SECTION A: 20

QUESTION 4

4.1 Oxygen ✓ (1)

4.2 4 ✓ (1)

4.3 (a) 17 ✓ (1)
(b) 35,5 ✓ (1)

4.4 Baron (1)

4.5 Group 14/Group IV (1)

4.6 H_2SO_4 ✓✓ (2)
[8]

QUESTION 5

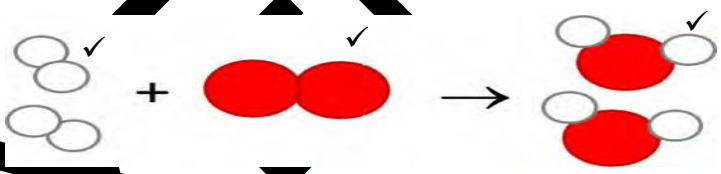
5.1 5.1.1 Calcium hydroxide ✓ and carbon dioxide ✓ (2)

5.1.2 Calcium carbonate ✓ and water ✓ (2)

5.1.3 The number of atoms on both sides of the equation are equal. ✓ (1)

5.2 5.2.1 HCl + CaO ✓ → [illegible] + H_2O ✓ (2)

5.2.2 NaOH + HCl → NaCl + H_2O ✓ (2)

5.2.3 

(3)
[12]

QUESTION 6

6.1 6.1.1 iron + oxygen ✓→ iron oxide ✓ (2)

6.1.2 4Fe + ✓ $3O_2$ ✓→ $2Fe_2O_3$ ✓ (3)

6.2 6.2.1 $2Mg + O_2 \rightarrow$ ✓ 2MgO ✓ (balancing) (2)

6.2.2 Magnesium burns in a white bright light (flame) ✓ and the product formed is a white powdery solid. ✓ (2)

6.2.3 Wear eye protection. ✓
Avoid direct eye contact. ✓
Take care not to burn yourselves. ✓
Conduct the experiment in a well-ventilated area. ✓ (Any one) (1)

6.3 6.3.1 Corrosion is the process in which a metal deteriorates in the presence of moisture and oxygen. ✓ (1)

6.3.2 Iron ✓/(Fe) ✓ (1)

6.3.3 Coat with oil or grease ✓/Paint ✓
Electroplating ✓ Galvanise/Coat with Zinc ✓ (Any two) (2)

6.3.4 Fe_2O_3 ✓ (1)
[15]

QUESTION 7

7.1 7.1.1 Carbon burns with a bright orange ✓/yellow flame.
A suffocating/choking gas is formed. ✓/White fumes are formed. ✓
(Any one) (1)

7.1.2 Carbon dioxide ✓ (1)

7.1.3 The pH of the water ✓ will decrease ✓ /decrease ✓ to below ✓ 7.
(Any one) (2)

7.1.4 C + O_2 ✓ ⟶ CO_2 ✓ (2)

7.1.5  (2)

7.2 7.2.1 Sulphur dioxide ✓ (1)

7.2.2 (a) The product is a choking ✓ (1)
(b) colourless gas ✓ (1)

7.2.3 Blue ✓ (1)

7.3 7.3.1 When coal is burnt in power stations, sulphur dioxide is formed ✓ and is released into the atmosphere. ✓ Water in the air combines with the gas to form sulphurous acid which is acid rain ✓ (3)

7.3.2 acidic (1)
[16]

QUESTION 8

8.1 8.1.1 Drain cleaner ✓ (1)

8.1.2 Lemon ✓ (1)

8.2 The universal indicator ✓ (1)

8.3 (a) from 0 to 1 ✓
(b) from 12 to 14 ✓
(c) around 7 ✓ (3)

8.4 Stomach tablet ✓
During indigestion/heartburn people use antacids ✓ (mild bases), like stomach tablets to neutralise excess acids. (3)
[9]

QUESTION 9

9.1 The pH ✓ of the solution will ✓ decrease ✓/decrease to below 7.
OR
The pH ✓ of the solution will increase ✓/increase to above 7.
OR
The solution will be neutral ✓/pH will be equal to 7. (Any one) (2)

9.2 pH ✓ (1)

9.3 Neutralisation ✓ pH ✓ (1)

9.4 9.4.1 (a) Yellow ✓ (1)
(b) Blue ✓ (1)

9.4.2 Point C ✓ (1)

9.5 pH increases ✓ (1)

9.6 When the colour of solution changes ✓ to green. ✓ (Any one) (2)
[10]

QUESTION 10

10.1 acid ✓ + metal oxide ✓ ⟶ salt ✓+ water ✓ (4)

10.2 Alkaline/Basic solutions ✓ (1)

10.3 Neutralisation methods in the treatment of wastewater. ✓ The salt produced is basic when it reacts with the waste water. This may help to reduce the damage caused to the environment during acid disposal by neutralising the acidity of the effluent sewage discharge) ✓

OR

Neutralisation methods of treatment of the pH of an acidic soil ✓ Calcium hydroxide or limestone (calcium carbonate) is a basic salt; it may be applied into the soil that is too acidic to neutralise its acidity for normal plant growth. ✓ (2)

10.4 Solid ✓ (1)

10.5 Control the pH of the water in swimming pools.
Neutralising the stomach acid during indigestion/heartburn – people use antacids (mild base) like milk of magnesia/carbonates such as $MgCO_3$/$CaCO_3$ $Al(OH)_3$ to neutralise excess acids. ✓ (2)

(Mark any relevant answer.) **[10]**

TOTAL SECTION B: 80

TOTAL: 100