GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

GAUTENG DEPARTMENT OF EDUCATION

PROVINCIAL EXAMINATION

JUNE 2020

GRADE 9

NATURAL SCIENCES

MARKING GUIDELINES

9 pages

SECTION A

QUESTION 1

MULTIPLE CHOICE QUESTIONS

1.1 C√

1.2 B√

1.3 A√

1.4 B√

1.5 D√

1.6 D√

1.7 C√

1.8 B√ **[8]**

QUESTION 2

TERMINOLOGY

2.1 Contact Force √

2.2 Periodic Table of Elements √

2.3 Resistor √

2.4 Atomic mass number √

2.5 Neutralization √

2.6 Carbon dioxide √ **[6]**

QUESTION 3

MATCHING

3.1 F√ / Fuse

3.2 D√ / Products

3.3 B√ / Universal indicator

3.4 C√ /Ohms

3.5 A√ / Circuit breaker

3.6 H√ / Atomic number **[6]**

TOTAL SECTION A: 20

SECTION B

QUESTION 4

THE PERIODIC TABLE OF ELEMENTS AND COMPOUNDS

4.1 Boron√ (1)

4.2 Oxygen √ (1)

4.3 Neon √ (1)

4.4 12 √ (1)

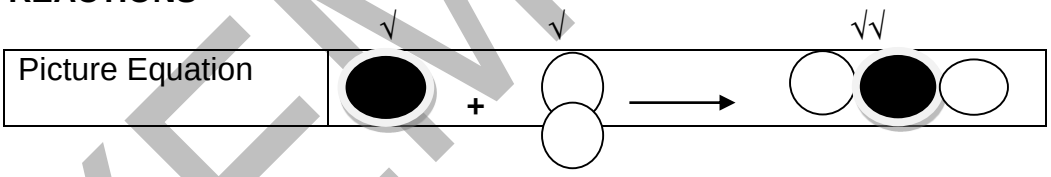
4.5 35.5 √ (1)

4.6 The formula represents one molecule of Sulfur trioxide √. The molecule Sulfur trioxide contains one sulfur atom √ and three atoms of oxygen √ (3)
[8]

QUESTION 5

CHEMICAL REACTIONS

5.1



(2 marks – Reactants √√)
(2 marks – Products √√) (4)

5.2 $4H$ √ + O_2 √→ $2H_2O$ √ BALANCED √ (4)

5.3 $2Cu$ √ + O_2 → $2CuO$ √ (2)
[10]

QUESTION 6

REACTION OF METALS AND NON-METALS WITH OXYGEN

6.1 When a flaky, crusty, reddish-brown product forms on iron or steel, it is called metal oxide. √ **(Compulsory Mark)**

Loss of Metal/Corroded structures such as bridges, buildings, cars and machinery are weakened and become dangerous.√

Electrical connections often corrode and reduce proper contact between terminals and leads. √

(Mark one only) (2)

6.2 Painting √
Greasing or oiling √
Coating iron and steel with a thin layer of chromium or zinc √
Electroplating √
Galvanizing √

(Mark any two) (2)

6.3 No not a healthy situation √. Carbon that burns where there is insufficient oxygen forms carbon monoxide √ which is harmful to the human body. When breathed in, carbon monoxide replaces oxygen √, and can lead to death. (3)
[7]

QUESTION 7

ACIDS, BASES AND pH VALUES

7.1 Bar graph √ (1)

7.2 Lemon juice √ (1)

7.3 Neutralisation √ will take place (1)

7.4 pH 7 √ (neutral) (1)

7.5 Green (1)
[5]

TOTAL SECTION B: 30

SECTION C

QUESTION 8

FORCES

8.1 Gravitational force √ – exerted by the earth that pulls the stone down
Force of reaction (normal force) √ – exerted by the ground vertically upwards
The force of pulling √ by the boy
The force of friction √ – exerted by the stone
Applied force √ (5)

8.2 8.2.1 When an uncharged object gains electrons √ and there are, in total more electrons than protons. √ (2)

8.2.2 When the balloon is rubbed with the jersey, charge transfer occurs √. Static electricity is produced √. The electrons of the jersey are transferred to the balloon making the balloon negatively √ charged and the jersey positively charged because it has lost electrons √ or it has more protons. (4)

8.3 Electrostatic force √ (1)

8.4 Attractive force √ (1)

8.5 Electrostatic force is the force acquired by objects when certain materials are rubbed together and acquire an electric charge √ as a result of loss or gain of electrons. √ (2)

8.6

Electrostatic force	Gravitational force
1. Is both a repulsive and attractive force √	1. Only attraction force√
2. Occurs due to a gain or loss of electrons √	2. Occurs between magnetic substances√
3. Is only exhibited by magnets on magnetic substances √	3. Is exhibited by magnets on all objects√

(Mark any one difference) (2)
[17]

QUESTION 9

ELECTRIC CELLS AS ENERGY SYSTEMS

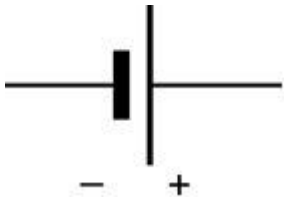
9.1 The electrolyte is a solution that can conduct electricity √ and consists of thousands of positive and negative particles that are called ions. √

OR

Is a substance that contains free ions √ and behaves as an electrical conductor. √ (2)

9.2 The LED light will glow (emit light) √ if an electric current is generated. √ (2)

9.3



√ √ (2)

9.4

Cell	Battery
A chemical system in which certain chemical reactions cause the flow of electricity (flow of electrical charge) which is brought about by means of an external circuit. √	Two or more cells that are connected to each other. √

(2)

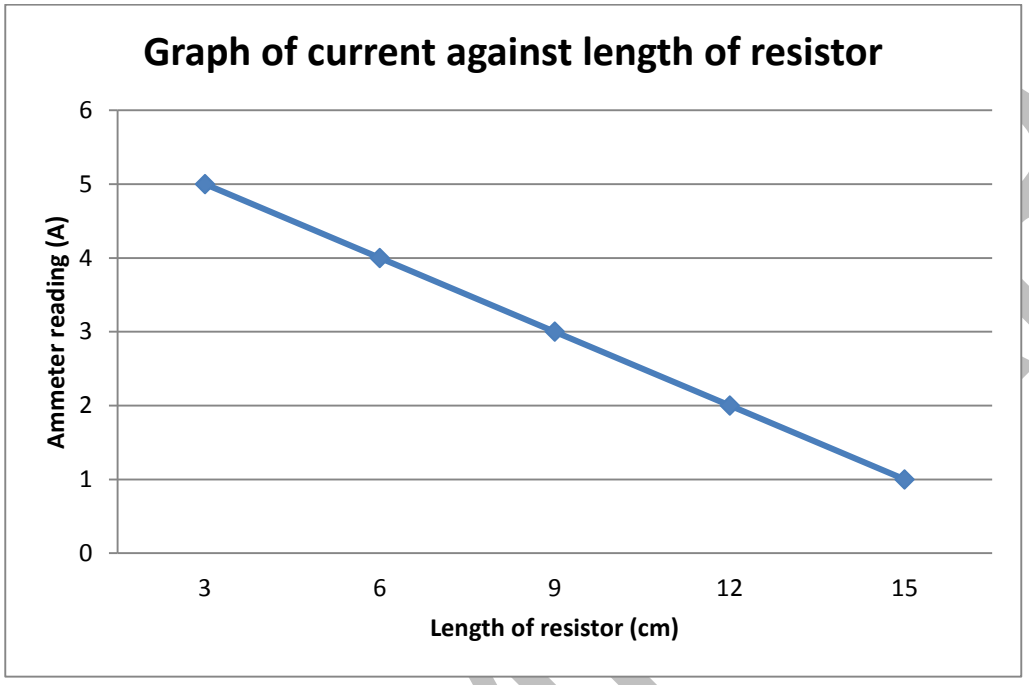
9.5 The lemon juice serves as an electrolyte √√ (2)

[10]

QUESTION 10

RESISTANCE

10.1



Marking guidelines

Correct Heading	**1 mark**
X axis: Scale and label	**1 mark**
Y axis: Scale and label	**1 mark**
Plotting: All correct	**1 mark**

(4)

10.2 To investigate/test/determine what effect the length of the conductor will have on its resistance. √ (2)

10.3 As the length of the of the conductor increases√ the ammeter reading increases. √ (2)

10.4 The decrease in ammeter reading means the resistance increases. √
As the length of the conductor increases, the resistance increases. √ (2)

10.5 The length of the conductor √ will increase its resistance. √
OR
The length of the conductor √ will decrease its resistance. √
OR
The length of the conductor √ will have no effect on its resistance. √ (2)

10.6 10.6.1 Dependent variable: The resistance of the conductors (copper wires) √ (1)

10.6.2 Independent variable: The length of the copper wires √ (1)

10.7 As the length of the copper wire increases √ the resistance also increases √ (2)
[16]

QUESTION 11

SERIES AND PARALLEL CIRCUITS AND SAFETY WITH ELECTRICITY

11.1 11.1.1 3 x 4 √ = 12 V √ (2)

11.1.2 The current through the light bulbs are equal. √ (1)

11.1.3 If light bulb 1 blows it will cause a breakage (gap) √ in the flow of electrical current, as it is connected to the battery in series.
Light bulb 3 will not burn.√ (2)

11.2 Wires and other components in an electrical system or circuit have a maximum amount of current they can safely carry √. If too many appliances/devices are plugged into a circuit the electrical current will heat the wires to a very high temperature and thus cause overloading. √ (2)
[7]

TOTAL SECTION C: 50

TOTAL: 100