



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

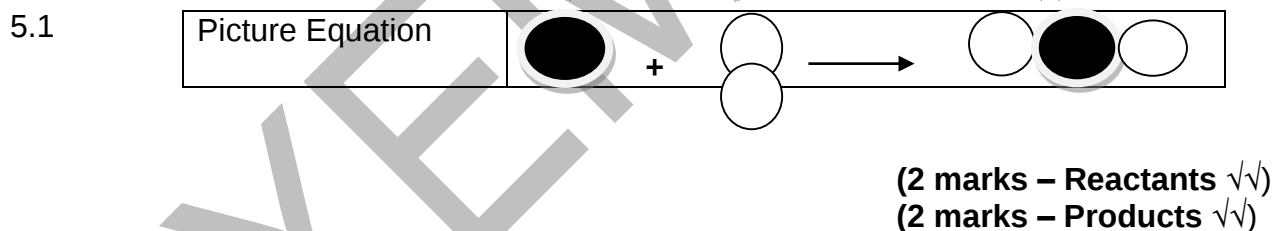
QUESTION 4

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



- 5.2 $4\text{H} \checkmark + \text{O}_2 \checkmark \rightarrow 2\text{H}_2\text{O} \checkmark$ BALANCED ✓ (4)
- 5.3 $2\text{Cu} \checkmark + \text{O}_2 \rightarrow 2\text{CuO} \checkmark$ (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

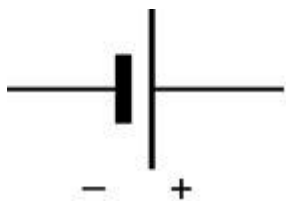
Is a substance that contains free ions ✓ and behaves as an electrical conductor. ✓

(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 ✓✓

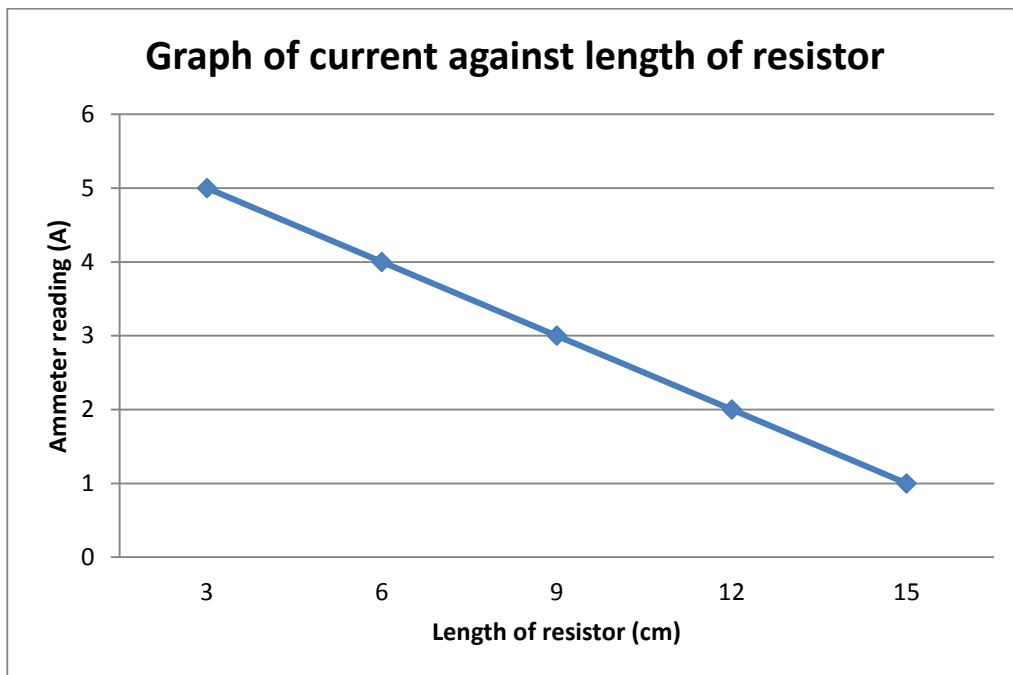
(2)

[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 $\checkmark$ will increase its resistance. $\checkmark$
OR
The length of the conductor $\checkmark$ will decrease its resistance. $\checkmark$
OR
The length of the conductor $\checkmark$ will have no effect on its resistance. $\checkmark$ (2)
- 10.6 10.6.1 Dependent variable: The resistance of the conductors (copper wires) $\checkmark$ (1)
- 10.6.2 Independent variable: The length of the copper wires $\checkmark$ (1)
- 10.7 As the length of the copper wire increases $\checkmark$ the resistance also increases $\checkmark$ (2)
[16]

QUESTION 11
SERIES AND PARALLEL CIRCUITS AND SAFETY WITH ELECTRICITY

- 11.1 11.1.1 $3 \times 4 \checkmark = 12 \text{ V } \checkmark$ (2)
- 11.1.2 The current through the light bulbs are equal. $\checkmark$ (1)
- 11.1.3 If light bulb 1 blows it will cause a breakage (gap) $\checkmark$ in the flow of electrical current, as it is connected to the battery in series.
Light bulb 3 will not burn. $\checkmark$ (2)
- 11.2 Wires and other components in an electrical system or circuit have a maximum amount of current they can safely carry $\checkmark$. 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. $\checkmark$ (2)
[7]

TOTAL SECTION C: 50
TOTAL: 100