



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

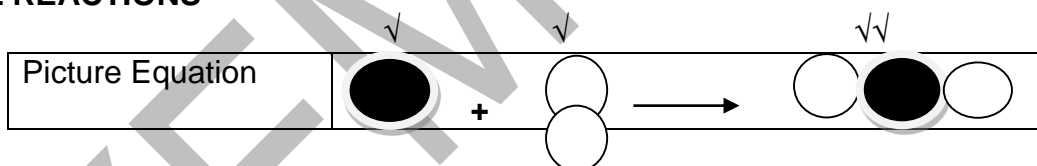
THE PERIODIC TABLE OF ELEMENTS AND COMPOUNDS

- 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 $4\text{H} \checkmark + \text{O}_2 \checkmark \rightarrow 2\text{H}_2\text{O} \checkmark$ 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

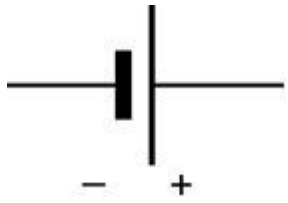
Is a substance that contains free ions ✓ and behaves as an electrical conductor. ✓

(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 ✓✓

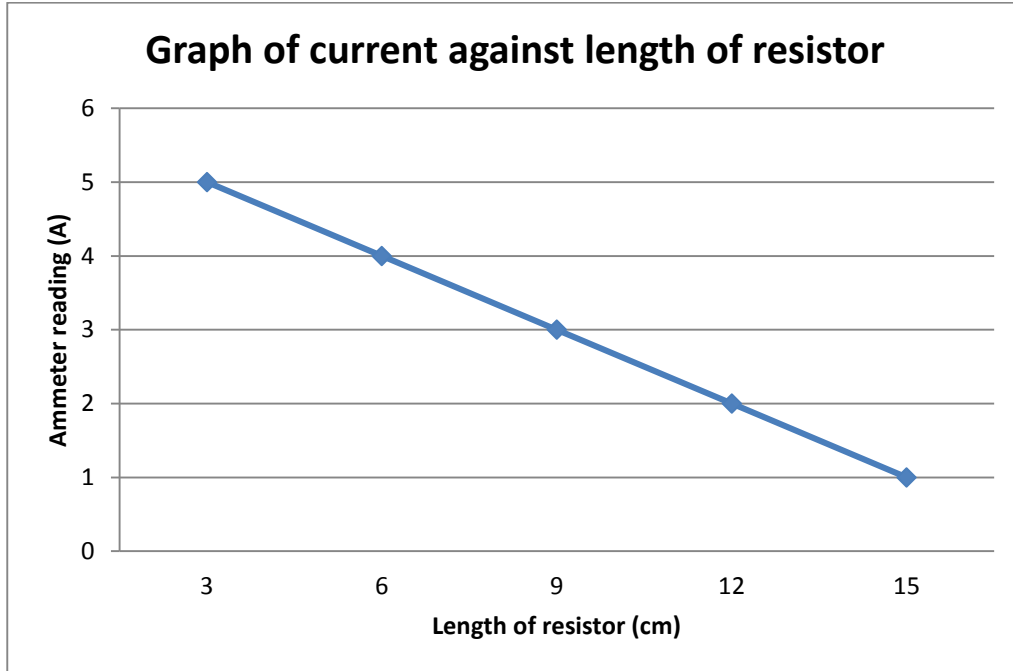
(2)

[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**