



GAUTENG PROVINCE

EDUCATION
REPUBLIC OF SOUTH AFRICA

PROVINCIAL EXAMINATION

NOVEMBER 2023

GRADE 9

MARKING GUIDELINES

NATURAL SCIENCES

8 pages

SECTION A**QUESTION 1: MULTIPLE-CHOICE QUESTIONS**

1.1 D ✓

1.2 B ✓

1.3 B ✓

1.4 B ✓

1.5 C ✓

1.6 D ✓

1.7 C ✓

1.8 A ✓

1.9 C ✓

[9]**QUESTION 2: TERMINOLOGY**

2.1 Resistor ✓

2.2 Gravitational force ✓

2.3 Earth wire ✓

2.4 Igneous rock ✓

2.5 Lightning ✓

2.6 Atmosphere ✓

[6]**QUESTION 3: MATCHING ITEMS**

3.1 B – Black hole ✓

3.2 E – Fuse ✓

3.3 A – Tension ✓

3.4 C – Planetary nebulae ✓

3.5 D – Rock cycle ✓

[5]**TOTAL SECTION A: 20**

SECTION B

QUESTION 4: FORCES

- 4.1 A Movement/Changes direction/Changes the speed ✓ (Any ONE) (1)
 B Changes the shape of an object ✓

- 4.2 4.2.1 Electrostatic force ✓ (1)

- 4.2.2 Type of force ✓ (1)

- 4.2.3 Electrons ✓ (1)

- 4.2.4 Yes ✓ (1)

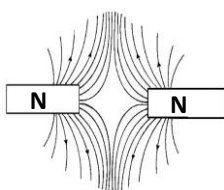
- 4.2.5 The spheres carry ✓ the same charge ✓/spheres ✓ have like charges, ✓

OR

- They repel ✓ one another ✓/push each ✓ other away ✓ (2)

- 4.3 4.3.1 Field Force (1)

- 4.3.2



Marking criteria

- ✓ mark – Shape of the magnetic field.
 - ✓ mark – Direction of the magnetic field.
- (Away from north OR north to south)

(2)

- 4.4 4.4.1 0,1 N ✓ (Value AND unit for 1 mark.) (1)

- 4.4.2 Force decreases as the distance ✓ between magnets increases. ✓

OR

As the distance between the magnets increases ✓, the magnetic force between the magnets decreases. ✓

OR

As the distance between the magnets decreases, ✓ the magnetic force between the magnets increases. ✓

Marking criteria

- Both variables mentioned. (Distance and Force) ✓
- Relationship between variables ✓

(2)

4.5 Weight is the force exerted on the mass of the body ✓ by the gravitational field. ✓

OR

Weight is the force with which the Earth attracts ✓ all objects towards it's centre. ✓

(2)

[16]

QUESTION 5: CELLS AND ENERGY, RESISTANCE

5.1 5.1.1 What is the effect of the length of the conductor ✓ on its resistance? ✓

OR

How will the length of the conductor ✓ affect its resistance? ✓

OR

What is the relationship between the length of the conductor ✓ and its resistance? ✓

(2)

5.1.2 The longer the length of the conductor, ✓ the higher the resistance. ✓

(2)

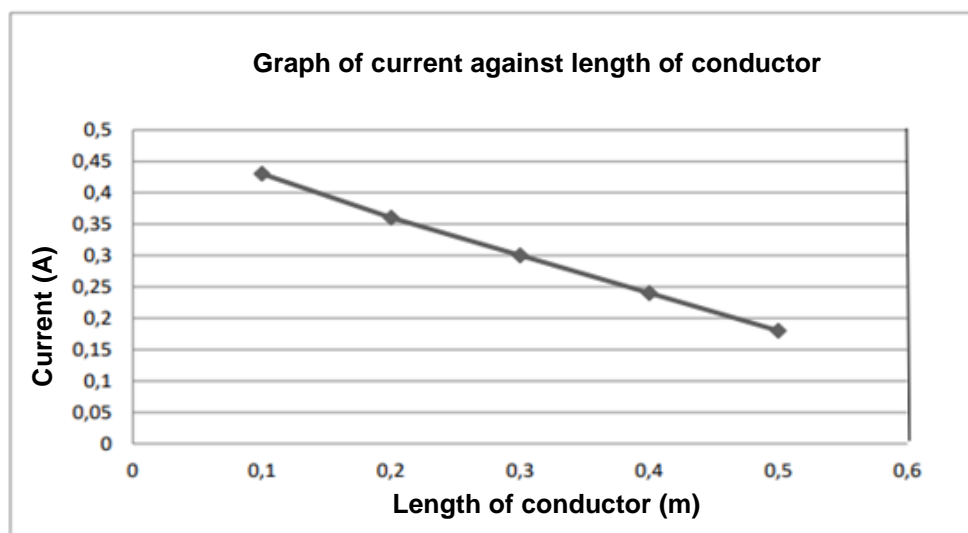
OR

The shorter the length of the conductor ✓ the lower the resistance. ✓

5.1.3 Resistance of a conductor ✓

(1)

5.1.4



Marking criteria

- A: Heading; ✓
 B: correct labels on y-axes ✓
 C: correct label on x-axis ✓; plotting of points ✓, correct scale ✓

(5)

5.2 5.2.1 To provide energy ✓ (1)

5.2.2 $3V \div 2 = 1,5V$ ✓✓ (answer only with unit -2 marks – without unit – 1 mark) (2)

5.2.3 Circuit breaker ✓ (1)

[14]

QUESTION 6: CURRENT ELECTRICITY

6.1 6.1.1 Parallel ✓ (1)

6.1.2 $V_1 = 3 \times 1,5$ ✓
 $= 4,5 V$ ✓ (Award 2 marks if a learner only wrote 4,5 V) (2)

6.1.3 4,5 V ✓ (1)

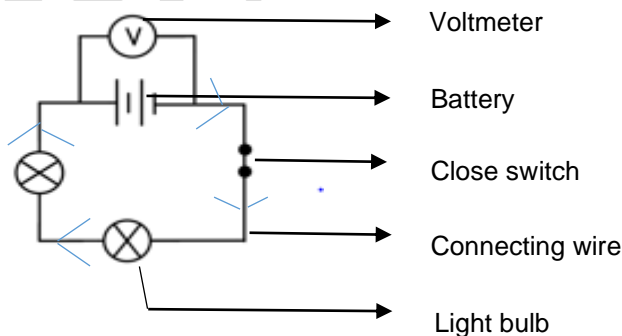
6.1.4 S ✓ (1)

6.1.5 Reading on A_1 will decrease. ✓ (1)

6.1.6 If T is switched off, there are less resistors in parallel, therefore the total resistance in the circuit will increase, ✓ and the total current will decrease. ✓ (2)

6.1.7 Ammeter ✓ (1)

6.2



Marking criteria

Correct labels – 4 marks (1 mark per label) ✓✓✓✓

Correct diagram – 1 mark ✓

(Any labels) (5)

[14]

7.1 7.1.1 Cost = 320 kW x 1h x 90 cents ✓
= 28800 cents ✓
= R288,00 ✓ (–1 mark if answer is left as cents or no units) (3)

7.1.2 12 minutes = 0,2 hours
1 360 W = 1,36 kW
6 000 W = 6 kW
Microwave oven: Cost = 1,36 ✓ x 0,2 x 90 ✓
= 24,48 cents = R0,24 ✓
Conventional oven: Cost = 6 x 1 x 90 = 540 ✓ cents ✓
= R5,40 ✓
Based on the calculations, the microwave is far cheaper to run than a conventional oven. ✓ (7)

7.2 7.2.1 Overload/demand for electricity is too high. ✓
OR
Electricity usage is too high. ✓ (1)

7.2.2 Loadshedding/Electricity supply will be interrupted or cut. ✓
(Any one) (1)

7.2.3 Resort to habits of switching appliances or lights off when not in use ✓;
OR
Make use of alternative sources of electricity such as electricity generated by solar power ✓,
OR
use of (fossil) fuels ✓
(Any one) (1)

7.2.4 It uses a renewable source that can be used and reused, can be replenished naturally. ✓
OR
It saves electricity – it does not cause environmental pollution, reduces the high demand from the current power grid. ✓
OR
Long term cost savings. ✓ (1)

- 7.2.5 Lithium batteries are very expensive (they are imports). ✓ It is sunlight dependent ✓/difficult to relocate ✓; Less energy available during prolonged rainy days without any sunshine ✓ (Any one) (1)
[15]

QUESTION 8: SPHERES OF THE EARTH

- 8.1 8.1.1 Lithosphere (rocks) and Hydrosphere (lime water) interacted ✓ (1)
- 8.1.2 Hydrosphere (water) and Atmosphere (carbon dioxide) interacted ✓ (1)
- 8.1.3 Biosphere (plants) and the atmosphere (light) interacted ✓ (1)
- 8.2 Minerals and other resources are often found within the Earth's crust, which is composed of solid rock. ✓ Oil and gas, on the other hand, are found in the Earth's upper mantle and are brought to the surface through geological processes such as tectonic activity and volcanic eruptions. ✓ The composition and structure of the Earth's layers thus play a crucial role in the formation and distribution of natural resources such as minerals, oil and gas. ✓ (3)
- 8.3 Heat ✓
Cold ✓
Water ✓
Wind/plants/animals ✓ (Any two) (2)
- 8.4 Greenhouse effect ✓ (1)
- 8.5 The Earth becomes warm (temperature is increased) and becomes habitable for life. ✓ (1)
[10]

QUESTION 9: MINING AND MINERAL RESOURCES

- 9.1 On the surface ✓ (1)
- 9.2 It devastates the environment ✓, causes deforestation ✓, pollutes the water, air and the soil through the release of toxic minerals. ✓ Contributes to high crime related incidents. ✓
(Accept any other relevant and factual answer.) (Any two) (2)
- 9.3 High rate of unemployment; failure by the government to come up with laws to regulate/policies to control mining by artisans. ✓✓ (informal mining)
(Accept any other relevant and factual answer.) (Any two) (2)
- 9.4 Leads to usage and wastage of water ✓; self-made pipelines contaminate the environment ✓; causes underground fires and explosions ✓, re-opening of sealed shafts can lead to serious health hazards. ✓
(Accept any other relevant and factual answer.) (Any two) (2)
[7]

QUESTION 10: BIRTH, LIFE AND DEATH OF STARS

- 10.1 Nuclear fusion in stars produces energy through the conversion of hydrogen into helium. ✓ This process releases a tremendous amount of energy in the form of heat and light, which radiates outwards from the star. ✓ (2)
- 10.2 How the star dies depends on its size, most stars run out of fuel and become white dwarf stars, ✓ but a few generate massive explosions so big that they can be seen with the naked eye. ✓ The biggest stars turn into black holes. ✓ (Any TWO) (2)
- [4]**

TOTAL SECTION B: 80

TOTAL: 100