GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

PROVINCIAL EXAMINATION

NOVEMBER 2021

GRADE 9

MARKING GUIDELINES

NATURAL SCIENCES

8 pages

EXEMPLAR

SECTION A

QUESTION 1

1.1 **A** ✓ Gravity and reaction forces

1.2 **C** ✓ Magma, Igneous, Sedimentary, Metamorphic

1.3 **B** ✓ Helium

1.4 **B** ✓ Repulsion

1.5 **A** ✓ white dwarf

1.6 **C** ✓ results in an action over a distance between two bodies.

1.7 **B** ✓

1.8 **A** ✓ Long, thin and hot

1.9 **B** ✓ hydroelectricity

[9]

QUESTION 2

2.1 Battery ✓ (1)

2.2 Mass ✓ (1)

2.3 Fuse ✓ (1)

2.4 Atmosphere ✓ (1)

2.5 National electricity grid ✓ (1)

2.6 Sediment ✓ (1)

[6]

EXEMPLAR

QUESTION 3

3.1 F/Ore ✓

3.2 D/Hydrosphere ✓

3.3 A/Stratosphere ✓

3.4 B/Biosphere ✓

3.5 C/Planetary Nebulae ✓

[5]

TOTAL SECTION A: [20]

EXEMPLAR

SECTION B

QUESTION 4

FORCES

4.1 4.1.1 Pushing/Compression ✓✓ (2)

4.1.2 She makes it move./change direction ✓and brings it to a standstill. ✓ (2)

4.2 Weight = Mass in kg x 9,8 N
55 kg x 9,8 N ✓
539 ✓ N ✓ (3)

4.3 Mass is the amount of matter that a substance/object consists of ✓ whereas weight is the force of gravity with which the earth attracts objects towards itself. ✓

OR

Mass is the quantity measured in kilograms ✓and weight is the quantity measured in Newtons. ✓ (2)

4.4 Gravitational force; ✓ electrostatic; ✓ magnetic ✓
(Any 2) (2)

4.5 A thundercloud becomes charged ✓ by the rubbing together of air and water particles moving past each other in the atmosphere. ✓
A lightning strike occurs when there is a massive discharge (the release of charge) between the thundercloud and the ground. ✓ Lightning is the giant spark of electricity. ✓ (4)

[15]

EXEMPLAR

QUESTION 5

CURRENT ELECTRICITY

5.1 5.1.1 **X** – Voltmeter ✓ **Y** – Battery ✓ **Z** – Light bulb/Bulb ✓ (3)

5.1.2 Chemical energy to electrical energy ✓ (1)

5.1.3 In series ✓ (1)

5.1.4 9 v ÷ 2 ✓
= 4,5 V ✓ (2)

5.1.5 Bulb 1 will not glow ✓, removal of bulb 2 creates a gap in the circuit (in series). ✓ The path of the current will be incomplete/broken, and there will be no current flow. ✓ (3)

5.2 5.2.1 The community (children) would be in danger of being electrocuted ✓ should the cables be worn out and exposed. ✓
(Any logical reason related to the dangers of illegal connections.) (2)

5.2.2 Illegal connections mean that people use electricity that they do not pay for and the service provider loses expected revenue, ✓ and this will also have an adverse impact on the economy because power stations will be working at a loss. ✓
(Any other logical answer.) (2)
[14]

QUESTION 6

RESISTANCE

6.1 6.1.1 Length does not have any effect ✓ on resistance. ✓

OR

Length has an effect ✓ on resistance. ✓

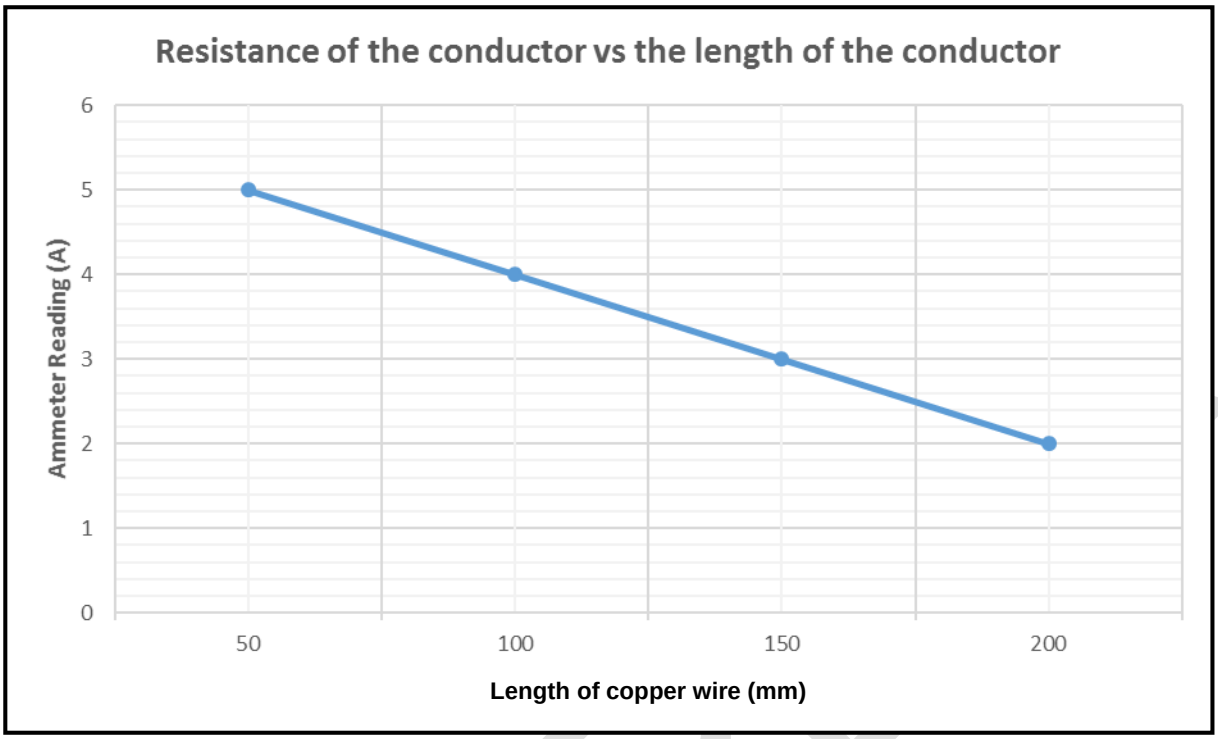
(Any 1) (2)

6.1.2 Does length ✓ have an effect on resistance? ✓ (2)

6.1.3 Resistance ✓ (1)

EXEMPLAR

6.2



1 Mark for the heading ✓
1 Mark for straight line ✓
2 Marks for correct scaling ✓✓
2 Marks for 2 correct points ✓✓ (6)
[11]

QUESTION 7

COST OF POWER CONSUMPTION

7.1 7.1.1 Power rating in kW = 1500 ÷1000 ✓
= 1.5 kW ✓ (2)

7.1.2 12 ÷ 60 = 0,2 hrs ✓
199 ÷ 100 = 1,99 ✓
Cost = power rating in kW x time x unit price
= 1,5 kW x 31 x 0,2 x 1,99 ✓
= R9.30 ✓ Mr Maloka's claim is correct ✓ (5)

7.2 7.2.1 Coal is a non-renewable energy source that can be exhausted or depleted. ✓/Burning of coal causes air pollution. ✓/Production of greenhouse gases ✓/Causes global warming. ✓/Uses a lot of water.✓/ Causes water pollution. ✓ Destroys the environment or habitats. ✓
(Any 1) (1)

EXEMPLAR

7.2.2 Wind ✓
Falling water ✓
Waves ✓
Solar energy/Sun ✓
Nuclear energy ✓

(Any 1) (1)
[9]

QUESTION 8

SPHERES OF THE EARTH

8.1 8.1.1 Interaction between Atmosphere and Hydrosphere. Water evaporates into the air. ✓ Groundwater seeps into the rocks. ✓ (2)

8.1.2 Interaction between Biosphere and Hydrosphere: Fish need the dam water to live in. ✓ Humans use water to generate electricity. ✓ (2)

8.1.3 Interaction between Biosphere and Lithosphere: Plants in the surrounding area use minerals from the soil. ✓ Humans use rocks to build dam walls. ✓ (2)

8.2 8.2.1 1 – Crust ✓
2 – Mantle ✓
3 – Outer Core ✓
4 – Inner Core ✓ (4)

8.2.2 Igneous rock ✓
Metamorphic rock ✓
Sedimentary rock ✓ (3)

8.2.3 Grains of sand compact ✓ together over a long period of time. ✓ (2)

8.3 8.3.1 54 + 21+ 14 + 7 + 2 = 98 ✓
100 – 98 = 2% ✓ (2)

8.3.2 Percentage (%) contribution to the greenhouse effect ✓ (1)

8.3.3 Carbon dioxide **OR** Methane ✓ (1)

8.3.4 CFC's ✓ (1)

8.3.5 Carbon dioxide – respiration ✓
OR
Methane – decaying plants or manure/waste gases from cattle. ✓

(Any 1) (1)
[21]

EXEMPLAR

QUESTION 9

MINING OF MINERAL RESOURCES

9.1 9.1.1 Northern Cape Province ✓ (1)

9.1.2 On the surface ✓ (1)

9.1.3 A mixture ✓ consists of a variety of minerals. ✓
OR
It is an impure substance. ✓
(Any 1) (2)

9.1.4 Using a magnet ✓ (1)

9.1.5 Removal of plants ✓ causing habitat loss for animals ✓/removal of soil ✓ causing the topsoil to wash away ✓/ground/air/water pollution ✓ from chemicals used. ✓ (Any 1) (2)
[7]

QUESTION 10

BIRTH, LIFE AND DEATH OF STARS

10.1 As the stars grow older, their temperature decreases ✓ causing a change in colour from blue to red. ✓ (2)

10.2 Supernova ✓ (1)
[3]

TOTAL SECTION B: [80]

TOTAL: 100

EXEMPLAR