GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

GAUTENG DEPARTMENT OF EDUCATION

PROVINCIAL EXAMINATION

NOVEMBER 2017

GRADE 9

NATURAL SCIENCES

MEMORANDUM

10 pages

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NATURAL SCIENCES

MEMORANDUM

SECTION A

MULTIPLE-CHOICE QUESTIONS

QUESTION 1

1.1 C ✓ (1)

1.2 B ✓ (1)

1.3 A ✓ (1)

1.4 B ✓ (1)

1.5 A ✓ (1)

1.6 D ✓ (1)

1.7 A ✓ (1)

1.8 B ✓ (1)

[8]

QUESTION 2

TERMINOLOGY

2.1 Newton✓ (1)

2.2 Electrolyte✓ (1)

2.3 Resistor✓ (1)

2.4 Ore✓ (1)

2.5 Global warming✓ (1)

2.6 Supernova✓ (1)

[6]

QUESTION 3

MATCHING COLUMNS

3.1 C (Power surge) ✓ (1)

3.2 H (Power station) ✓ (1)

3.3 B (Ammeter) ✓ (1)

3.4 A (Gravitational force) ✓ (1)

3.5 E (Troposphere) ✓ (1)

3.6 D (Larva) ✓ (1)
[6]

TOTAL SECTION A: [20]

SECTION B

ENERGY AND CHANGE

FORCE

4.1 Forces can cause object to:

Start moving✓
To speed up✓
To change direction✓
To change shape✓
To rotate✓

(Mark any two correct answers) (2)

4.2 4.2.1 Tension force ✓ (1)

4.2.2 Compression✓ (1)

4.3 4.3.1 Magnetic force. ✓ (1)

4.3.2 **Photo A** – Magnetic fields are attracted at the poles as a result of strong forces of unlike poles. ✓✓

Photo B – Magnetic fields repel each other at the pole as a result of weaker forces at the like poles. ✓✓ (4)

4.3.3 Gravitational forces ✓ (1)

Electrostatic force ✓ (1)

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QUESTION 5

SERIES AND PARALLEL CIRCUIT

5.1 5.1.1 3V×4✓
=12V✓ (2)

5.1.2 The currents through the light bulbs 2 and 3 are equal to each other because they are connected in parallel.✓✓ (2)

5.1.3 The current through the light bulb 1 is higher than the current in bulb 2. ✓✓ (2)

5.1.4 Light bulb 3 will go out / off. Because bulb 1 is connected in series, so if it blows there is a gap in the circuit✓✓ (2)

5.1.5 It will continue to shine / burn. Because bulb 2 is connected in parallel, so if it blows there is still a path in which the current can flow. ✓✓ (2)

5.2

- Thickness of the conductor✓
- Length of the conductor ✓
- Type of material ✓
- Temperature of the conductor ✓ (Any two) (2)

[12]

QUESTION 6

ELECTRICITY GENERATION IN SOUTH AFRICA

6.1 6.1.1 Because there are no coal reserves in Western Cape.✓ (1)

6.1.2 Uranium. ✓ (1)

6.1.3 Nuclear waste can cause

- burns
- cancer, and
- genetic mutation ✓ (Any one) (1)

6.2 6.2.1 Sun✓ / Solar energy (1)

6.2.2 No air pollution✓ (1)

6.2.3 Water✓ (1)

6.2.4 Renewable energy✓ (1)

6.2.5 The up-and-down motion of waves can be converted into electrical energy. ✓ (1)

6.2.6 renewable✓ (1)

6.2.7 Radioactive element✓ (1)

[10]

QUESTION 7

COST OF ELECTRICAL POWER

7.1 Laptop✓ (1)

7.2 You can use a geyser blanket.✓
Use a geyser timer.✓
Switch the geyser on and off when required.✓ (2)
[Mark any two correct answers.]

7.3 Cost of energy use = *kw* x *h* x *cost*
= 2 x 3 x 60c✓✓
360c✓

Total cost = R3, 60c✓ (4)
[7]

TOTAL SECTION B: [40]

SECTION C

QUESTION 8

EARTH AND BEYOND

EARTH AS A SYSTEM

8.1

- Lithosphere and Hydrosphere ✓(Water erodes soil.)
- Atmosphere and Hydrosphere ✓(Water evaporates from oceans becoming vapour in the atmosphere.)
- Lithosphere and atmosphere ✓(Volcanoes erupt, shooting gases and dust into the atmosphere.)
- Biosphere and atmosphere ✓ (Plants give off oxygen during photosynthesis. Plants use carbon dioxide during photosynthesis.)
- Biosphere and Hydrosphere ✓(Water is used by plants and animals.)
- Biosphere and Lithosphere✓(Plants derive water from the soil. Animals use water to sustain life.) (6)

8.2 8.2.1

1. Igneous rock✓ (1)
2. Sediment ✓ (1)
3. Sedimentary rock✓ (1)
4. Metamorphic rock✓ (1)
5. Magma or Lava✓ (1)

8.2.2 **Magma** is a hot melted rock. ✓
Igneous rock is the rock that forms when Magma cools down. ✓ (2)

8.3 Heat ✓
Cold✓
Water✓
Wind✓ (Any three) (3)

[16]

QUESTION 9

MINING IN SOUTH AFRICA

9.1 9.1.1 (a) It generates revenue for a country. ✓✓
It provides employment for people. ✓✓
It provides opportunities for scientific and technological research. ✓✓

(Any two) (4)

(b) It changes the landscape around the site. ✓✓
The waste products pollute the water, air and land. ✓✓
It damages places with high value in tourism. ✓✓
It damages places of cultural heritage. ✓✓
Farming land and conservation areas are lost because mining uses a lot of land. ✓✓

(Any two) (4)

9.1.2 There should be strict government laws that govern mining. ✓✓
Old unused mines could be restored to their original condition. ✓✓
There should be laws to govern pollution. ✓✓
Guidelines should be drawn up to make sure that mining activities do not damage the environment of the surrounding communities. ✓✓

(Any two) (4)

9.1.3 Troposphere ✓

Stratosphere✓

Mesosphere✓

Thermosphere✓ (4)

9.2 Global climate change would follow. ✓ E.g. the snow would melt, the rivers might dry up, the plants and animals would suffer from an increase in average temperature. ✓ (2)

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QUESTION 10

BIRTH, LIFE AND DEATH OF STARS

10.1 The colour of a star is determined by age (life cycle). ✓

OR

The colour of a star is determined by its temperature. ✓

(Any one) (1)

10.2 Nebula✓ ⇒ Protostar✓ ⇒ Blue star✓ ⇒ Red gaint✓ ⇒ White dwarf✓

(5)

[6]

TOTAL SECTION C: [40]