



education

Department of
Education
FREE STATE PROVINCE

GRADE 9

NATURAL SCIENCES

NOVEMBER 2018

MEMORANDUM

MARKS: 100

This memorandum consists of 7 pages

SECTION A**QUESTION 1**

- | | | |
|------|-----|-----|
| 1.1 | C ✓ | (1) |
| 1.2 | C ✓ | (1) |
| 1.3 | D ✓ | (1) |
| 1.4 | D ✓ | (1) |
| 1.5 | B ✓ | (1) |
| 1.6 | B ✓ | (1) |
| 1.7 | D ✓ | (1) |
| 1.8 | A ✓ | (1) |
| 1.9 | B ✓ | (1) |
| 1.10 | A ✓ | (1) |

[10]**QUESTION 2**

- | | | |
|-----|--|-----|
| 2.1 | Newton. ✓ (Do not accept just N; word must be given) | (1) |
| 2.2 | Electrostatic (force). ✓ | (1) |
| 2.3 | Resistor. ✓ | (1) |
| 2.4 | Battery. ✓ | (1) |
| 2.5 | Lithosphere. ✓ | (1) |

[5]**QUESTION 3**

- | | | |
|-----|-----|-----|
| 3.1 | H ✓ | (1) |
| 3.2 | F ✓ | (1) |
| 3.3 | G ✓ | (1) |
| 3.4 | I ✓ | (1) |
| 3.5 | A ✓ | (1) |

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

SECTION B**QUESTION 4**

4.1.1 R✓ (1)

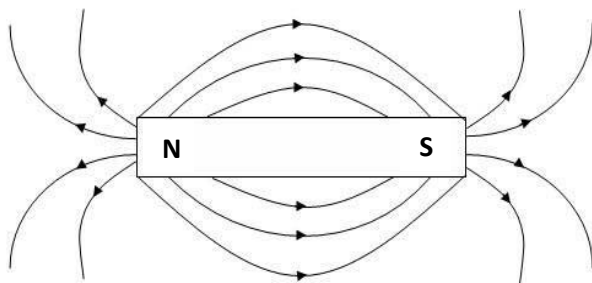
4.1.2 The thread in R is the least straight, showing that the magnetic force is not as strong as in S or T. ✓ (1)

OR

The paper clip in R is not lifted as high as the paper clips in S and T, therefore the magnetic force in R is the weakest. ✓

4.1.3 Size / type / weight / mass of the paper clips/pieces of thread. ✓
Strength and/or type of magnet. ✓ **(ANY ONE)** (1)4.1.4 Distance✓ (of the magnet from the table surface). (1)

4.2



N and S pole ✓

Shape of magnetic field (field lines touch surface of magnet; lines do not cross)✓

Direction of magnetic field lines from N to S✓ (3)

4.3

CHARGED OBJECT	CHARGE (POSITIVE OR NEGATIVE)
Q	Negative ✓
R	Negative ✓
S	Positive ✓
T	Positive ✓

(4)

[11]

QUESTION 5

5.1.1 None will glow. ✓✓ (2)

5.1.2

- M and P✓ will have equal brightness. ✓
- N will not glow. ✓ (3)

5.1.3

- Same potential difference for M and N. ✓
- Potential difference across P is higher than that across M and N. ✓ (2)

5.1.4.1 decrease✓ (1)

5.1.4.2 remain the same✓ (1)

5.1.5 current✓ (1)

5.2.1 The current divides.✓ **OR** The current splits up into two branches/pathways.✓ (1)

5.2.2 M✓ The lower the resistance of a resistor, the lower the voltage.✓ (2)

5.2.3 $6V + 3V✓ = \underline{9V}✓$ (2)

5.2.4 $12 - 9 = \underline{3V}✓$ (1)

5.2.5 Ammeter reading will increase/be higher ✓ because the total resistance will be less/decreases✓ when the resistor B in series, is removed. (2)

[18]

QUESTION 6

6.1 Stove ✓ (1)

6.2 $3\text{h} \times 30\checkmark = 90\text{h}\checkmark$ (2)

6.3 Cost for hotplate = power rating x hours used x unit price✓
 $= 1,5\text{ kW} \times 90\text{h} \times 79,5\text{c/kWh}\checkmark$ (90h **OR** 3×30 from question 6.2)
 $= 10\,732,50\text{c}$ **OR** $\text{R } 107,33\checkmark$ (3)

6.4 Cost for geyser = $300\text{kWh} \times 79,50\text{cents}\checkmark$ (**OR** $\text{R } 0,7950$)
 $= \text{R } 238,50\checkmark$

OR

Cost for geyser = $2 \times 5 \times 30 \times 79,50\checkmark$
 $= 23\,850\text{c}$
 $= \text{R } 238,50\checkmark$ (2)

6.5 $1,1\text{ kW}\checkmark \times y\text{ h} \times \text{R } 0,795/\text{kWh}\checkmark = \text{R } 6,55\checkmark$ (Unit for money must be the same)

Number of hours = $7,49\text{ h}\checkmark$ (4)
[12]

QUESTION 7

7.1 CO_2 / Carbon dioxide✓
 CH_4 / Methane gas✓
 N_2O / Nitrous oxide / Nitrogen oxide✓ (ANY TWO) (2)

7.2 Carbon dioxide / CO_2 ✓ (1)

7.3 Energy sector✓ (1)

7.4 Commercial sector✓ (1)

7.5 Afforestation (planting of more trees) ✓ (1)

7.6 Opportunities for further afforestation was limited due to a variety of factors, including limited natural resources like water, ✓ suitable fertile land, social and other environmental challenges. (1)

7.7 Global warming✓ (1)

- 7.8 The absence of greenhouse gases in the Earth's atmosphere can lead to extreme fluctuating temperatures on Earth. ✓ E.g., if all the Earth's heat radiation during night time can escape into outer space without any absorption by greenhouse gases, then the Earth's atmospheric temperature will decrease to far below -100°C during night time. ✓ (2)

7.9

- Climate change ✓
- Rising sea levels ✓
- Food shortage ✓
- Mass extinctions ✓

(ANY THREE)

(Alternative answers can also be considered – use discretion)

(3)

[13]

QUESTION 8

- 8.1 1 - Crust ✓
2 - Mantle ✓
3 - Outer Core ✓
4 - Inner Core ✓ (4)
- 8.2 Igneous rock ✓
Metamorphic rock ✓
Sedimentary rock ✓ (3)
- 8.3 Grains of sand compact ✓ together over a long period of time. ✓ (2)
- 8.4.1 $54 + 21 + 14 + 7 + 2 = 98$ ✓
 $100 - 98 = 2\%$ ✓ (2)
- 8.4.2 %Contribution to the greenhouse effect ✓ (1)
- 8.4.3 Carbon dioxide **OR** Methane ✓ (1)
- 8.4.4 CFC's ✓ (1)
- 8.4.5 Carbon dioxide – respiration ✓
OR
Methane – decaying plants or manure / waste gases from cattle. ✓ (1)
- [15]

QUESTION 9

9.1

- 1 - Cooling / Crystallization✓
- 2 - Weathering and erosion✓
- 3 - Lithification OR Compression and cementation✓
- 4 - Heat and pressure✓ (Metamorphism)
- 5 - Melting✓

(5)

9.2.1 Mesosphere. ✓

(1)

9.2.2 Troposphere✓

(1)

9.2.3 Mesosphere. ✓

(1)

9.2.4 Stratosphere. ✓

(1)

9.2.5 Mesosphere. ✓

(1)

9.2.6 Troposphere. ✓

(1)

[11]

TOTAL SECTION B: 80
GRAND TOTAL: 100