



education

Department of
Education
FREE STATE PROVINCE

GRADE 8

NATURAL SCIENCES

NOVEMBER 2022

MARKING GUIDELINES

TIME: 2 HOURS

MARKS: 90

These marking guidelines consist of 6 pages.

SECTION A**QUESTION 1**

- 1.1.1 A✓
 1.1.2 D✓
 1.1.3 C✓
 1.1.4 D✓
 1.1.5 B✓
 1.1.6 A✓
 1.1.7 D✓
 1.1.8 B✓
 1.1.9 D✓
 1.1.10 C✓

[1 x 10 = 10]

- 1.2.1 Battery✓
 1.2.2 Short circuit✓
 1.2.3 Violet✓
 1.2.4 Retina✓
 1.2.5 Light year✓

[1 x 5 = 5]

- 1.3.1 D✓
 1.3.2 F✓
 1.3.3 A
 1.3.4 H✓
 1.3.5 E✓

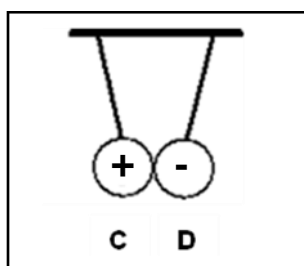
[1 x 5 = 5]

TOTAL SECTION A: 20**SECTION B****QUESTION 2**

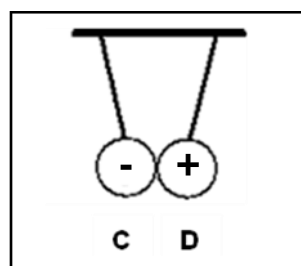
- 2.1.1 A and B✓
 2.1.2 C and D✓
 2.1.3

(1)

(1)



OR



✓

(1)

- 2.2.1 Neutral✓ (1)
- 2.2.2 Equal number of positive and negative charges.✓
OR
 Equal number of protons and electrons. ✓
OR
 The rod has 5 positive and 5 negative charges. ✓ (1)
- 2.2.3 Positive✓ (1)
- 2.2.4 Due to friction between the **ROD**✓ and the cloth, **ELECTRONS**✓ move from the rod to the cloth. (2)
[8]

QUESTION 3

- 3.1.1 Electrolysis✓ (1)
- 3.1.2 Copper chloride → copper✓ + chlorine✓ (NOT chloride)
 (Accept: Copper chloride → Cu✓ + Cl₂ ✓) (2)
- 3.1.3 Current does not flow anymore.
 No electrical energy available✓ to keep the reaction going.
OR
 Electrolytic reactions need a source of energy / electrical energy must be converted to chemical energy.
 If circuit is broken, no energy can be transferred. ✓ (1)
- 3.2.1 0,6 A ✓ (0,3 A x 2) (1)
- 3.2.2 Fuse✓ (1)
- 3.2.3 When the current increased (to 0,6 A), the fuse overheated and melted. ✓
 The circuit was broken.
 The fuse protected the bulb,✓ which can only handle 0,4 A, from fusing. (2)
[8]

QUESTION 4

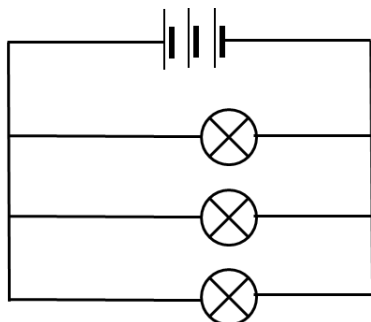
- 4.1.1 Number of cells✓ (1)
- 4.1.2 The strength of the electromagnet✓
 (Accept: Number of paper clips picked up) (1)
- 4.1.3 -The same electromagnet must be used **OR** the same iron nail with the same number of wire windings around it. ✓
 -The type and size of paper clips must be the same. ✓
 (Accept: Identical cells must be used, although it is not crucial in this case.) (2)
- 4.2 More cells increase the strength of the electromagnet. ✓
OR
 If the number of cells increases, the electromagnet gets stronger. ✓
 (Only 1 mark for the **relationship**; variables were given in the question.) (1)
- 4.3 Copper is non-magnetic / not ferromagnetic. ✓ (1)
[6]

QUESTION 5**5.1.1 Series✓**

The positive pole / terminal of one cell is connected to the negative pole / terminal of the next cell. ✓

OR

There is only one pathway for current to flow through the three cells. ✓ (2)

5.1.2

Correct symbol for a cell ✓
 Correct symbol for a bulb ✓
 3 Cells connected in series ✓
 3 Bulbs connected in parallel ✓

(4)

5.2.1 B₁ and B₂ ✓ (BOTH for one mark)

(1)

5.2.2 No bulbs will glow ✓

(1)

5.2.3 If Bulb B₂ is removed:

There are LESS bulbs in parallel. ✓

Total resistance increases. ✓

Total current decreases. ✓

Brightness of B₁ decreases. ✓

(3)

5.2.4 Lights can be switched on and off independently from one another. ✓

If a light bulb fuses, the others will still glow. ✓

If more bulbs are connected in parallel, the brightness of the bulbs remain the same. ✓

(ANY ONE) (1)

5.3.1 Reading on A₂ = 2 A ✓

(1)

5.3.2 Reading on A₃ = 2 - 1,4 ✓

= 0,6 A ✓ (answer WITH unit)

(2)

5.4 Because B₁ is glows brighter:

Total current is higher. ✓

Therefore, copper has a lower resistance than nichrome ✓

OR

Because B₂ is glows dimmer:

Total current is smaller. ✓

Therefore, nichrome has a higher resistance than copper ✓

(2)

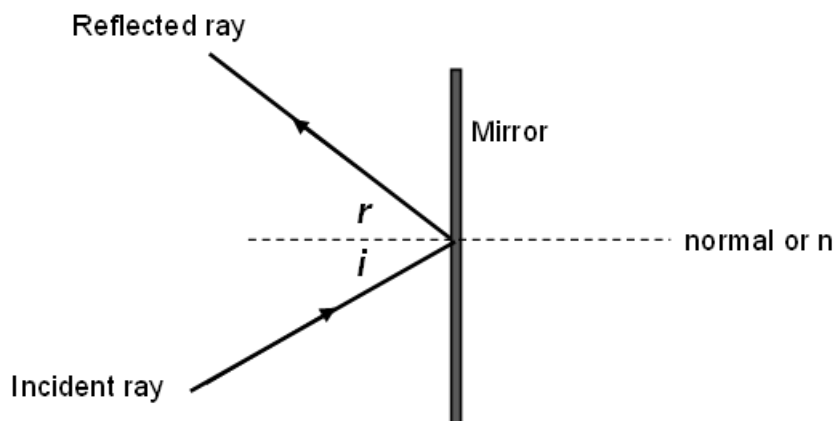
[17]

QUESTION 6

- 6.1.1 Spectrum✓ of white light (Rainbow is **NOT** acceptable) (1)
- 6.1.2 Y✓ (1)
- 6.1.3 Red✓ (1)
- 6.2.1 C✓ (1)
- 6.2.2 A✓ (1)
- 6.2.3 B✓ (1)
- 6.2.4 C✓ (1)
- [7]**

QUESTION 7

7.1.1



Marking criteria	Marks
Reflected ray correctly drawn and the direction is indicated	✓
Angle of incidence (i), indicated between the n and the incident ray	✓
Angle of reflection (r), indicated between the n and the reflected ray	✓

(3)

- 7.1.2 Angle of incidence (i) = Angle of reflection (r) ✓
(Accept: The angles / They are equal, or they have the same size) (1)
- 7.2.1 Light is refracted / bends / changes direction when moving from one medium to another. ✓
OR
Where two different (optical) mediums / water and air meet, light bends / changes direction. ✓ (1)

7.2.2 AWAY✓ from the normal.

Angle of refraction (r) is greater than the angle of incidence (i); $r > i$ ✓

OR

Angle of incidence (i) is smaller than the angle of refraction (r); $i < r$ ✓

OR

The light moves from an optically denser medium to an optically less dense medium. ✓ (2)

7.2.3 At C✓ (1)
[8]

QUESTION 8

8.1 The Sun produces its own light. ✓ (1)

8.2 Jupiter✓ (1)

8.3 Pluto✓ (1)

8.4 Uranus✓ (NOT Saturn) (1)

8.5 Between Mars and Jupiter✓ (1)

8.6 -Earth's distance from the sun provides the ideal **temperature** range / Earth is not too hot or too cold. ✓

-Earth has just the right temperatures so that **water** can be in each of the three phases: solid, liquid and gas. ✓

-Earth gets the right amount of **sunlight** to provide energy for food chains / photosynthesis.✓

-Earth has the right amount of **oxygen** needed for respiration / support life.✓
(ANY THREE) (3)

[8]

QUESTION 9

9.1.1 Ice, ✓ rock, ✓ dust, ✓ frozen gases✓ (ANY TWO) (2)

9.1.2 As the comets come closer to the Sun:

The Sun heats / melts✓ the outer layers of the solid ice / dust / frozen gases to form liquids.

Liquids evaporate to form gases✓ causing the white tail. (2)

(Learners do not have to explain why the tail always point away from the Sun.)

9.2.1 Milky Way✓ Galaxy (1)

9.2.2 Gravity / Gravitational force✓ (1)

9.3.1 Southern Cross✓ (1)

9.3.2 Alpha Centauri✓ (1)
[8]

TOTAL SECTION B: 70

GRAND TOTAL: 90