



**education**

Department of  
Education  
FREE STATE PROVINCE

**GRADE 8**

**NATURAL SCIENCES**

**MEMORANDUM**

**JUNE 2023**

**TIME: 1 HOUR**

**MARKS: 50**

**This memorandum consists of 5 pages.**

**SECTION A****QUESTION 1**

- 1.1.1 D ✓ (1)  
1.1.2 B ✓ (1)  
1.1.3 C ✓ (1)  
1.1.4 D ✓ (1)  
1.1.5 A ✓ (1)  
**[5]**

- 1.2.1 C ✓ (1)  
1.2.2 D ✓ (1)  
1.2.3 E ✓ (1)  
1.2.4 A ✓ (1)  
1.2.5 B ✓ (1)  
**[5]**

**TOTAL SECTION A: 10**

**SECTION B****QUESTION 2**

- 2.1.1 Periods ✓ (1)  
2.1.2 Magnesium ✓ (NO mark is awarded for the symbol, Mg) (1)  
2.1.3 13 ✓ (1)  
2.1.4 Group 18 ✓ (He, Ne and Ar appear in group 18 on the Periodic Table provided.) (1)  
2.1.5 Cl or Cl ✓ (1)  
2.2.1 Compound ✓ (1)  
2.2.2 Element ✓ (1)  
2.2.3 Compound ✓ (1)  
2.3 A compound is a substance that consists of atoms ✓ from two or more different elements ✓ chemically bonded together. (2)  
**[10]**

**QUESTION 3**

- 3.1 A✓  
Each molecule consists of 2 atoms from the same element.✓ (2)
- 3.2 B = Solid✓  
C = Liquid✓  
The forces between the solid particles (B) are STRONGER than the forces between the liquid particles (C). ✓ (3)
- 3.3 Two✓ types (1)
- 3.4 A✓  
The open spaces between the particles of a gas are the largest.✓  
**OR**  
The forces of attraction between the particles of a gas are the weakest and the particles can move freely. ✓ (2)
- 3.5 The open spaces between the particles of a solid (B) are very small✓ and therefore the particles are limited to move (diffuse)✓ freely.  
**OR**  
The strong forces of attraction that exist between the particles of a solid (B) keep the particles in fixed positions,✓ preventing them to move (diffuse)✓ freely. (2)
- [10]**

**QUESTION 4**

- 4.1.1 Density is defined as the mass✓ per unit volume✓ of a substance. (2)
- 4.1.2 Pomegranate (juice) ✓ (1)
- 4.1.3 Decrease✓  
When exposed to heat, the volume of the substance will increase, while the mass remains the same.✓ (2)
- 4.2.1 

$\begin{aligned}\text{Density of water} &= \frac{\text{mass}}{\text{volume}} \\ &= \frac{64,2}{64,2} \checkmark \\ &= 1 \text{ g/cm}^3 \checkmark\end{aligned}$
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 (2)

4.2.2 Density of ice cube =  $\frac{\text{mass}}{\text{volume}}$

$$= \frac{64,2}{70} \checkmark$$

$$= 0,92 \text{ g/cm}^3 \checkmark$$

(2)

4.2.3 A✓

The density of the ice cube ( $0,92 \text{ g/cm}^3$ ) is lower/less than the density of water ( $1 \text{ g/cm}^3$ ) and will float on the water.✓

(2)

**[11]****QUESTION 5**

5.1 The particles in a solid are packed in an orderly way.✓

**OR**

The particles in a solid are closely packed in a regular arrangement.✓

**OR**

The particles are arranged in a fixed grid.✓

(1)

5.2 There are no/very small open spaces✓ between the solid particles, therefore, the particles' movement / compressibility is limited. ✓

(2)

5.3 The particles inside an ice cube, which is in the solid state, don't move; they are only able to vibrate✓ in fixed positions.

(1)

5.4 Solid to liquid ✓

(1)

**[5]****QUESTION 6**

6.1 A change in colour can be noticed.✓

(Lime water turns milky.)

**OR**

The formation of a white precipitate (solid substance).✓

} (Any 1 for 1 mark)

**Do not accept:** Formation of a gas (bubbles).

A change in temperature.

(1)

6.2 Carbon dioxide✓

**OR** Clear lime water✓**OR** Calcium hydroxide solution✓ (chemical name for lime water)

(Any 1 for 1 mark) (1)

- 6.3

The substance that is formed / produced during a chemical reaction.✓

(1)
- 6.4

Burning paper✓

(1)
- [4]**

**TOTAL SECTION B:**

**40**

**GRAND TOTAL:**

**50**