



Province of the
EASTERN CAPE
EDUCATION

SENIOR PHASE

GRADE 9

NOVEMBER 2012

**NATURAL SCIENCES
MEMORANDUM**

MARKS: 100

This memorandum consists of 7 pages.

INFORMATION

1. When marking bear in mind the age of the learners.
2. Note carefully the distribution of marks.
3. Any other possible answers must be considered, especially with open-ended questions.

QUESTION 1: MULTIPLE-CHOICE QUESTIONS

- 1.1 D ✓ Potential difference (1)
- 1.2 A ✓ Mouth (1)
- 1.3 B ✓ $\left| \begin{array}{l} | \\ | \end{array} \right|$ (1)
- 1.4 B ✓ Bleach (1)
- 1.5 A ✓ eukaryotic (1)
- 1.6 B ✓ Tendons (1)
- 1.7 A ✓ Excretion – this is the physical manipulation of solid foods which is done first by the tongue and the teeth followed by the swirling and mixing motions of the digestive track. (1)
- 1.8 B ✓ Digestion (1)
- 1.9 D ✓ Talking (1)
- 1.10 C ✓ Gold (1)
- [10]**

QUESTION 2

- 2.1 H ✓ Pasteurisation (1)
- 2.2 E ✓ Diabetes (1)
- 2.3 A ✓ Balanced diet (1)
- 2.4 B ✓ volt (1)
- 2.5 D ✓ Heart (1)
- [5]**

QUESTION 3

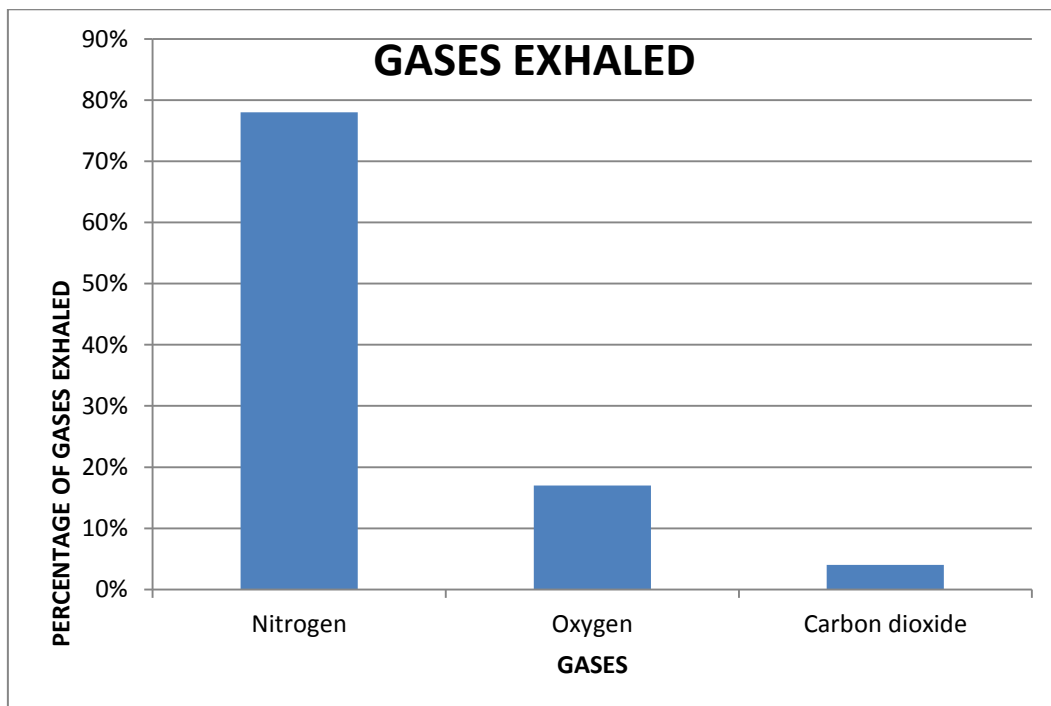
- 3.1 Excretion ✓ (1)
- 3.2 Organ ✓ (1)
- 3.3 Electrolysis ✓ (1)
- 3.4 Growth ✓ (1)
- 3.5 Respiration ✓ (1)
- [5]**

QUESTION 4: LIFE AND LIVING

- 4.1 The auricle/right \checkmark side of the heart collects deoxygenated blood from the body. (1)
- 4.2 Veins \checkmark are the blood vessels that carry deoxygenated blood back to the heart. (1)
- 4.3 Oxygenated \checkmark blood returns to the left side of the heart from where it is pumped back to the body. (1)
- 4.4 The part marked **F**, controls the flow of blood within the heart. \checkmark (1)
- [4]**

QUESTION 5: LIFE AND LIVING

- 5.1 Carbon dioxide is inhaled least. \checkmark (1)
- 5.2 Nitrogen is exhaled most. \checkmark (1)
- 5.3 KEYS: N – Nitrogen, O – Oxygen, C – Carbon dioxide

**Marking codes:**Heading (\checkmark)Labels: drawing of x-axis and y-axis using the proper scale ($\checkmark\checkmark$)X-axis (\checkmark) GasesY-axis \checkmark Percentage of the gases exhaledPlotting the points correctly and drawing of the bars (\checkmark)

(6)

- 5.4 Carbohydrate + oxygen \rightarrow carbon dioxide + water + energy $\checkmark\checkmark$ (2)

[10]

QUESTION 6: MATTER AND MATERIALS

- 6.1 The gas that is released is hydrogen. ✓ (1)
- 6.2 When a burning match is placed in a test tube containing hydrogen, you hear a small pop. ✓ A small explosion ✓ causes this pop. (2)
- 6.3 Hydrogen is used in industry to make hydrochloric acid and ammonia ✓/ used to harden liquid oils to make margarine ✓ / can be used as a powerful fuel. (Any 2 x 1) (2)
- 6.4 Zinc + Hydrochloric acid ✓ → Zinc chloride + Hydrogen ✓ (2)
- 6.5 $Zn \checkmark + 2HCl \checkmark \rightarrow ZnCl_2 \checkmark + H_2 \checkmark \checkmark$ (5)
- [12]**

QUESTION 7: ENERGY AND CHANGE

- 7.1 Unsafe practices with regard to electricity:
- Children pulling chords. ✓
 - Unplugging the electrical kettle while the current is not switched off. ✓
 - Leaking taps close to electrical wires. ✓
 - Insulators of electrical wires that are damaged. ✓
 - Overloading of wall socket with many appliances. ✓
 - Overcrowding the small table with many appliances. ✓ (Any 4 x 1) (4)
- 7.2 Ways in which the unsafe practices can be made safe:
- A child pulling a chord: a chord must be placed at a reasonable height. ✓
 - Unplugging the electrical kettle while the current is not switched off: ensure that the current is switched off before unplugging the appliances. ✓
 - Leaking tap close to electrical wires: close the tap properly. ✓
 - Insulators of the electrical wires that are damaged: invite a qualified electrician to come and repair the damaged electrical wires. ✓
 - Overloading of wall socket with many appliances/Overcrowding the small table with many appliances: use one appliance at a time. (Any 4 x 1) (4)
- [8]**

QUESTION 8: ENERGY AND CHANGE

$$8.1 \quad R_t = 2 \, \Omega + 3 \, \Omega \checkmark \\ = 5 \, \Omega \checkmark \quad (2)$$

$$8.2 \quad I = \frac{V}{R} \checkmark \quad = \frac{10}{5} \checkmark \quad = 2 \, A \checkmark \quad (3)$$

$$8.3 \quad V = I \times R \checkmark \\ = 2 \times 3 \checkmark \\ = 6 \, V \checkmark \quad (3)$$

$$8.4 \quad \text{emf} = \frac{\text{Voltmeter reading}}{\text{Number of cells}} \checkmark \\ = 10 \, V / 2 \checkmark \\ = 5 \, V \checkmark \quad (3)$$

[11]

QUESTION 9: MATTER AND MATERIALS

9.1 Potatoes will grow well if the pH is between 5 and 5,5. \checkmark (1)

9.2 Beetroot could grow. \checkmark (1)

9.3 Carrots \checkmark / cauliflower \checkmark / onions \checkmark (3)

9.4 If the soil has a pH of 4, a farmer can add lime (alkali) $\checkmark\checkmark$ to the soil to reduce the acidity. During neutralisation lime (calcium hydroxide) dissociates in water and an acid ionises in water. $\checkmark\checkmark$ (4)

9.5 Acid + Alkali $\checkmark \rightarrow$ salt + water \checkmark (2)

9.6 $\text{Ca(OH)}_2 \checkmark$ (1)

[13]

QUESTION 10: EARTH AND BEYOND

10.1 Renewable resources are substances that can be re-manufactured once they have been used whereas non-renewable resources are substances that cannot be re-manufactured once they have been used. $\checkmark\checkmark$ (2)

10.2 coal \checkmark / oil \checkmark / natural gas (Any 2 x 1) (2)

10.3 solar power \checkmark / hydro-electric power \checkmark / wind power / nuclear energy (Any 2 x 1) (2)

[6]

QUESTION 11: MATTER AND MATERIALS

- 11.1 Copper sulphate ✓ (1)
- 11.2 Hydrochloric acid ✓ (1)
- 11.3 Iron ✓ (1)
- 11.4 Sulphuric acid ✓ (1)
- 11.5 Sulphuric acid ✓ (1)
- [5]**

QUESTION 12: ENERGY AND CHANGE

- 12.1 These two balls (A and B) attract each other and exert a force of attraction on each other. ✓✓ (2)
- 12.2 The law of attraction and repulsion states that like charges repel each other and unlike charges attract each other. ✓ (1)
- [3]**

QUESTION 13: LIFE AND LIVING

- 13.1 L – Muscle cells ✓ M – Nerve cells ✓ N – Red blood cells ✓ (3)
- 13.2 **L – Muscle cells** bring about movement ✓
M – Nerve cells carry messages around the body ✓
N – Red blood cells carry oxygen around the body. ✓ (3)
- [6]**

QUESTION 14: EARTH BEYOND

- 14.1 At B ✓ because the water is falling and moving quickly so has a lot of energy and it swirls around, throwing pebbles and sand into the rock. ✓ (2)
- 14.2 The rock will be eroded, undercut and will collapse. ✓ (1)
- [3]**

TOTAL: 100