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GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

**GAUTENG DEPARTMENT OF EDUCATION
PROVINCIAL EXAMINATION
JUNE 2017
GRADE 9**

NATURAL SCIENCES

MEMORANDUM

11 pages

MEMORANDUM**NATURAL SCIENCES GRADE 9****GAUTENG DEPARTMENT OF EDUCATION
PROVINCIAL EXAMINATION****NATURAL SCIENCES**

PRINCIPLES RELATED TO MARKING NATURAL SCIENCES

1. **If more information than marks allocated is given**
Stop marking when maximum mark is reached and put a wavy line and 'max' in the right-hand margin (~ max).
2. **If, for example, three reasons are required and five are given**
Mark the first three irrespective of whether all or some are correct/incorrect.
3. **Incorrect numbering**
If the answer fits into the correct sequence of questions but the incorrect numbering is given, it is acceptable.
4. **If language used changes the intended meaning**
Do not accept.
5. **Spelling errors**
If recognizable, accept, provided it does not mean something else in Natural Sciences or if it is out of context.
6. **No changes** may be made to the approved marking memorandum.



MEMORANDUM**NATURAL SCIENCES GRADE 9****SECTION A****QUESTION 1****MULTIPLE-CHOICE QUESTIONS**

1.1. C ✓

1.2. A ✓

1.3. C ✓

1.4. C ✓

1.5. D ✓

1.6. D ✓

1.7. C ✓

1.8. C ✓

(8)

MEMORANDUM**NATURAL SCIENCES GRADE 9****QUESTION 2****TERMINOLOGY**

- | | | |
|-----|---------------|------------|
| 2.1 | Hypothesis ✓ | (1) |
| 2.2 | Metal oxide ✓ | (1) |
| 2.3 | Cell ✓ | (1) |
| 2.4 | Galvanise ✓ | (1) |
| 2.5 | Locomotion ✓ | (1) |
| 2.6 | Alveoli ✓ | (1) |
| | | (6) |

QUESTION 3**MATCHING ITEMS**

- | | | |
|-----|-----|-----|
| 3.1 | E ✓ | (1) |
| 3.2 | A ✓ | (1) |
| 3.3 | H ✓ | (1) |
| 3.4 | C ✓ | (1) |
| 3.5 | B ✓ | (1) |
| 3.6 | D ✓ | (1) |

(6)**TOTAL SECTION A: [20]**

MEMORANDUM**NATURAL SCIENCES GRADE 9****SECTION B****LIFE AND LIVING THINGS****QUESTION 4****CELLS AS BASIC UNITS OF LIFE**

4.1 Structure A: Plant Cell ✓
Structure B: Animal Cell ✓ (2)

4.2 Structure A
Part 1: Chloroplast ✓
Part 7: Vacuole ✓ (2)

4.3 Cell wall supports and protects the cell. ✓ (1)

4.4 Structure B
Part 3: Mitochondrion ✓
Part 6: Nucleus ✓ (2)

4.5 Chloroplast gives plants their green colour. ✓ (1)

4.6

PLANT CELLS	ANIMAL CELLS
• Have a rigid, regular shape • Have large vacuole • Have a cell wall • Have chloroplasts • Covered and protected by a cell wall • Single membrane	• Have an irregular shape • Have small temporary vacuoles or no vacuoles • Do not have a cell wall • Do not have chloroplasts • Covered and protected by a cell membrane • Double membrane

NB: Mark any two.

No credit must be given when comparison is not done. (2)

4.7 Nucleus ✓
DNA is important because it contains the information that determines an organism's inherited characteristics. ✓ ✓ (3)
(13)

MEMORANDUM**NATURAL SCIENCES GRADE 9****QUESTION 5****SYSTEMS IN THE HUMAN BODY**

- 5.1 Part 2: Oesophagus ✓
Part 5: Small intestine ✓ (2)
- 5.2 The glucose is used in respiration to produce energy for the cell. ✓✓ (2)
- 5.3 Mouth: Ingestion ✓
Stomach: Digestion ✓
Large intestine: water absorption✓ and egestion ✓ (4)
(8)

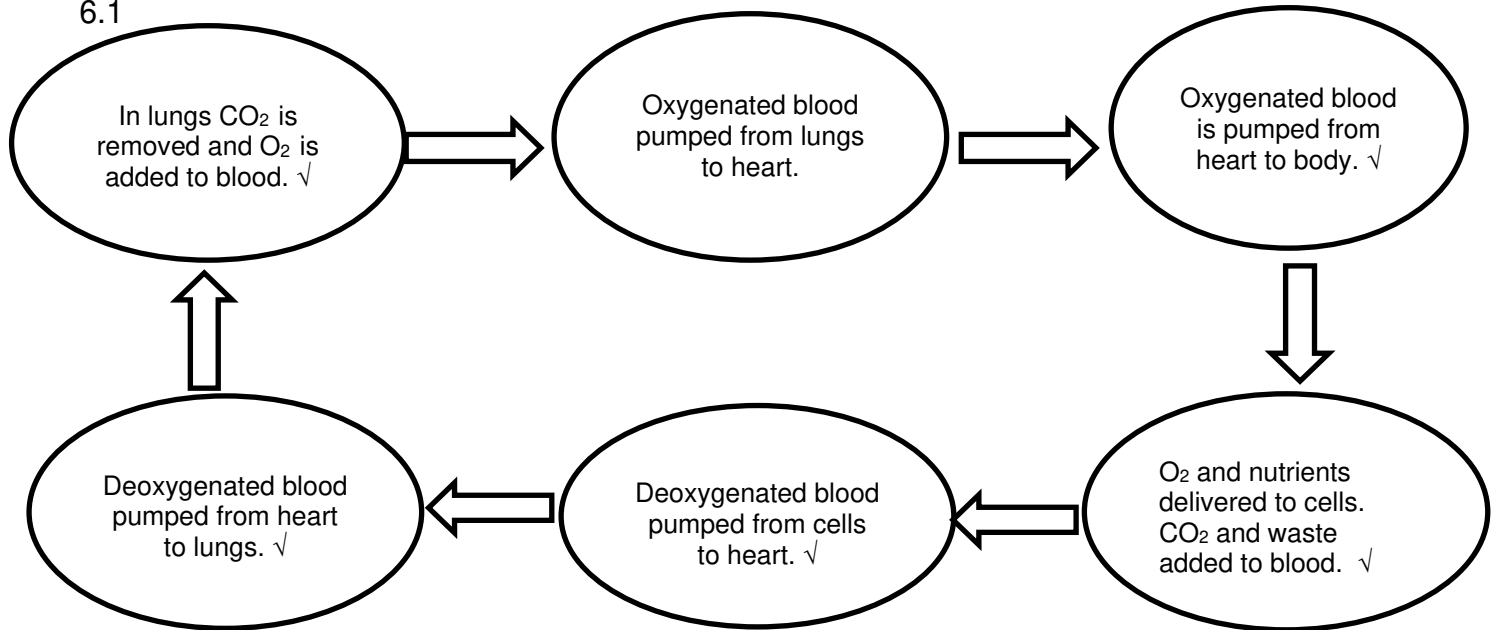
MEMORANDUM

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QUESTION 6

BREATHING, GASEOUS EXCHANGE, CIRCULATION AND RESPIRATION

6.1



(5)

6.2 Breathing is the inflow (inhalation) and outflow (exhalation) of air in the lungs. ✓
Gaseous exchange is the transfer of oxygen and carbon dioxide between an organism and its environment. ✓

(2)

6.3 No comparison – no mark.

	ARTERIES	VEINS
Direction of the blood flow	Away from the heart	Towards the heart ✓
Type of blood transferred	Oxygenated blood	Deoxygenated blood ✓
Thickness of walls	Thin muscle walls	Thick muscle walls ✓

(3)

(10)

MEMORANDUM**NATURAL SCIENCES GRADE 9****QUESTION 7****REPRODUCTIVE SYSTEM**

- 7.1 Part 2 ✓ (1)
- 7.2 Part 1 ✓ (1)
- 7.3 • Condoms are used to avoid pregnancy. ✓
• Prevents HIV / Aids and other STDs ✓ (2)
- 7.4 It depends on which part of the menstrual cycle she is in. ✓
If she has just ovulated then she could fall pregnant. ✓
Egg cells can survive for 24 hours and this increases the time when she could fall pregnant. (2)
- 7.5 Substances such as alcohol and drugs can pass through the placenta to the fetus. ✓
The substances can affect the physical and mental health of the fetus. ✓
This can lead to mental retardation, social problems and physical abnormalities. (3)
(9)

TOTAL SECTION B: [40]

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SECTION C

MATTER AND MATERIALS

QUESTION 8

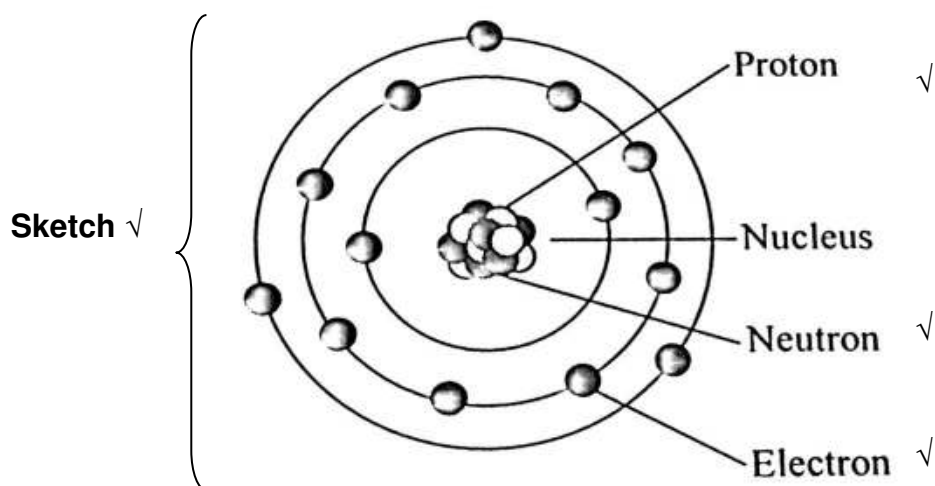
PERIODIC TABLE, ELEMENTS AND COMPOUNDS

- 8.1 Aluminium ✓ (1)
- 8.2 27 ✓ (1)
- 8.3 13 ✓ (1)
- 8.4 Period 3 ✓ (1)
- 8.5 This substance is used for the production of aluminium foil for the covering and protection of food. ✓ (1)
- 8.6 **Marking rubric for the Atomic structure** ✓

1 mark for correct drawing ✓

1 mark for heading ✓

3 marks for correctly naming all three particles ✓ ✓ ✓

Atomic Structure of Aluminium ✓

(5)

- 8.7 8.7.1 CH_3 ✓ (1)
- 8.7.2 NaCl ✓ (1)
- (12)

MEMORANDUM**NATURAL SCIENCES GRADE 9****QUESTION 9****ACIDS, BASES AND pH VALUES**

- 9.1 9.1.1 Blue purple ✓
Sodium hydroxide is a base / alkali (2)
- 9.1.2 Neutralisation ✓✓ (2)
- 9.1.3 $\text{HCl} + \text{NaOH} \rightarrow \text{NaCl} + \text{H}_2\text{O}$ ✓✓ (2)
- 9.1.4 The universal indicator turned green ✓ (1)
- 9.1.5 Sodium Chloride ✓ (1)
- 9.1.6 Let the water evaporate ✓ (1)
- 9.2 9.2.1 5 – 5,5 ✓ (1)
- 9.2.2 Mint or beetroot ✓ (1)
- 9.2.3 Add lime to the soil to neutralize it ✓ (1)
- (12)**

QUESTION 10**REACTION OF NON-METALS WITH OXYGEN**

- 10.1 Carbon + Oxygen ✓ → Carbon dioxide ✓ (2)
- 10.2 $\text{C} + \text{O}_2 \rightarrow \text{CO}_2$ ✓ (2)
- 10.3  ✓
- KEY. Carbon → 
- Oxygen →  (3)
- (7)**

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QUESTION 11

REACTION OF METALS WITH OXYGEN

11.1 Oxygen ✓ (1)

11.2 Combustion ✓ (1)

11.3 $2\text{Mg} \checkmark + \text{O}_2 \checkmark \rightarrow 2\text{MgO} \checkmark$ (3)

11.4  KEY. Mg → 
O →  (4)
(9)

TOTAL SECTION C: [40]

TOTAL: 100