



GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

**GAUTENG DEPARTMENT OF EDUCATION
PROVINCIAL EXAMINATION
JUNE 2019
GRADE 9**

NATURAL SCIENCES

MARKING GUIDELINES

9 pages

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SECTION A

ANSWER ALL QUESTIONS IN THE ANSWER BOOK.

QUESTION 1**MULTIPLE-CHOICE QUESTIONS**

1.1 C✓

1.2 D✓

1.3 B✓

1.4 A✓

1.5 A✓

1.6 B✓

1.7 B✓

1.8 C✓

[8]

QUESTION 2**TERMINOLOGY**

- 2.1 Nucleus ✓
- 2.2 Uterus / womb ✓
- 2.3 Oxygenated blood / Oxygen rich blood ✓
- 2.4 Periodic table of Elements ✓
- 2.5 Menstruation ✓
- 2.6 Non-Metal Oxide ✓

[6]**QUESTION 3****MATCHING ITEMS**

- 3.1 F ✓ / Magnifying glass
- 3.2 H ✓ / Balancing
- 3.3 A ✓ / Arteries
- 3.4 B ✓ / Photosynthesis
- 3.5 G ✓ / Additives
- 3.6 E ✓ / Rust

[6]**TOTAL SECTION A: 20 MARKS**

SECTION B

LIFE AND LIVING

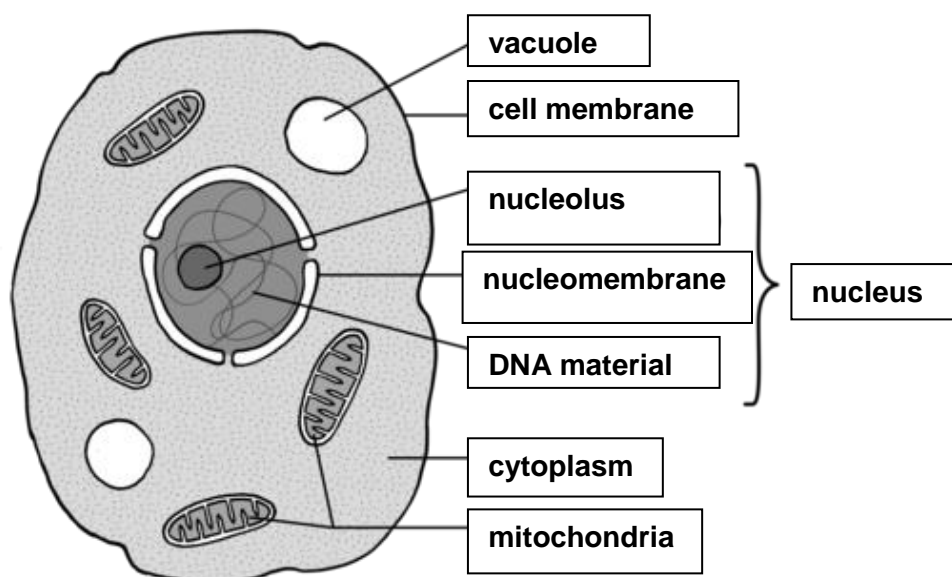
QUESTION 4

CELLS AS BASIC UNIT OF LIFE

4.1 Animal Cell ✓ (1)

4.2 Irregular shape ✓ (1)

4.3 The structure of an animal cell



Marking Grid for drawing of an animal cell

Correct heading	1 mark
Any two correct labels	2 marks
Correct drawing	1 mark

(4)

4.4

- All living organisms (plant – and animal cells) need the mitochondrion to release energy ✓ during cellular respiration ✓ to perform cellular activities. (2)

OR

- Responsible for cellular respiration ✓ to release energy ✓ from food.

4.5

	PLANT CELL	ANIMAL CELL
1	Has a cell wall	Does not have a cell wall ✓
2	Has chloroplasts	Does not have chloroplasts ✓
3	Has one or two large vacuoles	Has very small vacuoles or none ✓
4	Has a regular and rigid structure	Has an irregular structure and is not rigid ✓

[MARK ANY ONE]

(1)

[9]**QUESTION 5****THE HUMAN DIGESTIVE SYSTEM**

- 5.1 5.1.1 B – Oesophagus ✓ (1)
D – Large intestines / Colon ✓ (1)
F – Rectum ✓ (1)
- 5.1.2 A – Ingestion ✓ (1)
C – Digestion ✓ (1)
- 5.2 5.2.1 1. Mechanical Digestion: The physical breakdown of food ✓ through chewing, churning and mashing. ✓ (2)
2. Chemical digestion: The mixing of food with digestive enzymes ✓ and hydrochloric acid ✓. Breaking the food into smaller pieces. (2)
- 5.3 5.3.1 A healthy diet contains all the essential nutrients ✓ in the right (correct) proportions ✓ that are needed for normal growth and good health. (2)
- 5.3.2 Yes ✓
The different nutrients ✓ (proteins, carbohydrates, fats and oils, vitamins, minerals, fibre and water) are available for a healthy and balanced diet. (2)
- 5.3.2. Anorexia Nervosa ✓ (1)
- [14]**

QUESTION 6**HUMAN REPRODUCTIVE SYSTEM**

- 6.1.1 Structure A – Female reproductive system ✓
Structure B – Male reproductive system ✓ (2)
- 6.1.2 Womb / Uterus ✓ (1)
- 6.1.3 Fallopian tube / Oviduct ✓ (1)
- 6.1.4 Carries sperm from the testes to the urethra / penis ✓ (1)
- 6.1.5 When the part labeled 1 is tied, the sperm cells will never be part of ejaculation✓ and there will be no pregnancy ✓ (2)

OR

No transfer of sperm cells✓ to the vagina ✓

- 6.2 6.2.1 Ovulation ✓ (1)
- 6.2.2 28 days ✓ (1)
- 6.2.3 The uterine wall thickens in preparation for the implantation and growth of a fertilized egg ✓ (1)

[10]

QUESTION 7**RESPIRATORY SYSTEM**

7.1 Respiratory system / breathing system ✓ (1)

7.2 Circulatory system ✓ (1)

7.3 Oxygen is inhaled, carbon dioxide is exhaled and gaseous exchange happens between alveoli and the capillaries through diffusion. ✓ Oxygenated blood is transported (circulated) from the lungs to the left side of the heart ✓ and pumped through the arteries to the cells of the body. ✓

OR

Carbon dioxide diffuses from the cells into the blood capillaries for excretion ✓ and is transported (circulated) in the blood ✓ to the right side of the heart by veins back to the lungs to be exhaled. ✓ (3)

[MARK ANY THREE CONCEPTS USED]

7.4. The arteries transport the blood away from the heart ✓, the veins transport the blood towards the heart. ✓

OR

The arteries transport oxygenated blood ✓, the veins transport deoxygenated blood. ✓

OR

The arteries have thick muscle walls ✓; the veins have thin muscle walls. ✓

OR

The arteries have high blood pressure ✓; the veins have low blood pressure. ✓

OR

Pulmonary arteries carry (transport) deoxygenated ✓ blood, the Pulmonary veins carry (transport) oxygenated blood. ✓ (2)
[MARK ANY ONE] [7]

SECTION C

MATTER AND MATERIALS

QUESTION 8

THE PERIODIC TABLE OF ELEMENTS

- 8.1 a 12 ✓
 b Sodium ✓
 c 6 ✓
 d 8 ✓
 e 26 ✓
 f Iron ✓

[6]

QUESTION 9

NON-METALS WITH OXYGEN

- 9.1 Carbon dioxide ✓ + Water ✓ → Carbonic acid ✓ (3)

- 9.2 CO_2 ✓ + H_2O ✓ → H_2CO_3 ✓ (3)

- 9.3 ✓ (3)

- 9.4 Arnot Power Station ✓

It burns the most coal - 30% and it will therefore release more gases into the atmosphere ✓ which will contribute the most to acid rain ✓ (3)

- 9.5 Acid rain acidifies soil, lakes and rivers killing plants and animals. ✓

Acid rain can damage zinc roofs. ✓

Acid rain can damage buildings made from limestone. ✓

[MARK ANY TWO]

(2)
[14]

QUESTION 10**ACIDS, BASES AND pH-VALUES**

- 10.1 A universal indicator is a chemical ✓ that has the ability to show (indicate) a full range of pH values on the pH scale by colour changes. ✓ (2)
- 10.2 D ✓ and E ✓ (2)
- 10.3 A ✓ and C ✓ (2)
- 10.4 B ✓ (1)
- 10.5 Distilled water is neutral and will have a green colour when tested with an universal indicator ✓ (1)
- 10.6 D – pH = 4 OF pH=5 ✓
E – pH = 1 OF pH=2 ✓ (2)
- [10]**

QUESTION 11**REACTION OF ACIDS AND BASES**

- 11.1 The anti-acid neutralizes the acid ✓✓ (2)
- 11.2 The Ph would be neutral (almost neutral) (pH 7) ✓ (1)
- 11.3 $\text{Mg}(\text{OH})_2 \checkmark + 2\text{HCl} \checkmark \rightarrow \text{MgCl}_2 \checkmark + 2\text{H}_2\text{O} \checkmark$ (4)
- 11.4 He would repeat the test a few times. ✓ (1)
- 11.5 Use the same type of antacid. ✓
Use the same amount of water. ✓
Use the same amount of acid. ✓ (2)
- [MARK ANY TWO]** **[10]**

TOTAL: 100 MARKS