SMARTWIZ

GRADE10 LIFE SCIENCE EXAM

MARKS: 100

MARKS	

TIME: 2 hours

SCHOOL _____

CLASS (e.g. 4A) _____

SURNAME _____

NAME _____

Instructions for Learners:

- Read all the instructions carefully before you begin the exam.
- Write your name and learner number clearly on the answer sheet/booklet.
- Answer all the questions unless otherwise instructed.
- Show all your work/calculations where applicable.
- Write neatly and legibly.
- Use only blue or black ink. *Do not use correction fluid or tape.*
- No electronic devices (calculators, phones, etc.) are allowed unless explicitly permitted.
- Raise your hand if you have any questions.
- Do not talk to other learners during the exam.
- Any form of cheating will lead to disqualification.

This test consists of 6 pages including the cover page.

SECTION A: MULTIPLE CHOICE & MATCHING ITEMS (20 MARKS)

QUESTION 1: MULTIPLE CHOICE (10 × 1 = 10)

Choose the correct answer and write only the letter (A–D) next to the question number.

1.1 Which organelle is known as the "powerhouse" of the cell?
A. Ribosome
B. Chloroplast
C. Nucleus
D. Mitochondrion
Answer: _____

1.2 Which plant tissue transports water?
A. Xylem
B. Phloem
C. Parenchyma
D. Collenchyma
Answer: _____

1.3 What process converts light energy into chemical energy in plants?
A. Respiration
B. Transpiration
C. Photosynthesis
D. Fermentation
Answer: _____

1.4 What is the main function of red blood cells?
A. Fight infection
B. Carry oxygen
C. Clot blood
D. Produce hormones
Answer: _____

1.5 Which part of the brain controls voluntary movement?
A. Cerebellum
B. Brainstem
C. Cerebrum
D. Medulla
Answer: _____

1.6 Where are female gametes produced in humans?
A. Testes
B. Uterus
C. Ovaries
D. Fallopian tubes
Answer: _____

1.7 What is the main function of the phloem?
A. Transport water
B. Transport minerals
C. Transport food substances
D. Transport hormones
Answer: _____

1.8 Which body system protects against disease and injury?
A. Nervous system
B. Circulatory system
C. Respiratory system
D. Integumentary system
Answer: _____

1.9 Which structure produces eggs in plants?
A. Anther
B. Stigma
C. Ovary
D. Filament
Answer: _____

1.10 Which gas is taken in by plants during photosynthesis?
A. Oxygen
B. Nitrogen
C. Carbon dioxide
D. Hydrogen
Answer: _____

✅ [10 marks]

QUESTION 2: MATCHING ITEMS (5 × 1 = 5)
Match the terms in Column A with the correct descriptions in Column B.

Column A	Column B
2.1 Photosynthesis	A. Transports oxygen
2.2 Xylem	B. Produces eggs
2.3 Ovary	C. Removes waste from blood
2.4 Red blood cells	D. Occurs in green leaves
2.5 Kidney	E. Transports water in plants

2.1 _____
2.2 _____
2.3 _____
2.4 _____
2.5 _____

✅ [5 marks]

SECTION B: STRUCTURED QUESTIONS (40 MARKS)

QUESTION 3: CELLS AND ORGANELLES (10 marks)

3.1 Define a cell.

3.2 List three differences between plant and animal cells.

3.3.1 What is the function of the nucleus?

3.3.2 What is the function of the cell membrane?

✅ [10 marks]

QUESTION 4: TISSUES (10 marks)

4.1 Define tissue.

4.2 Name two types of animal tissues and their functions.

4.3 Name two types of plant tissues and their functions.

4.4 What is the function of phloem tissue?

✅ [10 marks]

QUESTION 5: RESPIRATORY SYSTEM (10 marks)

5.1 Name two organs of the respiratory system.

5.2 Explain how gas exchange takes place in the lungs.

5.3 Name two effects of smoking on lung health.

5.4 Suggest two ways to maintain healthy lungs.

✅ [10 marks]

QUESTION 6: PLANT STRUCTURES AND FUNCTIONS (10 marks)

6.1 Name two parts of a leaf important in photosynthesis.

6.2 What is the function of stomata?

6.3 Describe how water moves through a plant from roots to leaves.

6.4 List three products of photosynthesis.

✅ [10 marks]

SECTION C: ESSAY (40 MARKS)

Answer ONE of the following questions.

QUESTION 7: DIGESTIVE SYSTEM

Discuss the human digestive system. Your answer must include:

- A definition and role of the digestive system
- The main organs and their functions
- The importance of enzymes in digestion
- Healthy habits that support digestion

✅ [40 marks]

OR

QUESTION 8: PHOTOSYNTHESIS VS RESPIRATION

Explain photosynthesis and respiration. Your answer must include:

- Definitions of both processes and where they occur
- The chemical equations for each process
- The inputs and outputs of each
- The importance of these processes for life

[40 marks]

END OF EXAM

TOTAL : 100

MEMO

SECTION A: MULTIPLE CHOICE & MATCHING ITEMS (20 MARKS)

QUESTION 1: MULTIPLE CHOICE (10 marks)

1.1 D. Mitochondrion
1.2 A. Xylem
1.3 C. Photosynthesis
1.4 B. Carry oxygen
1.5 C. Cerebrum
1.6 C. Ovaries
1.7 C. Transport food substances
1.8 D. Integumentary system
1.9 C. Ovary
1.10 C. Carbon dioxide

QUESTION 2: MATCHING ITEMS (5 marks)

2.1 D. Occurs in green leaves (Photosynthesis)
2.2 E. Transports water in plants (Xylem)
2.3 B. Produces eggs (Ovary)
2.4 A. Transports oxygen (Red blood cells)
2.5 C. Removes waste from blood (Kidney)

SECTION B: STRUCTURED QUESTIONS (40 MARKS)

QUESTION 3: CELLS AND ORGANELLES (10 marks)

3.1 A cell is the basic structural and functional unit of life. (2)

3.2 Differences between plant and animal cells: (3)

- Plant cells have a cell wall; animal cells do not.
- Plant cells have chloroplasts; animal cells do not.
- Plant cells have a large central vacuole; animal cells have small vacuoles or none.

3.3.1 The nucleus controls cell activities and contains genetic material (DNA). (2)

3.3.2 The cell membrane controls movement of substances in and out of the cell, provides protection and support, and maintains homeostasis. (3)

QUESTION 4: TISSUES (10 marks)

4.1 Tissue is a group of similar cells working together to perform a specific function. (2)

4.2 Two types of animal tissues and functions: (4)

- Muscle tissue: responsible for movement.
- Nervous tissue: transmits electrical impulses.

4.3 Two types of plant tissues and functions: (4)

- Xylem: transports water and minerals.
- Phloem: transports food (sugars).

4.4 Phloem transports nutrients (sugars) made during photosynthesis to other parts of the plant. (2)

QUESTION 5: RESPIRATORY SYSTEM (10 marks)

5.1 Two organs of the respiratory system: (2)

- Lungs
- Trachea

5.2 Gas exchange in lungs: (4)
Oxygen diffuses from alveoli into the blood; carbon dioxide diffuses from blood into alveoli to be exhaled.

5.3 Two effects of smoking on lung health: (4)

- Damage to lung tissues
- Reduced oxygen intake

5.4 Two ways to maintain healthy lungs: (4)

- Avoid smoking
- Exercise regularly

QUESTION 6: PLANT STRUCTURES AND FUNCTIONS (10 marks)

6.1 Two parts of a leaf important in photosynthesis: (2)

- Leaf blade
- Chloroplasts

6.2 Function of stomata: (2)
Stomata regulate gas exchange and control water loss through transpiration.

6.3 Movement of water through a plant: (3)
Water is absorbed by roots, moves upward through the xylem via capillary action, root pressure, and transpiration pull.

6.4 Three products of photosynthesis: (3)

- Oxygen
- Glucose
- Water (used and produced)

SECTION C: ESSAY (40 MARKS)

QUESTION 7: DIGESTIVE SYSTEM (Mark allocation guide)

- Define digestive system and its role (4)
- Mouth: chewing and enzyme action (6)
- Stomach: digestion of proteins (6)
- Small intestine: digestion and nutrient absorption (6)
- Liver and pancreas: production of bile and enzymes (6)
- Importance of enzymes breaking down macronutrients (6)
- Healthy habits: fiber, water, hygiene, balanced diet (6)
- Conclusion summarizing importance (2)

OR

QUESTION 8: PHOTOSYNTHESIS VS RESPIRATION (Mark allocation guide)

- Define photosynthesis and respiration (4)
- Photosynthesis process and location (6)
- Respiration process and location (6)
- Chemical equations:
  - Photosynthesis: $6CO_2 + 6H_2O + \text{light} \rightarrow C_6H_{12}O_6 + 6O_2$
  - Respiration: $C_6H_{12}O_6 + 6O_2 \rightarrow 6CO_2 + 6H_2O + \text{energy (ATP)}$ (6)
- Inputs and outputs for both (6)
- Energy transformations and interdependence (6)
- Conclusion on importance for life (2)

END OF MEMORANDUM

TOTAL : 100