

SMARTWIZ

GRADE 9 NATURAL SCIENCE EXAM

MARKS: 80

MARKS	

TIME: 2 hours

SCHOOL _____

CLASS (e.g. 4A) _____

SURNAME _____

NAME _____

MYST PATHWORKS

Instructions for Students:

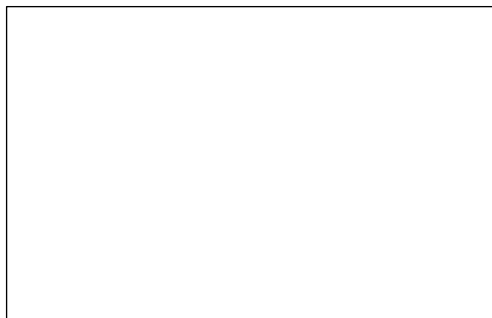
- > Read all instructions carefully before beginning the exam.
- > Write your name and student ID clearly on the answer sheet/booklet.
- > Answer all questions unless otherwise stated.
- > Show all your work/calculations where applicable.
- > Write clearly and legibly.
- > Use blue or black ink only. * Do not use correction fluid/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 students during the exam.
- > Any form of cheating will result in disqualification.

This test consists of 8 pages, excluding the cover page.

SECTION A: CELLS AND BIODIVERSITY (25 MARKS)

QUESTION 1: CELL STRUCTURE (10 MARKS)

1.1 Draw a neat labelled diagram of a plant cell. Label at least **four parts**. (4)



1.2 Match the cell parts to their functions: (3)

- a) Cell wall –
- b) Nucleus –
- c) Chloroplast –

- i. Controls cell activities
- ii. Site of photosynthesis
- iii. Provides support and structure

1.3 List two differences between animal and plant cells. (2)

1.4 What is the function of the cell membrane? (1)

QUESTION 2: CLASSIFICATION OF ORGANISMS (15 MARKS)

2.1 What is meant by classification in biology? (2)

2.2 Name the **five kingdoms** used to classify living organisms. (5)

- a) _____
- b) _____
- c) _____
- d) _____
- e) _____

2.3 Which kingdom does each of the following belong to? (3)

- a) Mushroom – _____
- b) Amoeba – _____
- c) Oak tree – _____

2.4 Why is classification important in biology? (2)

2.5 What is binomial nomenclature? Give one example. (3)

Example: _____

SECTION B: ENERGY AND CHANGE (30 MARKS)

QUESTION 3: ELECTRICAL ENERGY (15 MARKS)

3.1 Define electrical current. (2)

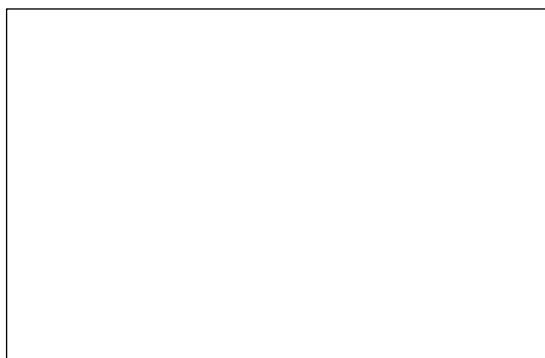
3.2 What is the unit of measurement for:

- a) Current – _____
- b) Resistance – _____
- c) Voltage – _____ (3)

3.3 List **two components** found in an electric circuit. (2)

3.4 Describe the difference between a series and a parallel circuit. (2)

3.5 Draw a simple **parallel circuit** with a battery, a switch, and two bulbs. (4)



3.6 Give one reason why households use parallel circuits rather than series. (2)

QUESTION 4: HEAT TRANSFER (15 MARKS)

4.1 Name and define the **three types of heat transfer**. (6)

- a) _____ – _____
 b) _____ – _____
 c) _____ – _____

4.2 Which form of heat transfer happens:

- a) From the Sun to Earth – _____
 b) When you touch a hot pot – _____ (2)

4.3 Why are metals good conductors of heat? (2)

4.4 Describe how a thermos flask reduces heat loss. Mention two methods. (3)

4.5 What is insulation and how does it help in saving energy? (2)

SECTION C: PLANET EARTH AND BEYOND (25 MARKS)

QUESTION 5: WEATHERING AND EROSION (15 MARKS)

5.1 Define:

- a) Weathering – _____ (2)
 b) Erosion – _____ (2)

5.2 Name and describe **two types of weathering**. (4)

5.3 How do plants contribute to weathering? (2)

5.4 State two negative effects of soil erosion. (2)

5.5 What can humans do to reduce erosion? (3)

QUESTION 6: THE ATMOSPHERE (10 MARKS)

6.1 Name the **four layers of Earth's atmosphere**, starting from the surface. (4)

- a) _____
b) _____
c) _____
d) _____



6.2 Which gas is most abundant in the atmosphere? (1)

6.3 What is the role of the ozone layer? (2)

6.4 Give one human activity that harms the atmosphere and its consequence. (3)

Activity: _____

Consequence: _____

Total : 80

MEMO

SECTION A: CELLS AND BIODIVERSITY (25 MARKS)

QUESTION 1: CELL STRUCTURE (10 MARKS)

1.1

- Diagram of plant cell with labels including any four of:
Cell wall, Cell membrane, Nucleus, Chloroplast, Vacuole, Cytoplasm (4 marks)

1.2

a) Cell wall – Provides support and structure ✓

b) Nucleus – Controls cell activities ✓

c) Chloroplast – Site of photosynthesis ✓

1.3

Two differences:

- Plant cells have cell walls; animal cells do not. ✓✓
- Plant cells have chloroplasts; animal cells do not. ✓✓
(Other valid differences accepted)

1.4

- Controls what enters and leaves the cell ✓

QUESTION 2: CLASSIFICATION OF ORGANISMS (15 MARKS)

2.1

- Classification is grouping organisms based on similarities and differences ✓✓

2.2

Five kingdoms:

a) Monera

b) Protista

c) Fungi

d) Plantae

e) Animalia

2.3

a) Mushroom – Fungi

b) Amoeba – Protista

c) Oak tree – Plantae

2.4

- It helps scientists identify, name, and study organisms systematically ✓✓

2.5

- Binomial nomenclature is the system of naming organisms using two names (genus and species) ✓✓✓

Example: Homo sapiens

SECTION B: ENERGY AND CHANGE (30 MARKS)

QUESTION 3: ELECTRICAL ENERGY (15 MARKS)

3.1

- Electrical current is the flow of electric charge or electrons through a conductor ✓✓

3.2

a) Current – Ampere (A)

b) Resistance – Ohm (Ω)

c) Voltage – Volt (V)

3.3

Two components: battery, switch, bulb, wire, resistor (any two)

3.4

- Series circuit has components connected in a single path; parallel circuit has components connected in multiple paths ✓✓

3.5

- Diagram of parallel circuit with battery, switch, and two bulbs correctly connected (4 marks)

3.6

- In parallel circuits, if one bulb goes out, others stay on ✓

QUESTION 4: HEAT TRANSFER (15 MARKS)

4.1

- a) Conduction – Transfer of heat through a solid by direct contact of particles ✓
- b) Convection – Transfer of heat through movement of fluids (liquids or gases) ✓
- c) Radiation – Transfer of heat by electromagnetic waves without needing a medium ✓

4.2

- a) Radiation
- b) Conduction

4.3

- Metals have free electrons that transfer heat quickly ✓✓

4.4

- Thermos flask reduces heat loss by using vacuum insulation to stop conduction and convection ✓✓
- Reflective surface to reduce radiation ✓

4.5

- Insulation is material that reduces heat flow ✓
- Helps save energy by keeping heat inside or outside as needed ✓

SECTION C: PLANET EARTH AND BEYOND (25 MARKS)

QUESTION 5: WEATHERING AND EROSION (15 MARKS)

5.1

- a) Weathering is the breakdown of rocks into smaller pieces by physical, chemical, or biological processes ✓✓
- b) Erosion is the removal and transport of soil or rock by agents like water, wind, or ice ✓✓

5.2

Two types:

- Mechanical/physical weathering: rocks break into smaller pieces without changing chemically ✓
- Chemical weathering: rocks change chemically due to reactions with water or air ✓

5.3

- Plant roots grow into cracks and break rocks apart ✓

5.4

Two negative effects:

- Loss of fertile soil
- Damage to ecosystems
- Increased flooding (any two)

5.5

- Plant trees to stabilize soil
- Use terracing on slopes
- Use cover crops or mulch (any valid answer)

QUESTION 6: THE ATMOSPHERE (10 MARKS)

6.1

Four layers:

- Troposphere
- Stratosphere
- Mesosphere
- Thermosphere

6.2

- Nitrogen (approximately 78%)

6.3

- The ozone layer absorbs harmful ultraviolet rays from the sun protecting living organisms ✓✓

6.4

Activity: Burning fossil fuels, deforestation, industrial pollution ✓

Consequence: Air pollution, global warming, ozone depletion ✓✓

TOTAL : 80