

# SMARTWIZ

## GRADE 8 NATURAL SCIENCE EXAM

**MARKS: 50**

MARKS	

**TIME: 2 hours**

**SCHOOL** \_\_\_\_\_

**CLASS (e.g. 4A)** \_\_\_\_\_

**SURNAME** \_\_\_\_\_

**NAME** \_\_\_\_\_

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### 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 4 pages, excluding the cover page.**

## SECTION A: THE PARTICLE THEORY OF MATTER

(20 Marks)

### QUESTION 1: PROPERTIES OF PARTICLES

1.1 What are particles?

\_\_\_\_\_ (1)

1.2 Name three states of matter.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ (3)

1.3 Describe how particles behave in a solid.

\_\_\_\_\_  
\_\_\_\_\_ (2)

1.4 What happens to particles when a solid is heated?

\_\_\_\_\_  
\_\_\_\_\_ (2)

1.5 Define evaporation.

\_\_\_\_\_ (2)

## SECTION B: THE PERIODIC TABLE

(15 Marks)

### QUESTION 2: ELEMENTS AND SYMBOLS

2.1 What is an element?

\_\_\_\_\_ (1)

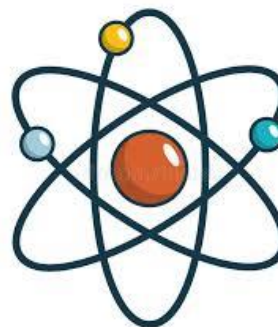
2.2 Write the chemical symbols for:

- a) Oxygen
- b) Carbon
- c) Sodium
- d) Hydrogen

e) Nitrogen  
(5)

2.3 What information does the atomic number of an element give?  
\_\_\_\_\_ (2)

2.4 How many electrons does an atom of oxygen have?  
\_\_\_\_\_ (1)



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## SECTION C: ECOSYSTEMS AND ENVIRONMENT

(15 Marks)

### QUESTION 3: INTERACTIONS IN ECOSYSTEMS

3.1 Define an ecosystem.  
\_\_\_\_\_ (2)

3.2 Name two producers in an ecosystem.

\_\_\_\_\_  
MYST PATHWORKS  
\_\_\_\_\_ (2)

3.3 What is a food chain?  
\_\_\_\_\_ (2)

3.4 Give an example of a simple food chain with three organisms.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ (3)

3.5 How do humans impact ecosystems negatively? Name two ways.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ (4)

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**TOTAL: 50 MARKS**

## **MEMO**

### **SECTION A: THE PARTICLE THEORY OF MATTER**

**(20 Marks)**

1.1 Particles are the tiny building blocks that make up matter. (1)

1.2 Three states of matter:

- Solid
- Liquid
- Gas (3)

1.3 In solids, particles are closely packed together, vibrate in place, and have a fixed shape and volume. (2)

1.4 When a solid is heated, particles gain energy, vibrate faster, and eventually move apart to become a liquid (melting). (2)

1.5 Evaporation is the process where a liquid changes into a gas at the surface of the liquid. (2)

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### **SECTION B: THE PERIODIC TABLE**

**(15 Marks)**

2.1 An element is a pure substance made of only one type of atom. (1)

2.2 Chemical symbols:

- a) Oxygen → O
- b) Carbon → C
- c) Sodium → Na
- d) Hydrogen → H
- e) Nitrogen → N (5)

2.3 The atomic number gives the number of protons (and electrons) in an atom of the element. (2)

2.4 Oxygen has 8 electrons. (1)

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### **SECTION C: ECOSYSTEMS AND ENVIRONMENT**

**(15 Marks)**

3.1 An ecosystem is a community of living organisms interacting with each other and their non-living environment. (2)

3.2 Two producers in an ecosystem:

- Grass
- Trees
- Algae

(Any two, 2 marks)

3.3 A food chain shows the feeding relationships where energy passes from one organism to another. (2)

3.4 Example of a simple food chain:

Grass → Grasshopper → Frog (3)

3.5 Two negative human impacts:

- Pollution
- Deforestation
- Overfishing
- Littering

(Any two, 4 marks)

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**TOTAL: 50 MARKS**