Hillcrest High School

Grade 8

NATURAL SCIENCE

JUNE 2024

MARKS: 100

TIME: 2 Hours

EXAMINER: Miss E. Blom

Mrs L.Prior

MODERATOR: Mrs M. Smith

Instructions:

1. This question paper consists of 11 pages and 2 Sections.
   SECTION A: Life Science (50)
   SECTION B: Physical Science (50)

2. Answer ALL of the questions from Section A and Section B in the answer book provided.

3. Non-programmable calculators may be used.

4. Number the answers correctly according to the numbering system used in the question paper.

5. Calculations must be rounded off to two decimal places where appropriate.

6. Rule off after each question.

SECTION A:

QUESTION 1: MULTIPLE CHOICE

For each of the following questions choose the correct LETTER of your choice. Write down only the **QUESTION NUMBER** and the **LETTER**. For example; 1.6 B.

1.1. In a food chain diagram, the arrow represents the …

A. amount of energy in the system.
B. the order of the organisms.
C. the flow of energy.
D. the transfer of food.

1.2. Which of the following causes ringworm in humans?

A. Virus
B. Protist
C. Bacteria
D. Fungi

1.3. The positive result observed when testing for the presence of carbon dioxide in exhaled air.

A. Iodine turns blue/black
B. Clear lime water turns milky
C. Clear lime water remains clear
D. Ethanol turns green

1.4. The term that describes an animal that eats another animal in a food chain/web.

A. Producer
B. Decomposer
C. Primary consumer
D. Secondary consumer

1.5. The products of the process of photosynthesis are:

A. glucose + carbon dioxide
B. glucose + water
C. carbon dioxide + water + sunlight
D. glucose + oxygen

(5x 1 = 5)

QUESTION 2: MATCHING COLUMNS

Match the definitions in **Column I** with the correct terms in **Column II**. Write down only the number and the letter of your answer. Eg 2.7 C

	Column I	**Column II**
2.1	An example of an abiotic factor.	A. Water B. Antibiotics C. Carnivore D. Ecosystem E. Indigenous F. Louis Pasteur G. Omnivore H. Alexander Fleming I. Alien J. ARV's K. Ecology
2.2	Animals that feed on plant and animal matter.	
2.3	The biologist who developed the process of pasteurisation.	
2.4	The study of interactions between living and non-living organisms and their environment.	
2.5	Organisms that are not found naturally in a particular habitat.	
2.6.	Medication used to treat bacterial infections.	

(6)

QUESTION 3: Terminology

Write down only one word/term to replace the following statements. Write **ONLY** the correct term next to the question number.

3.1. A mosquito-borne infectious disease caused by a protist.

3.2. Green pigment found in the leaves of plants.

3.3. A group of individuals of the same species living in the same ecosystem at the same time.

3.4. A characteristic that helps a living organism survive in its environment.

3.5. Consisting of one cell. **(5)**

QUESTION 4:

Read the following post by The New York Times and answer the following questions.

The New York Times: 20 March, 2023

Breaking News: Earth is likely to cross a critical global warming threshold within the next decade unless drastic changes are made, a major UN report said.

4.1. Write down the definition of global warming. (2)

4.2. Discuss TWO changes that humans can make to prevent this from happening. (2)

4.3. Identity ONE other natural factor that can be seen to disrupt the balance in ecosystems. (1)

(5)

QUESTION 5:

Study the diagrams below and answer the questions that follow.

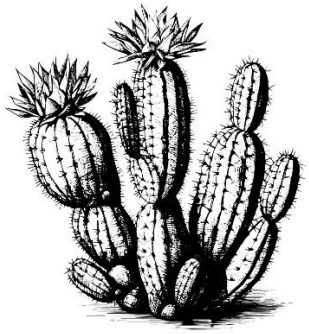


DIAGRAM A

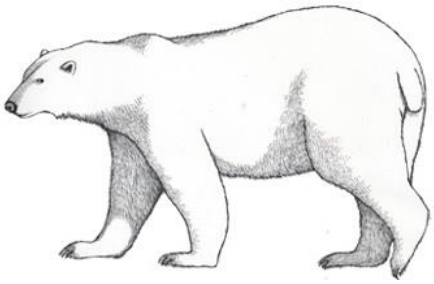


DIAGRAM B

5.1. Provide the name of the plant group that Diagram A belongs to. (1)

5.2. Write down ONE adaptation the plant in Diagram A displays for it to survive in its habitat. (1)

5.3. Describe the type of habitat that this plant lives in. (2)

5.4. Name the animal in Diagram B. (1)

5.5. Write down TWO structural adaptations of this animal. (2)

(7)

QUESTION 6:

The table below shows the numbers of different animals found in the Kruger National Park.

TYPE OF ANIMAL	NUMBER OF ANIMAL
Impala	50
Eagle	25
Lion	5
Mongoose	30

6.1. Draw a **BAR GRAPH** showing the information from the table above. (5)

6.2. Write down the dependent variable. (1)

6.3. What conclusions can you make from the bar graph drawn? (2)

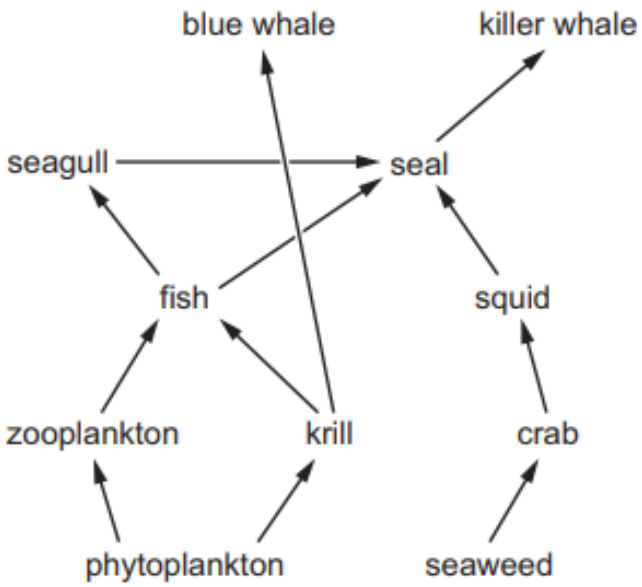
6.4. Lions feed on the impala, explain how they are adapted to catch their prey. (2)

6.5. Name ONE scavenger you might find living in the Kruger National Park.(1)

(11)

QUESTION 7:

Study the diagram below and answer the following questions.



7.1. Provide the name for the type of diagram above. (1)

7.2. a) Identify TWO herbivores. (2)
b) Name a producer from the diagram. (1)

7.3. Draw ONE food chain consisting of three organisms. (3)

7.4. Discuss what would happen to the ecosystem if all the crabs were poached. (2)

7.5. What type of ecosystem is this an example of? (1)

7.6. State the importance of micro-organisms in the ecosystem. (1)
(11)

Section B: 50 MARKS

Section B

QUESTION 8: MULTIPLE CHOICE

For each of the following questions choose the correct LETTER of your choice. Write down only the **QUESTION NUMBER** and the **LETTER**. For example; 8.6 A.

8.1. Which of the following is a non-metal?

A. Lithium
B. Carbon
C. Boron
D. Magnesium

8.2. Which statement is INCORRECT:

When a solid changes phase to a liquid…

A. The particles of the substance move faster
B. The spaces between the particles in the substance decrease
C. The forces of attraction between the particles decrease
D. The particles gain energy

8.3. An atom consists of the following components…

A. Atoms, elements, nucleons
B. Protons, neutrons, ions
C. Protons, neutrons, electrons
D. Protons, nucleus, ions

8.4. Which of the following is a diatomic molecule?

A. O_3
B. CH_4
C. CO_2
D. Br_2

8.5. Which of the following is a mixture?

A. Carbon dioxide
B. Air
C. Sodium chloride
D. Water

(5x 1 = 5)

QUESTION 9: MATCHING COLUMNS

Match the definitions in **Column I** with the correct terms in **Column II**. Write down only the number and the letter of your answer. Eg 9.6 J

	Column I	Column II
9.1	The spreading of one substance through another one.	A. Condense B. Volume C. Mass D. Diffusion E. Pure substance F. Compound G. Solidify H. Molecule
9.2	Two or more atoms that are chemically bonded together.	
9.3	When a gas turns into a liquid.	
9.4	The amount of space an object takes up.	
9.5	A substance that is made up of one type of atom or molecule	

(5)

QUESTION 10: Terminology

Write down only one word/term to replace the following statements. Write only the correct term next to the question number.

10.1. Matter that can flow and does not have a specific shape.

10.2. Negatively charged subatomic particles.

10.3. A substance that cannot be broken down into simpler substances by chemical methods.

10.4. Anything that has mass and occupies space.

10.5. Energy that an object has because it is in motion.

(5)

QUESTION 11

11.1. Write down the chemical symbol for the following elements:

a) Argon (1)

b) Potassium (1)

11.2. Write down the name of the following elements:

a) P (1)

b) Na (1)

11.3. Write down the:

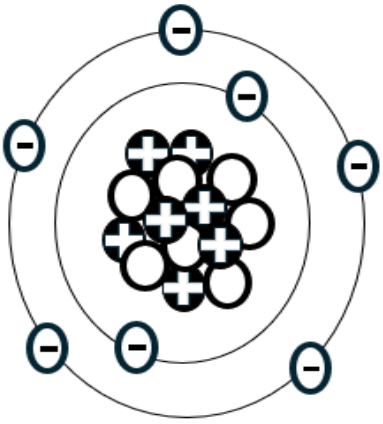
a) **Symbol** of the element with the atomic number of 14. (1)

b) **Name** of the element in period 2, group 13. (1)

(6)

QUESTION 12

Consider the following diagram of an atom of an element on the Periodic Table.



12.1. Name the positively charged particles found in the nucleus of the atom. (1)

12.2. What charge does a neutron carry? (1)

12.3. Write down:

a) the name of this element (1)

b) the atomic number of this element (1)

c) the atomic mass of this element (1)

d) the number of neutrons in the nucleus of an atom of this element (1)

(6)

QUESTION 13

Nitric acid (HNO_3) is an acid used to make fertilisers. Study its chemical formula below and answer the questions that follow:

HNO_3

13.1. Redraw the table below into your answer booklet and complete the missing information. (6)

Element Name	Number of atoms

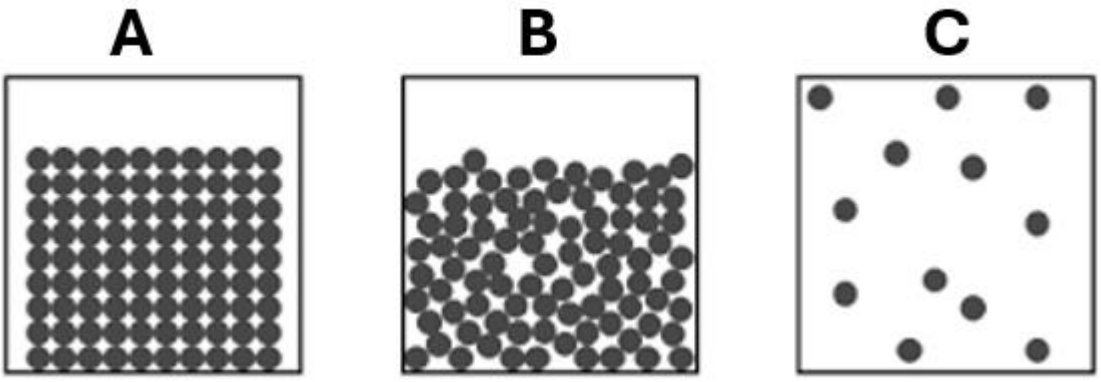
13.2. Calculate the total number of atoms in nitric acid.

Show ALL your working. (2)

(8)

QUESTION 14

The particle model of matter can be used to represent different substances, A, B and C.



14.1. Write down the **LETTER** of the diagram that represents a gas. (1)

14.2. Name and describe the change of phase from **A** to **B**. (2)

14.3. List any THREE properties of the particles shown in **A.** (3)

(6)

QUESTION 15

Using the formula $D = \frac{m}{v}$ calculate the following. Round off all answers to 2 decimal places.

15.1. Calculate the density of plastic cube with a mass of 1.7g and a volume of 2.1cm^3. (3)

15.2. The density of water is 1.00g/cm^3. If we placed the plastic cube into water, will it float? (1)

15.3. Provide a reason for your answer in 15.2. (1)

15.4. The table below shows the densities of some substances. Study the table and answer the questions that follow.

Substances	**Density (g/cm^3)**
Marble	2.00
Diamond	4.00
Water	1.00
Syrup	1.40
Dishwashing liquid	0.56

a) If 15 cm^3 of syrup was placed into to a measuring cylinder, calculate the mass of the syrup. (3)

b) Identify the independent variable from the table. (1)

(9)

Section B: 50 MARKS

TOTAL 100 MARKS