HERZLIA MIDDLE SCHOOL

GRADE 8
NATURAL SCIENCE MID-YEAR EXAMINATION
3 JUNE 2014
TIME: 90 Minutes
MARKS: 155
INSTRUCTIONS

1. There are 26 pages including a cover page, one Answer Sheet and a Periodic Table. Make sure you have all of them.

2. Answer all questions on the paper in blue or black ink.

3. Read each question carefully before answering it.

4. Pay attention to the mark allocation.

5. Plan your time carefully.

6. All the diagrams should be done in pencil and labelled in blue or black ink. Diagram rules must be followed.

7. Write neatly and legibly.

8. Use the Multiple Choice answer sheets for Question 1.

9. Write in full sentences. No one word answer will be accepted.

10. No colour or highlighter or shading may be used when drawing bar graphs.
MULTIPLE CHOICE ANSWER SHEET

NAME: ___________________________ CLASS: ______

Multiple Choice (use pencil only)

Choose the answer, which you consider most appropriate and cross the corresponding letter on this Answer Sheet.

E.g. If your answer to 1.3 is D, indicate your choice like this:

1.3 | A | B | C | D

If more than one cross appears in any line, the answer will be marked wrong.

<table>
<thead>
<tr>
<th>1.1</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.2</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
</tr>
<tr>
<td>1.3</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
</tr>
<tr>
<td>1.4</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
</tr>
<tr>
<td>1.5</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
</tr>
<tr>
<td>1.6</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
</tr>
<tr>
<td>1.7</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
</tr>
<tr>
<td>1.8</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
</tr>
<tr>
<td>1.9</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
</tr>
<tr>
<td>1.10</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
</tr>
</tbody>
</table>
SECTION A (LIFE & LIVING AND MATTER & MATERIALS)

QUESTION 1  MULTIPLE CHOICE

Four options are provided as possible answers to the following questions. Each question has only ONE correct answer. Mark this in the appropriate place on the Answer Sheet provided.

1.1 Look at the food chain shown below:

\[ X \rightarrow \text{grasshopper} \rightarrow \text{lizard} \rightarrow \text{puff adder} \rightarrow \text{Martial eagle} \]

X could be:

A a frog
B waterweed
C seaweed
D grass

1.2 Respiration produces:

I energy II oxygen III carbon dioxide IV starch

A I
B I and III
C I and II and III
D III and IV

1.3 The study of the interactions between living things and their environment is called …

A ecology
B a habitat
C an ecosystem
D a population
1.4 Organisms that break down dead organic matter are known as … (2)

A producers
B consumers
C herbivores
D decomposers

1.5 Which terms apply to all the meerkats (*Suricata suricatta*) in the Kalagadi Transfrontier Park? (2)

A community
B species
C population
D Both B and C

1.6 Breaking down a compound by passing current through it is called… (2)

A electrolysis
B combustion
C explosion
D mixing
1.7 What particles make up the nucleus of an atom? (2)

A electrons
B protons
C neutrons
D protons and neutrons

1.8 How are compounds formed? (2)

A When different atoms react with each other.
B When you have atoms of the same kind reacting.
C When 2 atoms of different kind separate.
D When only 2 elements of the same kind react together.

1.9 An element is a pure substance because it has… (2)

A atoms of the same kind
B atoms of different kinds arranged in the same way
C atoms that are chemically joined
D atoms that are chemically bonded

1.10 What is the charge of a neutron? (2)

A positive
B negative
C No charge
D Both negative and positive
### QUESTION 2  ONE WORD ANSWER

Give ONE word/term for each of the following descriptions. Write only the word/term next to the question number (2.1–2.10). Do not give examples.

<table>
<thead>
<tr>
<th>Question</th>
<th>Description</th>
<th>Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1</td>
<td>All the areas on Earth where life exists</td>
<td>Habitat</td>
</tr>
<tr>
<td>2.2</td>
<td>Place where organisms live</td>
<td>Biome</td>
</tr>
<tr>
<td>2.3</td>
<td>The non-living factors in an ecosystem</td>
<td>Abiotic</td>
</tr>
<tr>
<td>2.4</td>
<td>Carnivore that hunts other animals</td>
<td>Predator</td>
</tr>
<tr>
<td>2.5</td>
<td>Animals that eat plants</td>
<td>Herbivore</td>
</tr>
<tr>
<td>2.6</td>
<td>Some elements, for example oxygen which do not exist as single atoms</td>
<td>Molecule</td>
</tr>
<tr>
<td>2.7</td>
<td>Equal number of protons and electrons</td>
<td>Charge</td>
</tr>
<tr>
<td>2.8</td>
<td>When we put different elements or compounds together and there is no chemical reaction.</td>
<td>Reaction</td>
</tr>
<tr>
<td>2.9</td>
<td>Elements found on the left side of the Periodic Table.</td>
<td>Alkali metal</td>
</tr>
<tr>
<td>2.10</td>
<td>Smallest particles in an atom</td>
<td>Atom</td>
</tr>
</tbody>
</table>

(10X1)=10
QUESTION 3: MATCHING COLUMNS

Choose a term/phrase from COLUMN B that matches a term in COLUMN A. Write only the letter (A – J) next to the question number (3.1 – 3.10).

<table>
<thead>
<tr>
<th>COLUMN A</th>
<th>COLUMN B</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1 consumer</td>
<td>A  Makes its own food</td>
</tr>
<tr>
<td>3.2 biodiversity</td>
<td>B  Species that is not indigenous to an area</td>
</tr>
<tr>
<td>3.3 Neon</td>
<td>C  Feeds on insects only</td>
</tr>
<tr>
<td>3.4 producer</td>
<td>D  Neutron number of 10</td>
</tr>
<tr>
<td>3.5 Oxygen</td>
<td>E  Total variety of species in an area</td>
</tr>
<tr>
<td>3.6 alien</td>
<td>F  Neutron number 8</td>
</tr>
<tr>
<td>3.7 insectivore</td>
<td>G  Unable to make its own food</td>
</tr>
<tr>
<td>3.8 magnesium</td>
<td>H  Semi-metal</td>
</tr>
<tr>
<td>3.9 omnivore</td>
<td>I  Metal</td>
</tr>
<tr>
<td>3.10 silicon</td>
<td>J  Feeds on plant and animal matter</td>
</tr>
</tbody>
</table>

(10X1) =10
1.1 The following questions are related to the ecosystem in the above photograph.

1.1.1 Describe the process of how the plants obtain starch (food). (5)

........................................................................................................................................................................
........................................................................................................................................................................
........................................................................................................................................................................
........................................................................................................................................................................

1.1.2 How does the giraffe get its nutrition? (1)

........................................................................................................................................................................

1.1.3 The process of respiration continually takes place in both the giraffe and plants. Explain why. (2)

........................................................................................................................................................................
........................................................................................................................................................................
........................................................................................................................................................................
1.2 Zac tested if plants need light to make starch. He placed a plant in dark cupboard for 48 hours. Then he covered part of a leaf with aluminum foil.

1.2.1 Why was part of the leaf covered with foil? 

(1)

1.2.2 Which is the control? 

(1)

1.2.3 Zac placed the plant in sunlight for six hours. He removed the leaf and the aluminium foil. He then tested the leaf for starch.

1.2.3.1 Name the solution that is used to test for starch. 

(1)

1.2.3.2 Describe the appearance of the leaf after the starch test. 

(2)
QUESTION 2: ECOLOGY

2.1 Look at the bushveld food web and answer the questions:

Give an example of each of the following from the food web:

2.1.1 a producer

________________________________________________________________________

2.1.2 an omnivore

________________________________________________________________________

2.1.3 Construct one food chain with four links from the food web.

________________________________________________________________________

________________________________________________________________________

2.1.4 Explain why food chains usually begin with green plants.

________________________________________________________________________

________________________________________________________________________

2.1.5 If all of the jackals died what would happen to the number of:

2.1.5.1 mice?

________________________________________________________________________

2.1.5.2 leopards?

________________________________________________________________________
2.1.6 If the parts of the bushveld were developed for housing, describe how this could affect the bushveld community. (2)

2.2 Define the term adaptation. (3)

2.2.1 Look at the diagram of a gemsbok:

2.2.1.1 Calculate the amount of energy passed to the next level of the food pyramid. Show your workings. (2)

2.2.1.2 How is most energy lost from the gemsbok? (1)

2.2.1.3 How does the gemsbok gain energy? (2)
2.2.2 Use the diagram to help you to give five ways that desert plants are structurally suited to survive in a hot, dry habitat. (5)

2. Use the diagram to help you to give five ways that desert plants are structurally suited to survive in a hot, dry habitat. (5)
2.2.3 What type of environment is the polar bear suited to survive in? (3)
Justify your answer with three reasons.

2.3 Read the article taken from www.timeslive.co.za and answer the questions that follow.
277 rhinos killed in South Africa this year
09 April, 2014 19:12

Illegal hunting is up more than a third compared to the same time a year ago, when 203 of the giant animals were slaughtered by poachers, the ministry said in a statement.
More than half of the attacks were in Kruger National Park, where 166 animals were killed in the first three months of 2014, despite the deployment of troops to protect them.
Authorities in the vast national park, which borders Mozambique, have been battling to curb the scourge of rhino poaching that threatens to drive the endangered species into extinction.
Hunters often kill the giant animals inside the heavily-guarded reserve and then escape with their hacked-off horns to Mozambique, where they are then exported around the world, often to Asia.
After "extensive negotiations", South Africa and Mozambique on Wednesday signed a memorandum of understanding to address the escalating crisis.
"South Africa recognises the need for engaging with Mozambique on wildlife
management," the environmental affairs ministry said in a statement. "The conclusion of the agreement comes as the number of rhino poached in South Africa since the start of 2014 increased to 277."

Illegal rhino killings in South African parks continue despite the introduction of air and foot patrols, as well as increased numbers of rangers assisted by troops. So far 32 people have been arrested for poaching related incidents, but authorities could not give the number of cases that had been successful prosecuted.

In 2013, over 1,000 rhinos were poached in South Africa, fuelled by a demand for their horns in Asian countries, where they are believed to have medicinal properties.

In February, conservation groups announced that they will move 100 rhinos to neighbouring Botswana for safekeeping.

2.3.1 Define the term poaching. (2)

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

2.3.2 How many rhino were poached in the period 1 January – 31 March 2014 in the Kruger National park alone? (1)

________________________________________________________________________

2.3.3 How many rhino were poached in South Africa in 2013? (1)

________________________________________________________________________

2.3.4 Why are rhino being poached? (2)

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
2.3.5 What measures did South Africa put into place to prevent the poaching? (4)
Give four.

____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
3.1 Jayde investigated a forest ecosystem for a Science project and captured some woodlice on the forest floor. She investigated if woodlice prefer light or dark conditions. She designed a choice chamber with dark and light conditions. A choice chamber is a container divided into compartments or sections. Each section provides different conditions for animals. Choice chambers can be used to find out what conditions some animals prefer by observing the number of animals in each section.

3.1.1 Provide an aim for this investigation. (2)

3.1.2 Provide a hypothesis for this investigation. (2)

3.1.3 State the independent variable. (1)
3.1.4 State the dependent variable. (1)

_______________________________________________________________________________

3.1.5 Give three variables that must be kept the same. (3)

_______________________________________________________________________________

_______________________________________________________________________________

_______________________________________________________________________________

_______________________________________________________________________________
**SECTION C (MATTER & MATTERIAL)**

**QUESTION 1** The table below shows the different gases that are found in the air.

<table>
<thead>
<tr>
<th>Gas</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrogen</td>
<td>21%</td>
</tr>
<tr>
<td>Carbon dioxide</td>
<td>0.3%</td>
</tr>
<tr>
<td>Argon</td>
<td>0.7%</td>
</tr>
<tr>
<td>Oxygen</td>
<td>78%</td>
</tr>
</tbody>
</table>

1.1 From the table select:

1.1.1 A molecule of a compound (1)

1.1.2 An element that normally exists as a molecule (1)

1.2 Describe the structure of an atom. (4)

1.3 Tabulate two differences between compounds and mixtures. (3)
The table below shows some common compounds and their chemical formula. Complete the table.

<table>
<thead>
<tr>
<th>Name of compound</th>
<th>Elements in the compound</th>
<th>Formula of compound</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td></td>
<td></td>
<td><img src="image" alt="Model" /></td>
</tr>
<tr>
<td>Carbon dioxide</td>
<td>Carbon and oxygen</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salt</td>
<td>NaCl</td>
<td></td>
<td><img src="image" alt="Model" /></td>
</tr>
</tbody>
</table>
QUESTION 3
The following experiment was designed to demonstrate the decomposition of copper chloride.

3.1

3.1.1 What are the electrodes made from? (2)

3.1.2 Name the electrolyte. (1)

3.1.3 What was observed on the positive electrode? (1)

3.1.4 What was observed on the negative electrode? (1)

3.1.5 What element is formed at the negative electrode and positive electrode? (2)

negative

positive
3.1.6 What would be the purpose of the small bulb? 

3.2 Give the conclusion of the experiment.

QUESTION 4
Potassium permanganate (KMnO₄) is a dark purple solid. When it is heated, oxygen gas is released. The diagram below shows how the experiment was designed by Mr Joseph.

4.1 Describe briefly how the experiment for the test was done.
4.2 What can you conclude about potassium permanganate based on this demonstration? (2)

__________________________________________________________

__________________________________________________________

4.3 Do you think that the reaction would continue if you stop heating the tube? (2)
   Explain your answer.

__________________________________________________________

__________________________________________________________

QUESTION 5

The following elements of the Periodic Table have the atomic masses recorded in the box below:

Beryllium 9, Lithium 7, Carbon 12, Oxygen 16, Fluorine 19, Silicon 28, Boron 11, Nitrogen 14

5.1 Tabulate the above elements into metals, non-metals, and semi-metals. (10)

__________________________________________________________

__________________________________________________________

__________________________________________________________

__________________________________________________________

__________________________________________________________
5.2 Draw a bar graph showing the atomic mass of the elements in 5.1 starting with the element with the smallest atomic mass and continuing in order to the largest mass.
5.3 How would you separate a mixture of salt solution and iron filings into 3 pure substances? (2)