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INSTRUCTIONS TO LEARNERS

- Answer ALL the questions.
- The diagrams in this question paper may not be drawn to scale.
- Write neatly and legibly.
- This question paper consists of 3 pages

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QUESTION ONE

1.1 Various options are given as possible answers to the following questions.
Choose the correct answer and write only the letter (A to D) next to the question number (1.1.1 to 1.1.5) in the ANSWER BOOK, for example 1.1.6 D.

1.1.1 During photosynthesis the change in energy type is ...
A. chemical energy to light energy
B. light energy to radiant energy
C. light energy to chemical energy
D. light energy to heat energy

1.1.2 What is the name of the green pigment found in plants?
A. Chloroplast
B. Chloroquine
C. Chlorine
D. Chlorophyll

1.1.3 The reactants of photosynthesis are ...
A. carbon dioxide and water
B. glucose and oxygen
C. carbon dioxide and glucose
D. glucose and water

1.1.4 Which of the following terms describes an animal that eats another animal in a food chain?
A. Primary consumer
B. Secondary consumer
C. Decomposer
D. Herbivore

Page 1 of 3
1.1.5 In the diagram of a food chain what do the arrows indicate?
A. Which organism eats the next organism
B. The flow of energy
C. The flow of biomass
D. The amount of energy in the biological system

1.2 Choose an item from COLUMN A that matches a description in COLUMN B. Write only the letter (A – F) next to the question number (1.2.1 – 1.2.5), for example 1.3.6 J.

<table>
<thead>
<tr>
<th>COLUMN A</th>
<th>COLUMN B</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.2.1 Mitochondria</td>
<td>A. Can only be seen with a hand lens or microscope.</td>
</tr>
<tr>
<td>1.2.2 Secondary consumer</td>
<td>B. Decomposes dead organic matter</td>
</tr>
<tr>
<td>1.2.3 Micro-organism</td>
<td>C. Feeding level</td>
</tr>
<tr>
<td>1.2.4 Trophic</td>
<td>D. Converts glucose into energy</td>
</tr>
<tr>
<td>1.2.5 Bacteria</td>
<td>E. Eats herbivores</td>
</tr>
<tr>
<td></td>
<td>F. Eats both plants and animals.</td>
</tr>
</tbody>
</table>

QUESTION TWO
2.1 Study the diagram below which tests for starch in a green leaf.
2.1.1 Provide a hypothesis for the investigation. (2)

2.1.2 Identify the ...
   (a) independent variable (1)
   (b) dependent variable (1)
   (c) fixed variables (2)

2.1.3 Why is it important to make sure that one of the leaves being tested has no starch in it? (1)

2.1.4 How would you de-starch a leaf? (1)

2.1.5 Why do you need to boil the leaf before testing it for starch? (2)

2.1.6 Why do you need to boil the leaf in ethanol? (1)

2.1.7 Write a balanced equation for the process of photosynthesis. (4)

**QUESTION THREE**

3.1 In a dam, snails are eaten by carp that are eaten by bass. There are bulrushes and water lilies growing in the dam, on which snails and worms feed. The worms are eaten by the carp and there are leeches that eat the snails.

3.1.1 Using the information, draw up a food web to include all seven organisms. (4)

3.1.2 Underline the producer/s. (2)

3.1.3 Which type of consumer will gain most of the energy? (1)

3.1.4 What does the arrow in the food web indicate? (2)

3.2 The accompanying diagram represents an ecological pyramid of a certain food chain in nature.

![Ecological Pyramid Diagram]

3.2.1 Which letter represents the producers? (1)

3.2.2 What are the functions of the producers in the food chain? (2)

3.2.3 What type of consumer is represented by C? (1)

3.2.4 Which two letters represent carnivores? (2)

3.2.5 If B represents snakes, which one will represent secretary birds? (1)

3.2.6 What would happen in a food chain to ...
   (a) A, and (1)
   (b) C if all the members of B were removed? (1)

3.2.7 Which organism is not represented in the diagram? (2)