Ecosystem Explorers Assessment Handout

Student Name: _____	**Class:** _____
Student ID: _____	**Date:** {{DATE}}

Assessment Details

Duration: 45 minutes	**Total Marks:** 100
Topics Covered:	• Biotic and Abiotic Factors • Trophic Relationships • Ecological Balance

Instructions to Students:

1. Read all questions carefully before attempting.
2. Show all working out - marks are awarded for method.
3. Use diagrams and models to aid in your answers where necessary.
4. Write your answers in the spaces provided.
5. If you need more space, use the additional pages at the end.
6. Time management is crucial - allocate approximately 1 minute per mark.

Section A: Multiple Choice [30 marks]

Question 1 **[5 marks]**

What is the primary source of energy for most ecosystems?

A) Sunlight

B) Water

C) Soil

D) Air

Question 2 **[5 marks]**

Which of the following is an example of a biotic factor in an ecosystem?

A) Temperature

B) Humidity

C) Plants

D) Rocks

Question 3 **[5 marks]**

What is the term for the process by which plants convert sunlight into energy?

A) Respiration

B) Photosynthesis

C) Decomposition

D) Fermentation

Question 4 **[5 marks]**

What is the term for the relationship between organisms that eat other organisms for food?

A) Symbiosis

B) Mutualism

C) Commensalism

D) Predation

Question 5 **[5 marks]**

What is the term for the process by which dead organisms are broken down into simpler substances?

A) Decomposition

B) Fermentation

C) Respiration

D) Photosynthesis

Question 6 **[5 marks]**

What is the term for the movement of energy through an ecosystem?

A) Energy cycle

B) Food chain

C) Food web

D) Energy flow

Section B: Short Answer Questions [40 marks]

Question 7 **[10 marks]**

Describe the difference between a producer and a consumer in an ecosystem. Provide an example of each.

Question 8 **[10 marks]**

Explain the concept of ecological balance and provide an example of how human activities can disrupt this balance.

Question 9 **[10 marks]**

Describe the role of decomposers in an ecosystem and provide an example of a decomposer.

Question 10 **[10 marks]**

Explain the concept of a food web and provide an example of a food web.

Section C: Project-Based Task [30 marks]

Question 11 **[30 marks]**

Imagine you are a biologist tasked with creating a balanced ecosystem in a controlled environment. Using a diagram or model, design an ecosystem that includes:

- At least 3 biotic factors (plants, animals, microorganisms)
- At least 2 abiotic factors (light, water, temperature)
- A clear example of trophic relationships (producer-consumer-decomposer)
- A description of how you would use technology tools to monitor and maintain the ecosystem

Conclusion

Thank you for completing the Ecosystem Explorers assessment! Remember to review your work and ask questions if you need clarification. Your teacher will provide feedback on your understanding of biotic and abiotic factors, trophic relationships, and ecological balance, as well as your project-based task design and technology tool use.

Marking Guide

Multiple Choice Questions:

- Question 1: A) Sunlight
- Question 2: C) Plants
- Question 3: B) Photosynthesis
- Question 4: D) Predation
- Question 5: A) Decomposition
- Question 6: D) Energy flow

Short Answer Questions:

- Question 7: Producer - an organism that makes its own food (e.g., plants); Consumer - an organism that eats other organisms for food (e.g., animals)
- Question 8: Ecological balance - the stable state of an ecosystem where the relationships between biotic and abiotic factors are in harmony; Human activities (e.g., pollution, deforestation) can disrupt this balance by altering the delicate relationships within the ecosystem.
- Question 9: Decomposers - organisms that break down dead organisms into simpler substances (e.g., bacteria, fungi); Example - bacteria that break down dead plants and animals in a compost pile
- Question 10: Food web - a network of food chains that show the relationships between organisms in an ecosystem; Example - a food web that includes plants, herbivores, carnivores, and decomposers

Project-Based Task:

- Biotic factors (5 marks)
- Abiotic factors (5 marks)
- Trophic relationships (10 marks)
- Technology tool description (5 marks)
- Overall ecosystem design and balance (5 marks)

Implementation Guidelines

Time allocation: 45 minutes

Administration tips:

- Ensure students have access to diagrams and models for the project-based task
- Encourage students to use technology tools, such as species identification apps, to aid in their design
- Allow students to ask questions and seek clarification before starting the assessment

Differentiation Options

For students with visual impairments:

- Provide large print or braille versions of the assessment
- Offer assistive technology, such as text-to-speech software, for the project-based task

For English language learners:

- Provide a glossary of key terms
- Offer additional time to complete the assessment

For students with learning difficulties:

- Provide a graphic organizer to aid in the project-based task
- Offer one-on-one support during the assessment

Teaching Tips

To align with Bloom's Taxonomy, ensure that the assessment questions and tasks require students to apply, analyze, and evaluate their knowledge, rather than simply recalling facts.

To incorporate multiple intelligence approaches, consider adding a creative component to the project-based task, such as a drawing or poem, to allow students to express their understanding in different ways.

To provide clear success criteria, ensure that students understand the learning objectives and the requirements for each section of the assessment.