Introduction to Ecological Systems

Midterm Exam Review

**General Information**:

* 50 multiple choice questions and five short answer questions
* Study old tests, notes, and classwork in order to prepare for the exam
* A link to the website Quizlet will be provided to you when we get back in January. Quizlet is an online flashcard website; I will use this site to create a set of digital flashcards for our class.
* Pay special attention to vocabulary as you review! If you don’t understand the vocab, then you will have difficulty answering the questions.
* We will spend the first two weeks of January in class working on a review project for the midterm exam.

**Vocabulary:**

Experiment

Hypothesis

Data

Observations

Cell

Ecology

Biotic

Abiotic

Biosphere

Ecosystem

Community

Population

Organism

Species

Habitat

Niche

Carnivore

Omnivore

Herbivore

Producer

Consumer

Autotroph

Heterotroph

Food chain

Food web

Trophic level

Biome

Aquatic

Terrestrial

Precipitation

Climate

Tundra

Permafrost

Desert

Tropical rainforest

Glacier

Adaptation

Competition

Symbiosis

Parasitism

Mutualism

Commensalism

Predator

Prey

Decomposers

Energy Pyramid

10% Rule

Nitrogen

Free nitrogen

Denitrification

Nitrogen Fixation

Carbon

Photosynthesis

Cellular respiration

Glucose

Transpiration

Salinity

Evaporation

Condensation

Sublimation

Carbon dioxide

Climate change

Ecological succession

Disturbance

Primary succession

Secondary succession

Pioneer organism

Lichen

Climax community

Greenhouse effect

**Practice Questions:**

1. Your friend wonders, “Do squirrels like acorns better or walnuts better?” Answer the following questions:  
   A) What might his hypothesis be?   
   B) How could he set up his experiment? Be as clear as possible.
2. Put this list in order from **smallest** to **largest**:   
   population, cell, community, organism, biosphere, ecosystem
3. Give an example of a biotic factor interacting with an abiotic factor.
4. Define niche and give an example.
5. Define adaptation and give an example.
6. What are two specific reasons organisms depend on each other?
7. What biome do we live in?
8. How is the precipitation different in our home biome than in the rainforest?
9. Fill in the table below:

|  |  |
| --- | --- |
| **Type of Species Interaction** | **Example** |
| Parasitism |  |
| Predator/Prey |  |
| Commensalism |  |
| Mutualism |  |
| Competition |  |

1. Does the climatograph below describe a tundra or a rainforest? Explain your answer—your explanation should include both **temperature** and **precipitation**.
2. What is the difference between **autotrophs** and **consumers**?
3. Fill in the blanks to describe how energy flows through an ecosystem. Use the following words: decomposers, producers, the sun, consumers  
     
   All energy comes from \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Organisms called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ can use the sun’s energy to produce their own food. These organisms are eaten by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. When organisms die, they are broken down by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, organisms that keep energy cycling in ecosystems.
4. How much of the energy available in the producer level of the food web will be transferred to herbivores?
5. Using all of the organisms listed below, and no other organisms, create a food web.   
   Organisms: mountain lion, oak tree, deer, grass, squirrel, hawk, snake
6. Write a paragraph explaining the water cycle.
7. Why is nitrogen fixation important?
8. Why is denitrification an important part of the nitrogen cycle?
9. What kinds of organisms are able to use free nitrogen in the atmosphere?
10. List three ways that decomposers help ecosystems.
11. How do carbon dioxide and oxygen cycle through an ecosystem? Use the terms **photosynthesis** and **cellular respiration** in your answer.
12. How can a disturbance cause change in an ecosystem?
13. Give an example of how an organism can affect its environment.
14. What is the difference between primary ecological succession and secondary ecological succession?
15. Why are some organisms able to survive disturbances better than others?
16. Why are lichens good pioneer organisms?
17. Explain the greenhouse effect and give an example of a greenhouse gas.
18. List three human activities that are increasing the concentration of carbon dioxide in the atmosphere.
19. What evidence do scientists have that the Earth’s climate is changing over time?
20. What are three of the predicted effects of climate change?