**Food Webs, Ecosystems, Photosynthesis, and Cellular Respiration Study Guide**

**Skills required:**

* How to draw/analyze a food web and energy pyramid
* How to identify abiotic and biotic factors of an ecosystem and how abiotic factors affect the producers of a community
* How to match biomes/ecosystems to their abiotic/biotic factors (descriptions)
* How to explain the processes of photosynthesis and cellular respiration as opposite energy storing/energy releasing reactions
* How to predict changes to an ecosystem based on changes to abiotic or biotic factors
* How to identify and analyze symbiotic relationships

**Practice questions:**

1. What are three examples of **abiotic** factors that can be found in an ecosystem?
2. What are **biotic** factors and how are they dependent on the abiotic factors of an ecosystem?
3. If we change **abiotic** factors such as temperature or precipitation (rainfall), how are biotic factors affected? Give at least **two examples**.
4. When analyzing an **energy pyramid** that describes the populations of organisms within an ecosystem, what happens to a) population size and b) energy available as you move from producers to tertiary consumers?
5. **Define** and give at least **two examples** of each of the following: producer, consumer, herbivore, carnivore, omnivore, and decomposer.
6. What are **primary**, **secondary**, and **tertiary** **consumers**? Are primary consumers herbivores, carnivores, or omnivores? Are secondary consumers herbivores, carnivores, or omnivores? Are tertiary consumers herbivores, carnivores, or omnivores?
7. What is the difference between a **habitat**, **community**, and **ecosystem**?
8. **Describe** each of the following biomes/ecosystems based on their **abiotic** and **biotic** factors: Rain forest, desert, deciduous forest, coniferous forest, arctic, ocean.
9. What colors of light are **absorbed**/**reflected** by **green** pigments like **chlorophyll**? How can **blocking of the sun** lead to extinction of all species on earth?
10. How can we explain the flow of energy through an ecosystem by discussing photosynthesis and cellular respiration as **reverse** **processes**? (how does energy move from the sun to a tertiary consumer? When is energy stored? When is energy released again?) Use the following diagram to help guide your response.



1. Why are **food** **webs** more realistic than **food** **chains** for explaining the feeding relationships in ecosystems?
2. Give an **example** of each type of symbiotic relationship (**mutualism**, **commensalism**, **parasitism**) and describe which organism **benefits**, is **harmed**, or is **unaffected** in each.

**Diagrams to study**



**Photosynthesis**



