

Chapter 5 Questions – How Ecosystems Work

Please answer on a separate sheet of paper in complete sentences.

*Due Friday, October 13 (Friday, Oct 20 if you get extended time)

5.1 – Energy Flow in Systems

1. Describe how energy is transferred from one organism to another.
2. Describe the role that producers play in an ecosystem.
3. Explain the difference between an herbivore and an omnivore.
4. Compare energy transfer in a food chain to energy transfer in a food web.
5. Describe the chemical equation for cellular respiration using a simple sentence.
6. Describe the chemical equation for photosynthesis using a simple sentence.
7. What is the difference between a food chain and a food web?
8. Draw an energy pyramid for an ecosystem that includes grass, antelope, and lions only. If the grass represents 1000 units of energy, what do the antelope and lions represent (in terms of energy)?
9. Why is the number of trophic levels that can exist limited?
10. Why are decomposers an essential part of an ecosystem?
11. Explain how producers and decomposers are opposites of each other.

5.2 – The Cycling of Materials

12. Describe the two main processes of the carbon cycle (photosynthesis and cellular respiration). Make sure to include HOW they cycle carbon.
13. Describe how the burning of fossil fuels affects the nitrogen cycle.
14. Describe how the burning of fossil fuels affect the carbon cycle.
15. Explain how the excessive use of fertilizer affects the nitrogen cycle and the phosphorus cycle.
16. Explain why the phosphorus cycle occurs more slowly than both the carbon cycle and nitrogen cycle.

5.3 – How Ecosystems Change

17. Explain the difference between primary succession and secondary succession.
18. Define pioneer species and describe what role a pioneer species plays during the process of ecological succession.
19. Explain why putting out forest fires may be damaging in the long run.
20. Describe the role lichens play in primary succession.
21. Over a period of 1,000 years, a lake becomes a maple forest. Explain if this is primary succession or secondary succession.
22. Would a newly-formed volcanic island be a site of primary succession or secondary succession?
23. Suppose that a plague eliminates all of the primary consumers in an ecosystem. What will most likely happen to organisms in other trophic levels in this ecosystem?