**Biosphere Test 2 Review: Energy Flow in Ecosystems and Succession**

Please complete the following questions on your own sheet of paper. You do not need to write in complete sentences unless asked to “explain,” but please be neat! This assignment is worth 20 points and is due on Thursday, September 26 with our test.

**Energy Flow in Ecosystems**
1. What is a trophic level? Name each of the five trophic levels discussed in class.
2. What is the “Rule of 10” and what does it imply for food webs?
3. What are producers? Provide three specific examples.
4. Explain the difference between Gross Primary Productivity (GPP) and Net Primary Productivity (NPP).
5. Compare NPP levels in the following biomes: tropical rainforest, temperate deciduous forest, taiga,
 desert, and tundra. Which has the most? The least? Which are moderate?
6. How do humans pull from the world’s reserves of NPP?
7. Compare and contrast primary, secondary, and tertiary consumers. Provide at least three examples
 each of organisms that can feed at the designated trophic level.
8. Do organisms always fall into a given trophic level? Explain, using examples.
9. Compare and contrast herbivores and carnivores in terms of: time spent foraging, the relative amount of energy they get from their food, and the amount of biomass it takes to sustain them.
10. Why are decomposers important? Provide at least two examples of decomposers.
11. Compare and contrast food chains and food webs.
12. How do humans manipulate natural food chains? Describe at least three ways and for one of them,
 research an example of this kind of manipulation (describe the manipulation in 2-3 sentences
 including its environmental impact).
13. Explain, including a diagram, the concept of biomagnification.
14. Create a chart comparing the information conveyed by pyramids of numbers, biomass, and energy.

**Succession and Limiting Factors**15. What is primary succession? Give an example of a type of environmental effect that would lead to
 primary succession.
16. What is secondary succession? Give an example of a type of environmental effect that would lead to
 secondary succession.
17. Which type of succession is harder to recover from?
18. Describe a climax community in the temperate deciduous biome. Include information on abiotic
 AND biotic factors.
19. What is a limiting factor and why are they significant?
20. What nutrients limit organisms trying to grow on land and in water? Explain why this is the case.