Science 7 – Unit A Review

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1. Think of five different ecosystems that might be found in an area such as a national park. List the biotic and abiotic factors each ecosystem might contain. (Hint: Remember that ecosystems can be large, like a forest, or small, like a rotting log, as long as they include all of the biotic and abiotic factors present.)

   The ecosystems that you use will most likely contain all biotic (human, birds, plants, animals and insects) and biotic parts (air, soil, water).

4. Choose an organism and describe at least one adaptation it possesses that helps it survive in its environment.

   The criterion for adaptation is that the characteristic was inherited. One example is a hawk. It has specialized talons to help it grasp and hold its food (prey). It also has keen eyesight to detect slight movement of prey in the grass.

6. Describe three human activities that can endanger a species.

   Destruction of habitats by development of natural areas; overuse of an animal such as the over-hunting of passenger pigeons; and polluting the ecosystem by careless disposal of waste materials.

8. A family cultivated part of their lawn and turned it into a vegetable garden. The family then moved away. The house remained empty, and nobody looked after the garden. Ten years later, the family came back for a visit. Their lawn looked similar, though much weedier. They were surprised, however, to see wildflowers, shrubs, and small trees growing in their deserted garden. Explain why this is an example of succession.

   This is an example of succession because over a period of time, slow and consistent change takes place in this garden ecosystem. Eventually, many new varieties of plants move in and become established.

9. What is the carbon cycle?

The carbon cycle is the cycle in which carbon is used and reused through an ecosystem.

What role do each of the following play in it?

(a) fossil fuels burning

releases carbon dioxide into the environment

(b) forests burning

releases carbon dioxide into the atmosphere

(c) animals respiring

releases carbon dioxide into the atmosphere

(d) plants carrying out the process of photosynthesis

removes carbon dioxide from the atmosphere

10. Explain how the extinction of various species results in a less diverse ecosystem. How can this lead to the extinction of even more species?

Diversity refers to the number of species in a particular ecosystem. If a species becomes extinct, there are fewer species in an area, thereby creating lower diversity. Extinction of various species results in a less diverse ecosystem because extinction removes one part of the food web of which that species was a part. When that one species is removed, those organisms that relied on that species for food now have to find an alternative food source or they will die. Also, when the extinct species is no longer part of the food web, it can result in an overabundance of the organism it fed on, possibly resulting in that organism becoming overpopulated and dying off. These both result in imbalances in the ecosystem and could lead to those affected species facing possible extinction.

11. **(a)** Give two examples of how organisms interact with one another.

Answers may include: animals eating plants or any two animals that are in contact in some way.

(b) Give two examples of organisms that are dependent on one another.

The case of the lichen is one possible example, which really is alga and a fungus living together. In partnership, they are able to live where neither could survive alone, such as on a bare rock or tree

trunk. The alga makes food for both, while the fungus forms a sponge-like body that protects, anchors, and holds the water they both need.

17. Imagine that you are teaching the topic of adaptation to a class of younger students. Devise two questions you could ask to assess the students' understanding of an adaptation.

Remember that adaptations are inherited characteristics and learned behaviors are characteristics that develop over the lifetime of an individual. Your questions should take that into account.

27. A sailor survived a shipwreck. She managed to save several hens and a bag of grain from the cargo. She is now on an island far from land, in an area where there are no other people. It may be months before she is rescued. To survive as long as possible, what should she do?

(a) Feed the grain to the hens, and eat the eggs they lay.
(b) Eat the grain, and then eat the hens.
(c) Eat the hens, and then eat the grain.

Explain why you think the option you chose is best. If you do not agree with any of the options listed above, what other solution would you propose?

The sailor would get maximum amount of energy per amount of food if she eats foods from lower levels of the food chain. This allows her to conserve the maximum amount of energy. She should eat the hens first, so she does not have to feed them, and then eat the grain.

36. What are the benefits and problems relating to the 3 Rs: reduce, reuse, and recycle?

The benefits of the 3 R's include a reduction in the amount of garbage in the landfills as well as a reduction in the need for non-renewable resources. Problems include the cost to the community of the recycling problems, the lack of participation from all community members, and the contamination of recycled materials with materials that cannot be recycled.