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Section-II

Questions With Answers

Q.1 Describe water in 'basins'.

Ans. Water collects in natural basins or channels and forms lakes and ponds (in basins) and streams or rivers (in channels). These bodies of water play significant roles in the local water cycle and ecosystems.

Q.2 Describe the ways of nitrogen fixation.

Ans. Nitrogen fixation can occur through several methods:

- **Atmospheric Fixation** by lightning, which breaks nitrogen bonds allowing nitrogen to combine with oxygen to form oxides of nitrogen absorbed by the soil.

- **Industrial Fixation** through human-made processes that produce nitrogen-containing fertilizers.
- **Biological Fixation** where bacteria like *Azotobacter* (aerobic) and *Clostridium* (anaerobic), or in a symbiotic relationship with plants (e.g., *Rhizobium*), convert atmospheric nitrogen into ammonia, which is then available for plant use.

Q.3 Give the role of decomposers in the nutrient cycle.

Ans. Decomposers, like bacteria and fungi, facilitate nutrient recycling by breaking down dead organic matter into simpler compounds. This decomposition process releases nutrients like carbon, nitrogen, and phosphorus back into the

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soil or water, where they can be reused by plants and other organisms. By cycling nutrients, decomposers ensure the sustainability of ecosystems and support the growth of primary producers.

Q.4 What is productivity? Describe productivity in the desert ecosystem.

Ans. The rate at which energy added to the bodies of organisms in the form of biomass is called productivity. Productivity in desert ecosystems is constrained by low water availability and sparse plant cover. Desert plants, adapted to arid conditions, exhibit slow growth rates and produce minimal biomass compared to plants in more favorable environments. Despite these limitations, desert productivity supports unique adaptations and ecological interactions among specialized organisms adapted to survive in harsh desert conditions.

Q.5 Explain the pyramid of energy.

Ans. The energy pyramid illustrates the distribution of energy among trophic levels in an ecosystem. Producers, such as plants, capture the most energy through photosynthesis. As energy moves up the pyramid to higher trophic levels, such as herbivores and carnivores, there is a decrease in available energy due to heat loss and metabolic inefficiencies. This model helps ecologists understand the flow of energy and the relationship between different organisms within ecosystems.

Chapter 15 » Ecology

Q.6 Differentiate between primary and secondary succession.

Ans. **Primary Succession** occurs in habitats previously uninhabited by organisms, such as on new volcanic islands or exposed rock, starting without soil and typically beginning with life forms like lichens and mosses.

- **Secondary Succession** occurs in areas where a pre-existing community of organisms was substantially altered or removed but where soil remains, such as in abandoned farm fields or areas recovering from a fire.

Q.7 What is net primary productivity?

Ans. Net Primary Productivity (NPP) is defined as the amount of organic matter or biomass produced by producers, minus the energy used by those producers for respiration. NPP represents the energy available to support the consumers in the ecosystem.

Q.8 Explain the term 'biosphere'.

Ans. The biosphere is the thin layer of life enveloping the Earth, encompassing all living organisms and their environments. It includes various ecosystems, ranging from oceans to forests, and is crucial for maintaining life through the interaction of living organisms with each other and their physical surroundings.