# 15. Life on the Earth

**1. Multiple choice question**

**(i) Which one of the following is included in biosphere?**

**(a) only plants**

**(b) all living and non-living organisms**

**(c) only animals**

**(d) all living organisms**

**Answer:** (d) all living organisms

**(ii) Tropical grasslands are also known as :**

**(a) the prairies**

**(c) the steppes**

**(b) the savannas**

**(d) none of the above**

**Answer:** (b) the savannas

**(iii) Oxygen combines with iron found in the rocks to form:**

**(a) iron carbonate**

**(b) iron nitrites**

**(c) iron oxides**

**(d) iron sulphate**

**Answer:** (c) iron oxides

**(iv) During photosynthesis, carbon dioxide combines with water in the presence of sunlight to form:**

**(a) proteins**

**(b) amino acids**

**(c) carbohydrates**

**(d) vitamins**

**Answer:** (c) carbohydrates

**2. Answer the following questions in about 30 words.**

**(i) What do you understand by the term 'ecology'?**

**Answer:** Ecology is the study of the earth as a 'household', of plants, human beings, animals and micro- organisms.

**(ii) What is an ecological system? Identify the major types of ecosystems in the world.**

**Answer:** Ecosystem is a system, which consists of biotic and biotic components. There are two main types of ecosystems:

- terrestrial and
- aquatic

**(iii) What is a food-chain? Give one example of a grazing food-chain identifying the various levels.**

**Answer:** A food chain is a linear network of links in a food web starting from producer organisms and ending at apex predator species, decomposer species. For example, a plant-eating beetle feeding on a paddy stalk is eaten by a frog. Fog is eaten by a snake, which is then consumed by a hawk. This sequence transfer energy from one level to another is known as the food chain.

**(iv) What do you understand by the term 'food web'? Give examples.**

**Answer:** A food web or food cycle is the natural interconnection of food chains and generally a graphical representation of what-eats-what in an ecological community. Each organism may feed on a variety of foods derived from different levels. For example, A rat feeds on various kinds of stems, roots, fruits, and grains proteins, carbohydrates, amino acids and vitamins. There is a loss of energy at each level, which may be through respiration, excretion, or decomposers.

**(v) What is a biome?**

**Answer:** A biome is a plant and animal community that covers a large geographical area.

**3. Answer the following questions in about 150 wor**

**(i) What are bio-geochemical cycles? Explain how nitrogen is fixed in the atmosphere.**

**Answer:**

**Bio-geochemical cycles**: A biogeochemical cycle is a pathway by which a chemical substance moves through both biotic (biosphere) and abiotic (lithosphere, atmosphere, and hydrosphere) compartments of Earth. The sun is the source of all energy on earth. A very small fraction of about 0.1 per cent of solar energy reaching earth is fixed in photosynthesis. More than half is used for plant respiration and the remaining part is temporarily stored or is shifted to other portions of the plant. During photosynthesis, carbon dioxide is converted into organic compounds and oxygen. The balance of chemical elements in the atmosphere and hydrosphere is maintained for the last one billion years. These cycles are energised by solar Insolation. These cyclic movements are referred to as biogeochemical cycles.

**Fixing of Nitrogen in the Atmosphere**: Nitrogen is a major constituent of the atmosphere comprising about seventy-nine percent of the atmospheric gases. Action of soil micro-organisms and associated plant roots on atmospheric nitrogen found in pore spaces of the soil comprise the principal source of free nitrogen. Lightning and cosmic radiation can also fix nitrogen in the atmosphere.

**(ii) What is an ecological balance? Discuss the important measures needed to prevent ecological imbalances.**

**Answer:** Ecological balance is a state of dynamic equilibrium within a community of organisms in a habitat or ecosystem. Ecological balance can also be explained as a stable balance in the numbers of each species in an ecosystem. It can be maintained only if the population of

different organisms remains stable. It also depends on the fact that some species are interdependence for their food. For example, in the grasslands, deer, zebras, buffaloes, etc., live on grass. They provide food to carnivorous animals, such as tigers and lions, which live by hunting the herbivores. In plants, there is a change in the distribution of species. This change is 'due to competition where the secondary forest species such as grasses, bamboos, or pines overtake the native species, changing the original forest structure. This is called succession. Ecological balance is often disturbed by human interference and has led to several natural calamities like floods, landslides, diseases, climate change, etc. We need to have proper understanding of the close relationship that exists between plant and animal for protecting and conserving the ecosystems.