ECOLOGY Question & Answers

Question 1. What Is Ecology?

Answer :

Ecology is the field of Biology that studies the relations between living beings and between living beings and the environment.

Question 2. What Are Species?

Answer :

Species is the set of living beings able to cross among themselves generating fertile offspring.

This concept however does not apply to individuals of exclusive asexual reproduction and other definitions have been proposed. For example, “species is a set of living beings that evolve in a common manner all of them considered ancestors of the same type in relation to common descendants”.

Question 3. What Is Population?

Answer :

Population is the set of individuals of the same species found in a given place in a given time.

Question 4. What Is A Community? What Is The Difference Between The Concepts Of Community And Population?

Answer :

Community is the set of populations of living beings that live in the same region and interact with each other.

In Ecology population is a set whose members (living in a given place in a given time) are part of the same species. Community is a set of populations of different species (living in a given place in a given time).

Question 5. What Is The Difference Between Ecological Niche And Habitat?

Answer :

Ecological niche is the set of peculiar activities, resources, and strategies that a species explores to survive and reproduce. Habitat is the place where the species lives to explore its ecological niche. In other words, it can be said that habitat is the "address" of the species and the ecological niche is the "profession" of the species.

Question 6. What Are Biotic Factors?

Answer :

Biotic factors are the living beings (plants, animals, and microorganisms) that are part of a given environment. Image Diversity: biotic factors

Question 7. What Are Abiotic Factors?

Answer :

Abiotic factors are the nonliving elements that constitute a given environment, like light, temperature, minerals, water, gases, atmospheric pressure, etc.

Question 8. What Is An Ecosystem?

Answer :

Ecosystem is a system composed of biotic and abiotic factors in interaction.
Question 9. What Is Biosphere?

Answer :

Biosphere is the set of all of the ecosystems of the planet.

Question 10. What Are Autotrophic Beings? What Are Heterotrophic Beings?

Answer :

Autotrophic beings are those that can produce their own food, i.e., that make organic material from inorganic compounds.

Heterotrophic beings are those that need to incorporate organic material to nourish them. Therefore, heterotrophs depend on the production of the autotrophs.

Question 11. What Are The Processes That Autotrophic Beings Use To Produce Organic Material From Inorganic Substances?

Answer :

Autotrophic beings make organic material by photosynthesis or by chemosynthesis. There are photosynthetic autotrophs, like plants, and chemosynthetic autotrophs, like some bacteria.

Question 12. What Is A Biome?

Answer :

Biome is a prevailing ecosystem constituted by similar biotic and abiotic factors present in one or more regions of the planet.

Question 13. What Are The Major Terrestrial Biomes?

Answer :

The major terrestrial biomes are tundras, taigas (or boreal forest), temperate forests, tropical forests, grasslands and deserts.

Question 14. What Are The Typical Vegetation And The Typical Fauna Of The Tundras?

Answer :

Tundras have vegetation formed mainly by mosses and lichens. In the fauna the dense furred animals, like caribous, musk oxen and polar bears, and migratory birds are found.

Question 15. What Are The Typical Vegetation And The Typical Fauna Of The Taigas?

Answer :

Taiga, or the boreal forest, is characterized by coniferous trees, pine forests. There are also mosses, lichens, small bushes, and angiosperms. In the taiga many mammals, like moose, wolves, foxes and rodents, migratory birds and great diversity of insects are found.

Question 16. What Are The Typical Vegetation And The Typical Fauna Of The Temperate Forests?

Answer :

In the temperate forest, deciduous trees predominate. Mammals are found in great number, like bears and deers.

Question 17. What Are Deciduous Trees?

Answer :

Deciduous trees are plants that lose their leaves in a period of the year. In the case of the deciduous of the temperate forest, the fall of the leaves occurs in the autumn. The loss of leaves is a preparation to face the cold months of the winter: roots, stem and branches are more resistant to low temperature and snow than the leaves; without leaves the metabolic rate of the plant is reduced; the decaying fallen leaves help to nourish the soil.

Question 18. What Is The Typical Localization Of The Tropical Forests Regarding Latitude?

Answer :

Tropical rain forests, like the Amazon forest and the Congo forest, are typically located in low latitude, i.e., in the equatorial and tropical zones.

Question 19. What Are The Typical Vegetation And The Typical Fauna Of The Tropical Forests?

Answer :

In the vegetation of the tropical forests, broadleafed evergreen trees predominate. On the top of the trees, epiphytes and lianas grow. Many varieties of pteridophytes can be found in these forests.

Regarding the fauna, the abundance, and diversity is also great: there are monkeys, rodents, bats, insectivores, felines, reptiles, aves, amphibians, and invertebrates, mainly insects.

Question 20. How Can The Abundance And Diversity Of Living Beings In The Tropical Forests Be Explained?

Answer :

The biodiversity of these ecosystems can be explained by the great availability of the main abiotic factors for photosynthesis. Since these factors are abundant, plants can perform maximum photosynthetic activity, living and reproducing easily.

With great amount and diversity of producers (autotrophs), the consumers (heterotrophic animals and microorganisms) also have abundant food and a complex food web emerges creating many different ecological niches to be explored. So it is possible the appearing of varied living beings as well as the existence of large populations.

Question 21. Why The Tropical Forests Are Also Known As Stratified Forests?

Answer :

In tropical forests, tall trees of several species have their crowns forming a superior layer under which diverse other trees and plants develop forming other inferior layers. From the upper layer to the inferior layers the penetration of light lowers gradually and the exposition to wind and rain, the moisture and the temperature vary. Different compositions of abiotic factor condition the prevailing of different vegetation in each layer.

Question 22. What Is The Typical Vegetation Of The Grasslands?

Answer :

Grasslands are mainly formed of herbaceous (nonwoody)

vegetation: grass, bushes, and small trees.
Question 23. How Are The Grasslands Of North America And Of South America Respectively Called?

Answer :

The steppe grasslands of North America are called prairies. The grasslands of South America are known as “pampas” (the steppe grassland) and “cerrado” (the savannah grassland).

Question 24. How Are Grasslands Classified?

Answer :

Grasslands may be classified into steppes and savannahs. In the steppes, the prevailing vegetation is grass, like in the pampas of South America and in the prairies of North America. The fauna is mainly formed by herbivores, like rodents and ungulates. The savannahs present small trees, like for example the Brazilian cerrado or the African savannahs.

The fauna is diverse; in the Brazilian cerrado there are animals like emus, lizards, armadillos, jaguars, etc., and many types of insects; the African savannahs are the home of great herbivores and carnivores, like zebras, giraffes, antilopes, lions and leopards.

Question 25. What Are The Typical Vegetation And The Typical Fauna Of The Deserts?

Answer :

The predominant fauna of the desertic ecosystems is formed by reptiles, like lizards and snakes, terrestrial arthropods and small rodents. In these areas plants very adapted to dry climate may be found, like the cactus, that are plants that do not have real leaves and thus lose less water, along with grasses and bushes near places where water is available.

Question 26. Which Terrestrial Vertebrate Group Is Extremely Rare In Deserts?

Answer :

Amphibians are terrestrial vertebrates extremely rare in desertic environments (although there are few species adapted to this type of ecosystem). Amphibians are rare in deserts because they do not have permeable skin and so they easily lose water by evaporation and desiccate. They also need an aquatic environment to reproduce, since their fecundation is external and their larva is waterdependent.

Question 27. What Are Plankton, Nekton, And Benthos?

Answer :

Plankton, nekton, and benthos are the three groups into which aquatic living beings may be divided.

The plankton is formed by the algae and small animals that float near the water surface carried by the stream. The nekton is composed of animals that actively swim and dive in water, like fishes, turtles, whales, sharks, etc. The benthos comprehends the animals ecologically linked to the bottom, including many echinoderms, benthonic fishes, crustaceans, mollusks, poriferans and annelids.

Question 28. What Are The Phytoplankton And The Zooplankton?

Answer :

Phytoplankton and zooplankton are divisions of the plankton. The phytoplankton comprehends the autotrophic floating beings: algae and cyanobacteria. The zooplankton is formed by the heterotrophic planktonic beings: protozoans, small crustaceans, cnidarians, larvae, etc.

Question 29. What Is The Group Of Aquatic Beings Composed Of Large Number Of Photosynthetic Beings?

Answer :

A large number of photosynthetic beings is found in the plankton, i.e., in the surface of aquatic ecosystems. This is because light is abundant on the surface.

Question 30. What Is The Primary Energy Source For Life On Earth?

Answer :

The primary energy source for life on earth is the sun. The sun plays the important role of keeping the planet warmed and it is the source of the luminous energy used in photosynthesis. This energy is converted into organic material by the photosynthetic autotrophic beings and consumed by the other living beings.

Question 31. What Is The Main Means By Which Autotrophic Beings Obtain Energy?

Answer :

The main means by which autotrophs obtain energy is photosynthesis. (There are also chemosynthetic autotrophs.)

Question 32. Which Is The Autotrophic Group Responsible For The Production Of Most Part Of The Molecular Oxygen Of Earth?

Answer :

Algae and cyanobacteria of the phytoplankton are the organisms that contribute most for the production of molecular oxygen.

Question 33. In The Ecological Study Of Food Interactions How Are The Autotrophic Beings Called?

Answer :

In Ecology, autotrophic beings are called producers because they synthesize the organic material consumed by the other living beings of an ecosystem.

An ecosystem cannot exist without producers.

Question 34. How Are The Heterotrophic Beings Divided In The Ecological Study Of Food Interactions?

Answer :

Heterotrophs are divided into consumers and decomposers. An ecosystem can exist without consumers but it cannot be sustained without decomposers. Without the decomposers, the organic material would accumulate causing environmental degradation and later death of the living beings.

Question 35. What Is A Food Chain?

Answer :

Food chain is the linear not branched sequence in which a living being serves as food for the other, from the producers until the decomposers.