

13A01403 ENVIRONMENTAL SCIENCE Short Answers

Unit -II (Part-A)

1. **Name four segments of environment and explain them in brief.**

The environment consists of four segments namely Biosphere, Lithosphere, Hydrosphere and Atmosphere.

Biosphere: The environment which supports life and sustains various human activities is known as biosphere.

Lithosphere: It is the outer mantle of the solid earth i.e. earth crust consisting of rocks and soil. The soil is the most important part of lithosphere.

Hydrosphere: It includes all kinds of water resources, oceans, rivers, lakes, streams, glaciers, polar ice caps and ground water.

Atmosphere: It is the protective blanket of gases surrounding the earth. The main components of the atmosphere are nitrogen (78%), oxygen (20.95%) and minor components are argon, hydrogen, ozone and other inert gases like helium and neon.

2. **What is an ecosystem?**

Ecosystem is a self-sustained community of plants and animals existing in its own environment.

An **ecosystem** includes all of the living things in a given area, interacting with each other, and also with their non-living environments.

or

An ecosystem is a group of biotic communities of species interacting with one another and with their non-living environment exchanging energy and matter.

3. **What are the biotic components of ecosystem?**

The biotic components of ecosystem are producers, consumers and decomposers.

4. **What are the abiotic components of ecosystem?**

The abiotic components of ecosystem are Sunlight, Temperature, Precipitation, Soil Type, Fire, Water, Solar flux, Salinity, Dissolved oxygen etc.

5. **What are autotrophs? What are heterotrophs?**

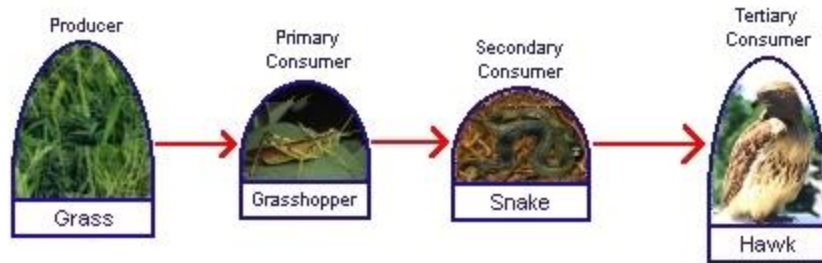
Autotrophs are those that can produce their own food, i.e., that make organic material from inorganic compounds. Heterotrophs are those that need to incorporate organic material to nourish themselves. Therefore heterotrophs depend on the production of the autotrophs.

6. **What is trophic level?**

The stage of an ecosystem at which consistent production is seen is called trophic level. or the stage when certain amount of food is stored is called trophic level. Ex. producers, primary consumers etc.

7. What is food chain?

The graphical chain representation of flow of food in an ecosystem is called food chain. A food chain is a linear sequence of links in a food web starting from a species that are called producers in the web and ends at a species that is called decomposers species in the web



8. What are the different types of food chains?

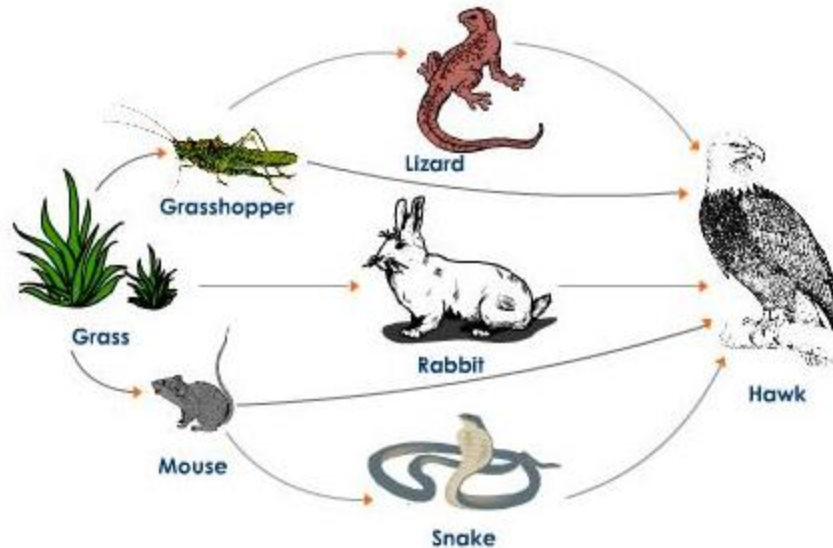
- Grazing Food Chain.
- Detritus Food Chain.

9. What is the significance of food chains?

- Food chains are useful tools in studying the balance of ecosystems.
- They are very useful tools in studying the number and structure of ecosystems.
- They help in understanding problems like bio magnification.

10. What is food web?

The complexity of ecosystem can not be represented in individual food chains. The network of food chains that represent the part of ecosystem is known as food web.



11. What are endangered species?

The species that are considered in imminent danger of extinction and whose survival is unlikely if factors causing their decline continue to operate i.e. these are the species

whose number has been reduced to a critical level that they are in immediate danger of extinction. e.g. tiger, swamp, Pink duck etc.

12. What is grazing food chain?

Any a food chain that starts with solar radiation as source i.e. photosynthesis is the base (starting with green plants) is known as grazing food chain. Many of the food chains common in nature are grazing food chains.

13. What is detritus Food chain?

The food chain that starts with dead matter or detritus matter is known as detritus food chain. Ex. Rain Forest Floor. Most common organisms include, termites, earthworms, dung beetles, millipedes etc.

14. What is the significance of food Chains?

These are useful in studying the maintenance and regulation of population size of ecosystems. Food Chains show a unique property of accumulation of certain chemicals, bio magnification.

15. What are biogeochemical cycles?

The percentage of various elements or compounds with in the earth is maintained by continuous transformation that can be depicted in the form of cycles called chemical cycles. As they occur with in the earth or biosphere, called geo chemical cycles. And as they occur through living organisms, called biogeochemical cycles.

16. What are the laws that govern the energy flow in an ecosystem?

Energy flow in an ecosystem is governed by I and II law of thermodynamics.

- a. **I Law of Thermodynamics:** Energy is neither be created nor be destroyed, but can be changed from one form to other.
- b. **II Law of Thermodynamics:** The entropy of any isolated system never decreases. i.e, energy of a system is intact.

17. What are ecological pyramids?

Certain features like energy flow, number, mass of an ecosystem can be represented graphically. Such representation look like pyramids, hence called ecological pyramids.

18. What is the difference between an ecological niche and a habitat?

An ecological niche is the area of an ecosystem where a set of peculiar activities, resources and strategies that a species explores to survive and reproduce.

An habitat is the place where the species lives to explore its ecological niche. or Living place of species is called habitat.

19. What is secondary production?

The energy or food stored at consumer level for the use by the next trophic level is thus defined as secondary production.

20. What is homeostasis?

Homeostasis is the inherent property of all the living systems to resist change. i.e. maintaining of the systems in a balanced state is called homeostasis.

21. What is homeostatic plateau?

The range of tolerance of any system i.e. the maximum or minimum range in which the system tolerate or resist the changes is known as homeostatic plateau.

22. What are negative feedback mechanisms?

The counteracting mechanisms that occur to bring back the system to the normal conditions when ever there is change or stress with the range of tolerance.

23. What are positive feedback mechanisms?

The counteracting mechanisms that occur by inducing the extra stress to the system when the system is deviated beyond the tolerance level, and bring back to normal conditions are called positive feedback mechanisms.

24. What is ecological succession?

Ecological succession is an orderly process of changes in the community structure and function with time mediate changes in the physical environment and ultimately leading to stabilized ecosystem called climax community.

25. Define stratification with an example.

The vertical distribution of different species occupying different levels is called stratification or niche. It is clearly visible in case of forests.

For example, trees occupy the top vertical strata, shrubs occupy the second and bottom layers/floor are occupied by herbs and grasses.

In lakes or ocean it is referred as zones, limnetic zone, euphotic, etc.

26. What is migration?

The process of reaching of seeds, spores or animals from one area to other areas of great distance is known as migration. While the movements of seeds sometimes called dispersal.

27. What are terrestrial ecosystems?

Ecosystems that are seen on land or earth are called terrestrial ecosystems. Ex. Forests, Grasslands, Tundra, Deserts etc.

28. Write about aquatic ecosystems.

The ecosystems containing water as major component or ecosystems associated with water are called aquatic. These are two kinds. lentic (Standing type like lakes, ponds, tanks etc.) lotic (Flowing type like streams, rivers etc).