

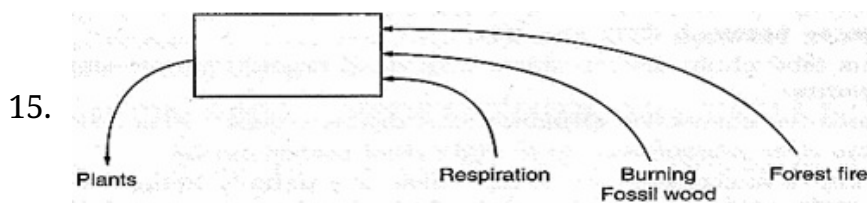
## CBSE Test Paper 04

### Ch-14 Ecosystem

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1. To attain maximum diversity and niche specialization, biotic succession needs:
  - a. Transitional community
  - b. Pioneer community
  - c. Interspecific competition
  - d. Climax community
2. Healthy ecosystems are the base for a wide range of
  - a. Economic, environmental and aesthetic goods and services.
  - b. Only aesthetic goods and services.
  - c. Only economic services.
  - d. Only economic services.
3. Which of the following group includes only ecosystem services?
  - a. Soil formation, nutrient cycling, energy generation.
  - b. Soil formation, extraction of coal, pollination, recreation.
  - c. Soil formation, nutrient cycling, pollination, habitat for wild animals.
  - d. Agriculture, soil formation, nutrient cycling.
4. Marine biomes are affected very less by
  - a. temperature
  - b. salinity
  - c. geographical location
  - d. type of sea floor
5. Universal non-polluting source of energy is
  - a. Sun
  - b. Wind and water
  - c. Fossils fuels
  - d. Nuclear energy
6. All the primary productivity is not available to a herbivore, give one reason.
7. Name the two forms of reservoir of carbon that regulate the ecosystem carbon cycle.
8. State what does a standing crop of a trophic level represent.

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9. Name the dominant producers in a deep aquatic ecosystem. What other name could you give to a primary consumer?
  10. Construct a pyramid of biomass starting with phytoplankton. Label 3 trophic levels. Is the pyramid upright or inverted? Why?
  11. Define ecological succession.
  12. Explain pyramid of numbers with the help of an example.
  13. Name the pioneer species on a bare rock. How do they help in establishing the next type of vegetation? Mention the type of climax community that will ultimately get established.
  14. Define ecological pyramids and describe with examples, pyramids of number and biomass.



The above diagram shows a simplified biogeochemical cycle.

- i. Name the compound whose cycle is depicted.
- ii. In what way do vehicles add this compound to the atmosphere?
- iii. What adverse effect does its excess have on the environment?
- iv. Cite an event which depicts this effect in modern times.
- v. Suggest two ways of reducing this effect.

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**Answer**

1. d. Climax community, **Explanation:** Climax community is the final community of succession that remain stable for sometimes. They have maximum diversity and niche specilisation that makes them stable.
2. a. Economic, environmental and aesthetic goods and services.,  
**Explanation:** Healthy ecosystems are the base for a wide range of economic, environmental and aesthetic goods and services. The products of ecosystem processes are named as ecosystem services, for example, healthy forest ecosystems purify air and water, mitigate droughts and floods, cycle nutrients, generate fertile soils, provide wildlife habitat, maintain biodiversity, pollinate crops, provide storage site for carbon and also provide aesthetic, cultural and spiritual values.
3. c. Soil formation, nutrient cycling, pollination, habitat for wild animals.  
**Explanation:** Ecosystem services "that are necessary for the production of all other ecosystem services". These services make it possible for the ecosystems to provide services such as food supply, flood regulation, and water purification. Ecosystem services includes soil formation, nutrient cycling, pollination, habitat for wild animals and other nature's life saving services.
4. c. geographical location, **Explanation:** The marine biome is the biggest biome in the world. It covers about 70% of the earth. It includes five main oceans: the Pacific, Atlantic, Indian, Arctic, and Southern, as well as many smaller Gulfs and Bays.  
Marine biomes remain almost same for all geographical location. It is affected by temperature, salinity and types of sea floor or stratification.
5. a. Sun, **Explanation:** Universal non-polluting source of energy is sun. All the sources of energy are directly and indirectly derived from sun including fossil fuels.
6. All the primary productivity is not available to a herbivore because a considerable

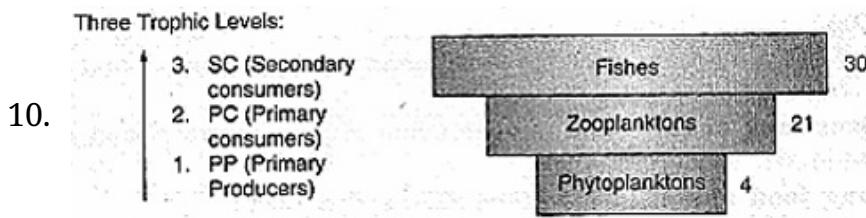
amount is utilised by the plants in respiration, while some is lost as heat into the environment.

7. Oceans and atmosphere

8. Standing crop represents the total mass of living material or energy content of all the organisms of a trophic level at a particular time and location.

9. Green algae and Phytoplanktons are the dominant producers in a deep aquatic ecosystem.

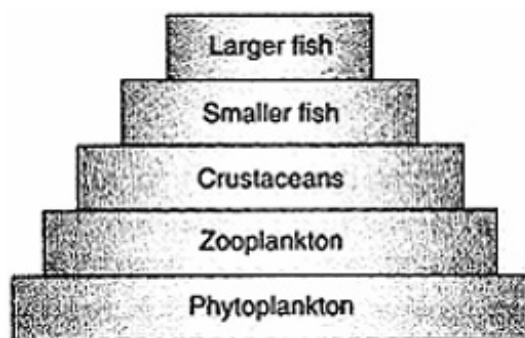
Herbivores are the primary consumers.



The pyramid is inverted since the biomass of fishes is much more than the phytoplankton.

11. Ecological succession is the gradual process by which ecosystems change and develop over time. Nothing remains the same and habitats are constantly changing. There are two main types of succession, primary and secondary.

12. **Pyramid of numbers:** It is a graphical representation of the number of individuals present at each trophic level in a food chain of an ecosystem. The pyramid of numbers can be upright or inverted depending on the number of producers. For example, in a grassland ecosystem, the pyramid of numbers is upright. In this type of a food chain, the number of producers (plants) is followed by the number of herbivores (mice), which in turn is followed by the number of secondary consumers (snakes) and tertiary carnivores (eagles). Hence, the number of individuals at the producer level will be the maximum, while the number of individuals present at the top carnivores will be least.



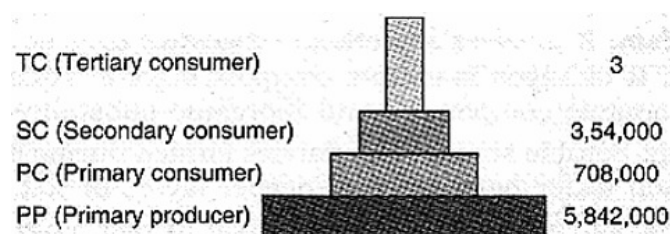
It is a graphic presentation of the aquatic food chain in terms of numbers of producers and consumers at each level.

13. The pioneer species on a bare rock are usually lichen, mosses and annual grass stage, and blue-green algae. In primary succession rocks, lichens are able to secrete acids to dissolve rocks, helping in weathering and soil formation. It paves way to some very small plants like bryophytes, which are able to take hold in the small amount of soil. They are, with time, succeeded by bigger plants.

Several hard and light demanding trees grow in the area occupied by shrubs. Slowly environment becomes more moist and shadier so that plants of climax community can spread in this area.

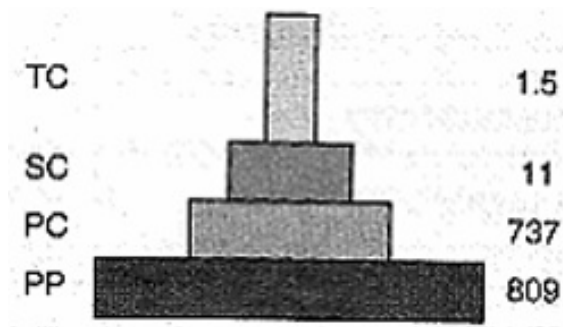
The type of climax community that will ultimately get established are shrubs and trees or a mesic forest.

14. An ecological pyramid is a graphical representation designed to show the biomass or productivity at each trophic level in a given ecosystem. Pyramids of numbers: An ecological pyramid of numbers shows graphically the population of each level in a food chain.



Pyramids of biomass: An ecological pyramid of biomass shows the relationship between biomass and trophic level by quantifying the amount of biomass present at each trophic level. Typical units for a biomass pyramid could be grams per  $m^2$  or

calories per m<sup>2</sup>. Biomass pyramids provide a single snapshot in time of an ecological community.



15. i. Carbon dioxide.
- ii. The burning of fossil fuels - petrol/diesel, in the vehicles produces carbon dioxide.
- iii. Carbon dioxide is a greenhouse gas and absorbs the infrared radiation emitted by the earth this results in an increased mean temperature of the atmosphere, also called global warming.
- iv. Melting of ice caps.
- v. Measures to reduce global warming include
- reducing the use of fossil fuels to reduce the emission of greenhouse gases.
  - reducing deforestation and planting more trees.