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Components of Environment

पर्यावरण

Environment in its true sense can be defined as all that surrounds us. Environment is our basic life support system. It provides the air we breathe, the water we drink, the food we eat and the land where we live. It also includes plants, animals and a large variety of man-made things which are necessary for our living. Thus, environment has both **natural** and **man-made elements**. The natural environment can be further bifurcated into two groups, i.e. (the **Physical environment** and the **Biological environment**). (The Physical environment includes all non-living things like land, water and air.) (The Biological environment includes all living things, such as plants and animals.) Man is the most important component of the biological environment who satisfies all the required needs from both parts (groups) of the environment.



Our environment, We care

The two components of the natural environment, that is the physical and the biological, are largely interdependent and cannot be separated. Any major change in the physical environment is bound to bring a change in the accompanying biological environment. The change can be sudden or gradual. For example, the development of soil takes years together and cannot be visualised through our senses. On the other hand, some changes are very sudden, like the changes brought about by the occurrence of an earthquake or volcano, etc.

FOUR SPHERES OF ENVIRONMENT

The natural environment can be broadly divided into four spheres, i.e. **Lithosphere**, **Atmosphere**, **Hydrosphere** and **Biosphere**. Each of these is unique in its own way and supports others in sustaining life forms on our planet called the **Mother Earth**. Let us understand the importance of each sphere of the natural environment.

Lithosphere

The literal meaning of 'lithosphere' is the 'sphere of rocks'. The earth's solid layer is called **lithosphere**.



Four spheres of environment

The lithosphere is about 100 km in thickness. The uppermost part of the lithosphere is composed of rocks rich in silica and aluminium called sial. Below the sial layer, the rocks are mainly rich in silica and magnesium and are called sima, which is generally found below the bottom of the ocean basins.

Thus, lithosphere is that part of the earth which provides us land over which we live. It provides soil for the plants and is also a source of all the mineral wealth.

Atmosphere

The literal meaning of 'atmosphere' is the 'sphere of air'. The atmosphere is composed of a mixture of gases which forms an envelope around the earth. It is a gaseous envelope extending about 1,600 km above the earth's surface. Of the total mass of the atmosphere, 99 per cent exists within 32 km of height from the earth's surface.

Among the four major elements of environment, atmosphere is the most dynamic in nature where changes occur not only from one season to another but also within a short period of time say, a few hours. These sudden changes produce changes in atmospheric conditions which affect our life both directly and indirectly.

Hydrosphere

Hydrosphere refers to the 'sphere of water' which is present in oceans, rivers, lakes and other water bodies on the earth's surface. (The planet earth is often called the **Water Planet** or the **Blue Planet** because of abundance of water on its surface.) The water bodies that include rivers, lakes, seas and oceans cover 71 per cent of the earth's surface.



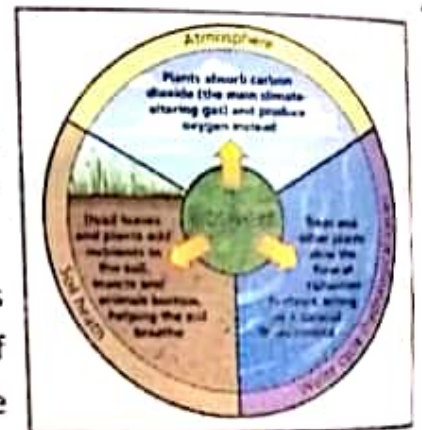
The sea

The distribution of water is not uniform in both the Northern and the Southern Hemispheres. It is estimated that 43 per cent of the total area covered by water lies in the Northern Hemisphere whereas the remaining 57 per cent lies in the Southern Hemisphere. Oceans hold 96.5 per cent water on the earth. Rest of the water is available in the form of ice, water vapours, underground water, rivers and lakes.

Biosphere

The word 'biosphere' literally means the 'sphere of life'. (Biosphere is the narrow zone of contact between all the three spheres of environment where all kinds of life exist.)


(Most of the living organisms like plants, animals and microbes present on the earth are found on or near the earth's surface of the land, water and air.) Human beings are an important part of the biosphere. They are capable of changing it.



Biosphere

The earth is full of diversities. There is diversity in land, soil, plants and animals. This process of diversification has occurred largely over long period of time resulting in the emergence of new species of plants and animals. These changes create biodiversity on the earth


The Government of India has passed the Wildlife Protection Act in 1972 to protect and conserve this biodiversity. Under this Act poaching and hunting are prohibited. Violation of this Act is a punishable crime under law. It is not only the duty of the government to protect and preserve wildlife but all of us are responsible.



Do You Know?

Some critically endangered species of animals in India are Forest Owlet, Ganges Shark, Tiger Toad, Flying Frog, Leatherback Turtle, etc. Presently, there are 102 National Parks and 515 Wildlife Sanctuaries in India.

Human beings, as an important part of the environment, are well-equipped to exploit, consume or utilise different plant and animal species existing on the earth's surface. It is the need of the present times that we should live in harmony with our surroundings. This will allow the earth to sustain all forms of life on it and to produce newer ones in the course of time.



Keywords

- **biodiversity** it is a variety of life on earth comprising of plants, animals and micro-organisms.
- **microbes** very small organisms.
- **national park** a well demarcated reserved area for the protection of wildlife. It does not allow any human activity.
- **ocean** vast expanse of saline water on the earth's surface.
- **wildlife sanctuary** a geographical area meant for the conservation of biodiversity. Limited human activities are permitted.



Something To Know

A. Tick (✓) the correct option.

- Which one is not a part of biological environment?
(a) plants (b) water
(c) animals (d) human beings
- Volcanoes erupt due to—
(a) internal disturbance of the earth. (b) external disturbance of the earth.
(c) climate change. (d) man-made changes on the earth.
- Which one brings a sudden change in the environment?
(a) formation of a river (b) rainfall
(c) growth of a plant (d) formation of a mountain
- Identify by the term that stands for the topmost layer of the earth comprising of loose material.
(a) minerals (b) soil
(c) sial (d) sima
- In which year was the Wildlife Protection Act passed in India?
(a) 1971 (b) 1972
(c) 1973 (d) 1974

B. Give a single term for each of the following sentences.

- A situation or condition in which an organism lives.
- The only planet in our solar system where life exists.
- The uppermost part of the lithosphere which is rich in silica and aluminium.
- The sphere of air that envelopes the earth.
- Mass of water on the earth's surface.

Earth
Sial
Litho
Ocean

C. Match the following:

- | | |
|--|----------------------|
| 1. Physical environment includes | a. Atmosphere |
| 2. It is the most dynamic in nature | b. Human beings |
| 3. A narrow zone supporting life | c. Non-living things |
| 4. They are capable of modifying environment | d. Biosphere |
| 5. Rocks rich in silica and magnesium | e. Sima |

D. Answer the following questions in brief.

1. Name the major components of the environment.
2. What is meant by Sima and Sial?
3. Mention the distribution of water in the Northern and Southern hemispheres.
4. Give the literal meaning of four spheres of environment.
5. What is the atmosphere composed of?

E. Answer the following questions.

1. Differentiate between the physical and the biological environment.
2. Why is the earth called the 'Blue Planet'?
3. Define biosphere. Why is it important for us?
4. Explain with the help of an example how physical and biological components of the environment are interdependent. *Ex: Land, air, water form physical environment in which the plants and animals depend on each other for their existence.*
5. Explain two ways in which human beings are disturbing the natural environment. *1. Deforestation of natural resources. 2. Mining of large quantities of minerals.*



Value Based Question

On 25 April 2015, a massive earthquake of 7.8 magnitude struck 77 km north west of Nepal's capital, Kathmandu. It was the most powerful earthquake to have hit Nepal since 1934. It led to heavy loss of life and property. During this earthquake four men were trapped under the 10 feet rubble. They were rescued by NASA technology, FINDER (Finding Individuals for Disaster and Emergency Response) which sensed their heartbeats. This was the first time when this technology was used in a real-life situation. This is indeed a big step towards disaster management. But this, in no way, reduces our responsibilities as human beings.

- Under the circumstances, what best can we do after such a disaster?
- Suggest any five ways in which we can help the victims of other types of disasters.