

## Chapter 14

### Natural Resources

#### Intext Questions

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Question 1: How is our atmosphere different from the atmosphere on Venus and Mars?

Solution: The main difference is the composition of both the atmosphere

.The atmosphere of Earth contains a mixture of many gases like nitrogen (78.08%), oxygen (20.95%), carbon dioxide (0.03%) and water vapour (in varying proportion). On the other hand, the atmosphere on Venus and Mars mainly contains carbon dioxide. i.e., about 95-97%. It may be the reason that there are no life in the existence in both Venus and Mars.

Question 2: How does the atmosphere act as a blanket?

Solution: The atmosphere acts as a blanket by performing the following functions:

- (a) It keeps the average temperature of the Earth fairly constant during day time and even during the course of whole year.
- (b) It prevents a sudden increase in the temperature during day time.
- (c) It slows down the escape of heat from the surface of the Earth into outer space during night time.

Question 3:What causes winds?

Solution:Unequal heating of atmospheric air generates the winds.. The heat causes rising up of air along with water vapour. As the air rises, it expands and cools. This cooling causes the water vapour in the air to condense. The condensation of water occurs if some particles (like dust particles) act as the 'nucleus' for these drops to stick around. These tiny droplets grow bigger by more and more condensation of other water droplets and finally form the clouds.

Question 4:How are clouds formed?

Solution:During the day time, water evaporates from water bodies and goes into the atmosphere.

Air also becomes hot due to sunlight and starts rising up taking along with water vapour.

As the air rises up, it expands and cools.

This cooling of air causes water vapour in the air to condense. The process of condensation of water occurs. Small droplets grow and become big by more and more condensation of other droplets of water. These steps form the clouds.

Question 5: List any three human activities that you think would lead to air pollution.

Solution: The following activities lead to air pollution:

Excessive burning of fossil fuels, i.e., coal and petroleum produces high amount of oxides of nitrogen and sulphur.

Many industries release high amount of poisonous gases into the atmosphere causing air pollution.

Industrialization

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Question 1: Why do organisms need water?

Solution: Organisms need water because:

Substances dissolve in water for reactions to take place

Cellular processes need water for their functioning.

Transportation of substances within the body needs water.

Water helps in digestion of food and its absorption in the blood.

It helps to maintain body temperature.

Question 2: What is the major source of freshwater in the city/town/village where you live?

Solution: Underground water is the major source of water in city/town/village,. It is drawn with the help of hand pumps and tubewells. The other nearby sources are rivers, lakes and ponds.

Question 3: Do you know of any activity which may be polluting this water source?

Solution: The activities which may be polluting the water bodies are:

Disposal of garbage or sewage from cities/towns and from factories.

Release of hot water from the industries which may disturb the temperature of water body by disturbing the BOD.

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Question 1:How is soil formed?

Solution:The formation of soil takes place in the following ways:

Rocks near the surface of Earth are broken down by various physical, chemical and some biological processes. This process takes millions of years.

This weathering leads to the formation of fine particles called soil.

There are some other factors responsible to the formation of soil. These are:

Cracking and breaking down of rocks by sun heat that causes them into small particles.

Water dissolves rocks by freezing and fast flowing.

Wind causes erosion of rocks by fast blowing.

Lichens and mosses grow on rock surfaces and break them into powder down and form a thin layer of soil.

Question 2:What is soil erosion?

Solution:Removal of top layer soil is known as soil erosion. It is rich in humus and nutrients. The agents of soil erosion are mainly flowing water or wind. Land becomes infertile if this process occurs for long time and the reason for the same is the loss of its valuable nutrients.

Question 3:What are the methods of preventing or reducing soil erosion?

Solution:Preventive methods of soil erosion are as follows:

Afforestation

Contour Ploughing

Step (terrace) Farming

Soil Cover

Overgrazing

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Question 1:What are the different states in which water is found during the water cycle?

**Solution:** During the water cycle, water is found in solid state (snow, ice, etc.), liquid state (ground water, river water, etc.) and gaseous state (water vapours).

**Question 2:** Name two biologically important compounds that contain both oxygen and nitrogen.

**Solution:** The biologically important compounds that contain both oxygen and nitrogen are nitrates ( $\text{NO}_2$ ) and nitrates ( $\text{NO}_3$ ).

**Question 3:** List any three human activities which would lead to an increase in the carbon dioxide content of air.

**Solution:** The human activities which would lead to an increase in  $\text{CO}_2$  content of air are;

Deforestation increases the level of  $\text{CO}_2$  in the environment.

Respiration is the natural way to release of  $\text{CO}_2$  by plants. It is balanced by the release of oxygen by plants. So, it is not harmful for the environment.

Combustion of Fuels leads to increase in  $\text{CO}_2$  level in the atmosphere. Fuels are burnt to carryout activities like cooking, transportation and in industrial processes.

**Question 4:** What is the greenhouse effect?

**Solution:**Some gases like carbon dioxide, methane, nitrous oxide prevent the escape of heat from the Earth's surface by trapping it. This increases the average temperature of the Earth.

This is called the green house effect. An increase in the content of such gases would lead to a situation of global warming.

**Question 5:**what are the two forms of oxygen found in the atmosphere?

**Solution:**The two forms of oxygen found in the atmosphere are;  
Elemental oxygen is normally found in the form of diatomic molecule ( $O_2$ ) in the lower part of atmosphere. It is about 21% in the air and nonpoisonous.

Ozone is found in the stratosphere part of atmosphere. It contains three atoms of oxygen ( $O_3$ ).

## Exercises

**Question 1:**Why is the atmosphere essential for life?

**Solution:**Atmosphere is essential for life due to following reasons:

It maintains the appropriate climate for the sustain of life





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It keeps the average temperature of the Earth steady during the day and even throughout the year.

It prevents the sudden increases in temperature during the daylight hours.

The gases it contains are required for sustaining life on Earth. These gases are:

- o Oxygen , Carbon dioxide and Nitrogen

A thick layer of ozone (in stratosphere) of atmosphere filters the harmful UV radiations reaching the Earth. The UV rays produce harmful effects on all living organisms.

Question 2:Why is water essential for life?

Solution:Water is essential for life because of these reasons:

It provides medium to carry out all the cellular processes.

All the reactions that occur in our body and within cells occur between substances that are dissolved in water.

It is required for the transportation of materials from one part of the body to the other. It helps to maintain body temperature.

Water makes up about 70 % of body weight of all the living organisms.

Question 3: How are living organisms dependent on soil? Are organisms that live in water totally independent of soil as a resource?

Solution: Living organisms depend on soil in the following ways:

Soil helps to bind the roots of plants to provide them anchorage. The nutrients in soil are absorbed by the plants for their growth and development.

It provides natural habitat for various living organisms, e.g., bacteria, fungi, algae, earthworms, etc. These help to maintain the fertility of soil.

Many animals like rats, rabbits, etc., make their home in the soil. Earthworm performs all its activities in the soil. It maintains the fertility of soil by releasing nitrogen rich excreta.

Organisms that live in water are not totally independent of soil as a resource. These organisms depend on aquatic plants for food and other substances. These aquatic plants in turn require minerals for their sustenance. These minerals are carried to water bodies from soil by rivers, rain water, etc. without the supply of minerals from the soil to the water bodies, it is impossible to imagine aquatic life.



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Question 4: You have seen weather reports on television and in newspapers. How, do you think we are able to predict the weather?

Solution: Meteorologists collect information regarding the pattern of temperature, speed of wind, air pressure and all other features which influence weather. All these information are collected by remote sensing and weather forecast satellites. This information is then compiled in meteorological departments which prepare a weather report that is displayed on the maps. This information is further transmitted through radio, television and newspaper.

Question 5: We know that many human activities lead to increasing levels of pollution of the air, water-bodies and soil. Do you think that isolating these activities to specific and limited areas would help in reducing pollution?

Solution: Yes. Isolating human activities to specific areas would help in reducing levels of pollution. For example, setting up of industries in isolated regions will control pollution to some extent. The pollution caused by these industries will not contaminate water resources, agriculture land, fertile land, etc.

Question 6: Write a note on how forests influence the quality of our air, soil and water resources.

Solution: Forests influence the quality of air, soil and water resources in the ways as below:

#### A. Influence of forests on air :

Forests help to maintain oxygen and carbon dioxide balance in the air, They reduce the level of CO<sub>2</sub> in the air and to prevent greenhouse effect.

These maintain temperature of the environment,  
Forests increase the rate of photosynthesis in surrounding region.

#### B. Influence of forests in quality of soil:

Trees spread their roots deep inside the Earth and bind the soil particles firmly. This reduces soil erosion.

Forests help to maintain nutrient cycles (biogeochemical cycles) in the atmosphere.

#### C. Influence of forests in quality of water:

Water cycle will be maintained by the help of trees

Forests conserve water and make them available on the surface of Earth as water sources.