CHAPTER - 14
NATURAL RESOURCES

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

Answer 1:
Earth's atmosphere is different from those of Venus and Mars. This difference lies essentially in their compositions. Earth's atmosphere is a mixture of nitrogen (79%), oxygen (20%), and a small fraction of carbon dioxide, water vapours and other gases. This makes the existence of life possible on Earth. However, the atmospheres on Venus and Mars mainly consist of carbon dioxide. The amount of carbon dioxide on these planets can range from 95% to 97%.

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

Answer 2:
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?

Answer 3:
An uneven heating of the Earth's surface causes winds. On being heated, air becomes lighter and rises up. As a result, a region of low pressure is created. Then, air from a high pressure region moves to a low pressure region, causing wind.

Question 4:
How are clouds formed?

Answer 4:
During day time, on being heated, a large amount of water evaporates from various water bodies and goes into the air. A part of this water vapour also reaches the atmosphere through biological activities such as transpiration and respiration. This causes the air in the atmosphere to heat up.

When this heated air rises, it expands and cools, which results in the condensation of water vapour forming water droplets. The presence of dust and other suspended particles in air also facilitates the process of condensation. The formation of water droplets leads to the formation of clouds.

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

Answer 5:
The following three human activities would lead to air pollution:

(i) Burning of fossil fuels such as coal and petroleum
(ii) Industrialization
(iii) Deforestation

Question 1:
Why do organisms need water?

Answer 1:
Organisms need water for the following reasons:

(i) All cellular processes need water as a medium. Usually, the reactions that take place in our body or within the cells occur between substances that are dissolved in water.

(ii) Since most of the substances are transported in a dissolved form, water is necessary.

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

Answer 2:
River is a major source of fresh water.

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

Answer 3:
The discharge of waste water from homes, industries, hospitals, etc. into the river pollutes this fresh water source.

Question 1:
How is soil formed?

Answer 1:
Soil is formed by breaking down of rocks at or near the surface of the Earth through various physical, chemical, and biological processes by various factors such as the sun, water, wind and living organisms.

(i) **Sun:** During day time, the rocks are heated. This causes the rocks to expand. During night time, these rocks cool down and contract. Since all parts of the rock do not undergo expansion and contraction at the same rate, this causes the formation of cracks in these rocks. These cracks lead to the breaking up of huge rocks into smaller pieces.

(ii) **Water:** Water catalyses the process of formation of soil in two ways.

(a) Water goes into the cracks and crevices formed in the rocks. When this water freezes, its volume increases. As a result, the size of the cracks also increases. This helps in the weathering of rocks.

(b) Running water wears away hard rocks over long periods of time. Water moving in fast speed carries big and small particles of rock downstream. These rocks rub against each other, resulting in breaking down of rocks. These smaller particles are carried away by running water and deposited down its path.

(iii) **Wind:** Strong winds carry away rocks, which causes rubbing of rocks. This results in the breaking down of rocks into smaller and smaller particles.

(iv) **Living organisms:** Some living organisms like lichens help in the formation of soil. Lichens also grow on rocks. During their growth, lichens release certain substances, which cause the rock surface to powder down forming a thin layer of soil. On this thin layer of soil, some small plants like moss also grow. They further cause the breaking down of the rock particles.

Question 2:
What is soil erosion?

Answer 2:
The blowing away or washing away of land surface by wind or water is known as soil erosion.

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

Answer 3:
The methods of preventing or reducing soil erosion are:

(i) Prevention of deforestation
(ii) Plantation of trees

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

Answer 1:
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.

Answer 2:
Two biologically important compounds that contain both oxygen and nitrogen are:

(i) Amino acids
(ii) Deoxyribonucleic acid (DNA) and Ribonucleic acid (RNA)

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

Answer 3:
(i) Burning of fuels in various processes like heating, cooking, transportation, and industry.
(ii) Human induced forest fires.
(iii) The process of deforestation includes the cutting down of trees. This decreases the uptake of carbon dioxide for photosynthesis. Eventually, the content of carbon dioxide increases.

Question 4:
What is the greenhouse effect?

Answer 4:
Some gases like carbon dioxide, methane, nitro us 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 greenhouse 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

Answer 5:
The two forms of oxygen found in the atmosphere are:

(i) Diatomic molecular form with chemical formula O_2.

(ii) Triatomic molecular form with chemical formula O_3 known as ozone.

Question 1:
Why is the atmosphere essential for life?

Answer 1:
The atmosphere is essential for life because it maintains an appropriate climate for the sustenance of life by carrying out the following activities:

(i) Atmosphere keeps the average temperature of the Earth fairly constant during day time.

(ii) It prevents a sudden increase in temperature during day time.

(iii) It also slows down the escape of heat from the surface of the Earth into outer space during nighttime.

Question 2:
Why is water essential for life?

Answer 2:
Water is essential for life because of the following reasons:

(i) Most biological reactions occur when substances are dissolved in water. Thus, all cellular processes need water as a medium to take place.

(ii) Transportation of biological substances needs water as a medium.

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

Answer 3:
Almost all living organisms are dependent on soil. Some depend directly, while some depend indirectly. Plants need soil for getting support as well as nutrients to prepare their food. On the other hand, organisms depend on plants for food and other substances that are essential for life. Herbivores depend directly upon plants, and carnivores depend upon animals, which in turn depend upon plants for food. This makes them depend on soil indirectly. 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.

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

Answer 4:
The meteorological department of the government collects data on the elements of weather such as maximum and minimum temperatures, maximum and minimum humidity, rainfall, wind speed, etc. They are able to study these elements using various instruments. The maximum and minimum temperature of a day is measured by a thermometer known as the maximum−minimum thermometer. Rain fall is measured by an instrument known as the rain gauge. Wind speed is measured by anemometers. There are various instruments used to measure humidity.

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?

Answer 5:
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.

Answer 6:
Forests influence the quality of our air, soil, and water resources in various ways. Some of them are:

(i) Forests balance the percentages of carbon dioxide and oxygen in the atmosphere. The increasing amount of carbon dioxide caused by human activities is balanced by a larger intake of carbon dioxide by plants during the process of photosynthesis. Simultaneously, a large amount of oxygen is released.

(ii) Forests prevent soil erosion. Roots of plants bind the soil tightly in a way that the surface of the soil cannot be eroded away by wind, water, etc.

(iii) Forests help in the replenishment of water resources. During the process of transpiration, a huge amount of water vapour goes into the air and condenses to form clouds. These clouds cause rainfall that recharge water bodies.