14

Natural Resources

In the Chapter

- Life on Earth depends on resources such as soil, air and water, and energy from the Sun.
- Uneven heating of air over land and water-bodies causes winds.
- Evaporation of water from water-bodies and subsequent condensation provide us rain.
- Rainfall patterns depend on the prevailing wind patterns in an area.
- Many nutrients are used again and again in a cyclic fashion. This leads to a certain balance between the different components of the biosphere.
- Pollution of air, soil and water affect the quality of life and harm the biodiversity.
- We have to conserve our natural resources and use them in a sustainable manner.

Intext Exercises

Page No. 193

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

Ans. Our atmosphere has various important gases like nitrogen, oxygen, carbon dioxide and water vapour which together help in the existence of life on it. But the atmospheres on Venus and Mars have 95% to 97% carbon dioxide. The life supporting gases are not present there.

2. How dies the atmosphere act as a blanket?

Ans. The atmosphere acts as a blanket in the following way :
(i) It maintains average temperature on the earth.
(ii) It prevents the sudden rise of temperature during daytime.
(iii) It prevents heat from escaping to the outer space during nights.

3. What causes winds?

Ans. The air mass present near the earth surface get heated and rises up very fast. This leads to a decrease in air pressure. So, the heavier air present on the sea surface moves towards the area having low air pressure. This moving air causes wind.

4. How are clouds formed?

Ans. The water vapourises in the water bodies due to sun's heat. This water vapour gets mixed with the air. Some water vapours are already present in air. The water vapour after cooling down forms small water droplets suspended in air. This is called cloud.

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

Ans. (i) Using fossil fuels likes diesel, petrol, kerosene, etc.

(ii) Burning woods and coals
(iii) Cement industry
(iv) Smoke from industries, etc.

Page No. 194

1. Why do organisms need water?

Ans. The organisms need water:
(i) For different cellular processes.
(ii) For transportation of substance from one place to another inside the body.

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

Ans. Rivers or wells

3. Do you know of any activity which may be polluting the water source?

Ans. (i) **River** : The river water get polluted due to bathing and cleaning.
(ii) **Well :** Bathing and cleaning pollute well water.

Page No. 196

1. How is soil formed?

Ans. Following factors help in the formation of soil-
(i) Sun : The solar rays gradually heat the rock to expand it during day time. During nights, the rocks contracts, thus the cracks develop in the rocks and they break down.
(ii) Water : Water helps in the formation of soil in two ways—
(a) The cracks formed due to solar heat are filled with water. If water accumulates for a longer time, it widens the gap and loosens the rock into small pieces.
(iii) Air : Under the effect of blowing wind the stone pieces further break down.
(iv) Living organisms : Living organisms also help in the process of soil formation. Lichens grow on rock surfaces and converts them into powdery form and make soil layer. In the same way the plants like moss also help in the making of fine soil particles.

2. What is soil erosion?

Ans. The process of carrying away the upper fertile layer of soil by air and wind is called soil erosion.

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

Ans. (i) To grow maximum crops
(ii) To prevent excessive grazing
(iii) To prevent felling down the tree and planting new trees
(iv) To maintain the fertility of the soil

Page No. 201

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

Ans. Water is found in the following three different states during water cycle-
(i) Solid (ice)
(ii) Liquid water
(iii) Gas (water vapour)

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

Ans. (i) Protein
(ii) Nucleic acids (DNA and RNA).

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

Ans. Following are some human activities responsible for an increase in carbon dioxide content of air.
(i) Burning fossil fuels like diesel and petrol

(ii) Burning firewood and charcoal
(iii) Felling down the trees

4. What is greenhouse effect?

Ans. The earth receives light of different wavelengths from the sun. The ozone present in the upper atmospheric layers absorbs the harmful ultra-violet rays. The Earth receives other radiations and changes them into infrared rays of higher wavelengths CO_2 present in the atmosphere absorbs these radiations. This leads to an increase in the atmospheric temperature. This is called greenhouse effects.

5. What are the two forms of oxygen found in the atmosphere?

Ans. Oxygen is found in the following two forms in the atmosphere-
(i) Diatomic state (O_2)
(ii) Triatomic state (O_3)

Exercise

1. Why is the atmosphere essential for life?

Ans. Importance of atmosphere :
(i) It maintains the temperature. If temperature on the earth rises suddenly, it may threaten the existence of life.
(ii) It prevents heat from escaping away to the outer space during nights.

2. Why is water essential for life?

Ans. Importance of water :
(i) Water is essential for the biological processes taking place inside the cell.
(ii) It is essential for transportation of substances from one place to another inside the cell.

3. How are living organisms dependent on the soil? Are organisms that live in water totally independent of soil as resources?

Ans. Living beings directly or indirectly depend on soil because all living being depend on green plants to fulfil their food and energy requirements. Carnivorous animals depend on herbivorous animals. Plants depend on soil because :
(i) They obtain nutritive elements from soil for making their food.
(ii) Plant obtain water from soil. Soil also help them in standing erect and prevents them from being blown away by winds. This is not true to say that organisms living in water are totally independent of soil because they also depend on green plants for their food and energy requirements in one way or the other. Plants in turn are dependent on soil for water and minerals. So, it can be said that all living beings, whether aquatic or terrestrial, directly or indirectly depend on soil.

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

Ans. The prediction of weather can be done on the basis of speed and direction of wind which in turn help in predicting about the rain and other weather related processes. It helps in finding low or high air pressure areas. In India, most of the rains is due to south-west monsoon or north-east monsoon.

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 ?

Ans. We know that many human activities increase pollution. But by limiting these activities to certain areas would not reduce pollution. Air, water and soil are the natural resources which are interrelated. They cannot be limited to a certain area. Air is polluted with the rise in the level of CO_2 and other air pollutants. These air pollutants are carried away to other places by the winds. Water pollution is caused due to decrease in the level of oxygen

dissolved in water and by adding toxic substances to various water bodies. This cause the death of aquatic life forms. This affects the food chain and food web. In the same way, soil pollution leads to decrease in soil fertility and soil erosion. So, by limiting different human activities to specific areas the problem of pollution can't be resolved.

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

Ans. Forests influence all the three sources like air, water and soil :

(i)Forests maintain the balance between carbon dioxide and oxygen. They need CO_2 for photosynthesis and release O_2 in this process. Similarly they need O_2 for respiration and release CO_2 in this process.

(ii) Forests prevent soil erosion. The roots of plants hold soil tightly and prevent them from being blown away by wind and water.

(iii) Forests are also essential for recharging the water sources. They play important role in maintaining water cycle by transpiration. They also help in the cycling of under-ground and surface water.

In this way forests affect the quality of air, water and soil.

Additional Questions

1. Following are a few organisms :
(a) lichen (b) mosses (c) mango tree (d) cactus
Which among the above can grow on stones; and also help in formation of soil ? Write the mode of their action for making soil.

Ans. (a) and (b) (Lichen and Mosses). They can grow an stones. Lichens and mosses release substances which breakdown the stones resulting in the formation of soil. The mode of action here is chemical.

2. Soil formation is done by both abiotic and biotic factors. List the names of these factors by classifying them as abiotic and biotic ?

Ans. **Abiotic Factors:** Sun, water, wind.
Biotic Factors: Lichens, mosses, herbs, shrubs and trees.

3. All the living organisms are basically made up of C, N, S, P, Hand O. How do they enter the living forms ? Discuss.

Ans. Most of them first enter plants and become components of organic materials during the process of photosynthesis. They enter : plants from air (CO_2), water and ions (from soil). From plants the chemicals pass on to other organisms.

4. Why does the percentage of gases like oxygen, nitrogen and carbon dioxide remain almost the same in the atmosphere?

Ans. Through biogeochemical cycling where there is repeated circulation of biogenetic nutrients between abiotic and biotic components of the environment.

5. Why does moon have very cold and very hot temperature variations e.g., from-190°C to 110°C even though it is at the same distance from the sun as the earth is?

Ans. Moon does not possess atmosphere. Atmosphere being a bad conductor acts as a temperature buffer on earth. This is not so on the moon. Therefore, moon gets heated up as the sun rays fall on its surface. It cools down drastically when there is no sunlight.

6. Rivers from land, add minerals to sea water. Discuss how?

Ans. Water is capable of dissolving a large number of substances. As water flows over the rocks containing soluble minerals, some of them get dissolved in the water. Thus, rivers carry many nutrients from land to the sea.

7. How can we prevent the loss of top soil?

Ans. Loss of top soil can be prevented by
(i) increasing the vegetational cover
(ii) checking the falling of trees
(iii) preventing excessive grazing by animals

8. How is the life of organisms living in water affected when water gets polluted?

Ans. Addition of undesirable chemicals like pesticides, fertilizers, industrial waste and domestic wastes not only kill the organisms, they also cause diseases to the aquatic organisms. Besides, the requirement of oxygen by aquatic organisms is also increased. There is a reduction in the dissolved oxygen in water which adversely affects the aquatic organisms.

9. During summer, if you go near the lake, you feel relief from the heat, why?

Ans. During day time, air over the land becomes heated up, raises upward and creates an area of low pressure. Lake water is not heated up so quickly. Evaporation of water from its surface also cools it up. Therefore, air over the surface of lake is cooler. It moves towards the land where low pressure exists. Therefore, during daytime a cool breeze flows from lake to the land nearby.

Multiple Choice Questions

1. Wind causes weathering of rocks through

(a) Chemical change (b) Abrasion
(c) Mechanical forces (d) Frost action

Ans. (b) Abrasion

2. Which one promotes soil erosion?

(a) Conservation tillage (b) Terracing
(c) Over-grazing (d) Wind-breaks

Ans. (c) Over-grazing

3. A man-made source of air pollution is

(a) Burning of fossil fuels (b) Dust storm
(c) Pollen grains (d) Forest fone

Ans. (a) Burning of fossil fuels

4. Dissolved gas present in acid rain is

(a) Hydrogen chloride (b) Nitrogen oxides
(c) Sulphur dioxide (d) All the above

Ans. (d) All the above

5. Chlorofluoro carbons have been in use for

(a) Aerosol propellants (b) Formation of foam
(c) Refrigerators (d) All of the above

Ans. (d) All the above

6. The major cause of ozone depletion has been

(a) Pesticides (b) Chlorofluoro carbons
(c) Fertilizers (d) All the above

Ans. (b) Chlorofluoro carbons

7. The gas which is mainly responsible for greenhouse effect is

(a) Nitorgen (b) Oxygen
(d) Carbondioxide (d) Argon

Ans. (c) Carbondioxide