

# NCERT SOLUTIONS

## CLASS IX SCIENCE

### CHAPTER 14- NATURAL RESOURCES

**Question 1:**

**Compare the atmosphere of earth with that of Venus and Mars.**

**Solution:**

The atmosphere of earth contains a combination of different gases like nitrogen (78.08%), carbon dioxide (0.03%), oxygen (20.95%), water vapor and other gases.

The atmosphere of Venus and Mars are largely composed of carbon dioxide, which constitutes 95% – 97% of the total amount of gases. This is the reason that no life can exist on Venus and Mars.

**Question 2:**

**Explain how an atmosphere acts as a stabilizer for our planet.**

**Solution:**

Our atmosphere is composed of air, which is a bad conductor of heat, and this helps our planet to maintain its average temperature steadily during the day and throughout the year. It prevents excess heat during the daytime and at night-time, it slows the heat transfer to outer space.

**Question 3:**

**What cause winds?**

**Solution:**

The unequal heating of the atmospheric air causes winds. It is predominate along the coastal areas. During daytime, the air, which is above the land, gets heated and starts to rise. This creates a region of low pressure and to compensate it, the air that is over the sea then moves into this region. Thus, winds are created due to the movement of this air and the direction is from sea to land during the daytime.

**Question 4:**

**Explain the formation of clouds.**

**Solution:**

Water bodies and other water sources get heated during daytime and the evaporation of water takes place which rises along with the warm air. When the air rises, it cools and expands. The water vapor condenses around the dust particles to form tiny droplets of water. These droplets combine to form clouds.

**Question 5:**

**Name some human activities that cause air pollution.**

**Solution:**

- (i) The smoke from industries and factories cause air pollution.
- (ii) Due to the burning of fossil fuel, harmful gases are emitted into the atmosphere.
- (iii) Air pollution is caused by mining, ore refining and forest fire.
- (iv) The chlorofluorocarbons from the air conditioners cause pollution.

**Question 6:**

**Is water an essential resource for living organisms?**

**Solution:**

Water is needed for living organisms for various reasons like

- (i) Water medium is the place where all the cellular processes take place.
- (ii) in all living organisms, water makes up 70 % of their body weight.
- (iii) Transportation of substances take place from one place to another in the body in a liquid form.
- (iv) It's used to maintain body temperature and moisture.

**Question 7:**

**In the place where you live, what is the major source of water?**

**Solution:**

Underground water is the major source of water, which is taken out using pumps or bore wells. The other sources of fresh water are rivers, lakes and ponds.

**Question 8:**

**What are the activities that pollute the water sources?**

**Solution:**

- (i) The chemicals are dumped into rivers or lakes from industries and factories.
- (ii) The water from the cooling tower is discharged into aquatic bodies that affect the aquatic life.

**Question 9:**

**Explain the formation of soil.**

**Solution:**

Various physical, chemical and some biological processes break down the rocks over a period. The products are the fine particles of soil. There are many other factors, which play a vital role in the formation of soil.

These factors are :

- (i) The Sun : It causes heating of rocks resulting in cracks and ultimately breaking down into smaller pieces.
- (ii) Water: It breaks rocks by both freezing and their speed of flow.
- (iii) Wind: It causes erosion of rocks similar to the action done by fast flowing water. It also carries sand from one place to the other like water does.
- (iv) Living organisms: Lichens and moss plants grow on the rock surface and cause rock surface to powder down and form a thin layer of soil

**Question 10:**

**Explain soil erosion.**

**Solution:**

The topsoil, which is fertile and rich in nutrients, is removed by the action of wind or by the flow of water, which is known as soil erosion. It is the most naturally available resource on which farmers can grow the crops.

**Question 11:**

**What can be done to prevent soil erosion?**

**Solution:**

- (i) Afforestation: Planting of trees to reduce erosion of soil is known as Afforestation. The roots of the tree hold the soil together.
- (ii) Shelter belts: To reduce the soil erosion due to the winds, trees are planted around the farmland.
- (iii) Contour ploughing: In contour ploughing, the land is ploughed across the slopes and along the contour lines. This will also reduce soil erosion and make rainwater infiltrate into the soil more than on land plowed along the slope.
- (iv) Terrace farming: To catch the descending water, a series of steps formed by horizontal strips supported by walls are present. It will get the water to percolate into the soil and nourish the crop.
- (v) Soil cover: It's a dense cover of dried vegetation that grows over the surface of the ground to prevent soil erosion after harvesting a crop. Grass or pasture crops are used to cover steep slopes that cannot be ploughed.
- (iv) Preventing overgrazing: The grass has the ability to bind the soil molecules. So, it plays a great role in preventing soil erosion. Overgrazing of grass leads to soil erosion.

**Question 12:**

**Name the different states of water which is found in the water cycle.**

**Solution:**

The different states of water in the water cycle are:

- (a) Gaseous state which is present in the form of water vapor.
- (b) Liquid state which is the condensation of water vapor
- (c) Solid state which is the freezing of the water molecules.

**Question 13:**

**What are the important biological compounds that have both oxygen and nitrogen?**

**Solution:**

DNA and RNA which contain proteins and nucleic acid are the most important biological compounds.

**Question 14:**

**What are the activities that cause carbon dioxide in the air to increase?**

**Solution:**

The following are the reasons that lead to an increase in the carbon dioxide in the air:

- (a) Due to deforestation, the intake of carbon dioxide by plants and trees are reduced.
- (b) The fumes and toxic gases from the industries and factories are let into the air which increases the level of carbon dioxide in the atmosphere.
- (c) Sometimes forest fires which are caused by humans release a large amount of carbon dioxide in the air.

**Question 15:**

**What are the effects of greenhouse gases?**

**Solution:**

There are some gases that trap the heat and prevent it from escaping the earth. If the concentration of these gases increases, then the average temperature of the earth increases and this effect is known as greenhouse effect.

**Question 16:**

**In the Earth's atmosphere, what are the two forms of oxygen that are found?**

**Solution:**

The forms of oxygen that are found are:

- (a) In the lower region of the atmosphere, the elemental oxygen is in the form of a diatomic molecule ( $O_2$ ).
- (b) In the stratosphere, Oxygen exists in the form of a triatomic molecule ( $O_3$ ).

**Question 17:**

**Do you think that atmosphere is essential for life to sustain on earth?**

**Solution:**

For life to exist, atmosphere is essential as it maintains the necessary conditions for the existence of life.

- (a) Atmosphere maintains the average temperature of the Earth.
- (b) It prevents excess amount of heat from entering the Earth during daytime.
- (c) It prevents heat from escaping the surface of the Earth.

**Question 18:**

**Why is water essential for life?**

**Solution:**

For the life to exist, water is essential due to the following:

- (i) In all the living organisms, water makes up 70% of their body weight.
- (ii) It maintains the body temperature.
- (iii) Transfer of materials take place from one part of the body to another in a liquid form.
- (iv) Water is the medium for all cellular processes.

**Question 19:**

**How are organisms dependent on soil? Are aquatic organisms very dependent on soil?**

**Solution:**

All living organism are either directly or indirectly dependent on soil. The necessary nutrients for the preparation of food for the plant are gotten from the soil. Other organisms are dependent on plants for their survival and carnivores feed on these organisms. Thus indirectly, they too are dependent on soil.

The aquatic organisms need their nutrients which are gotten from the aquatic plants which inturn are dependent on soil. The nutrients from the soil are washed away by the flow of water into the aquatic bodies. Thus, aquatic organisms are also dependent on soil for their survival.

**Question 20:**

**There are weather reports in television and newspapers. How do we predict the weather?**

**Solution:**

The department of meteorology collects all the data related to the elements of weather such as temperature, maximum and minimum humidity, wind speed. Various instruments are used to study these elements. The rain gauge is used to measure the rainfall. The thermometer measures the maximum and minimum temperature. Anemometer is used to measure the wind speed.

**Question 21:**

***Pollution of air, soil and water bodies are caused by human activities. Can pollution be reduced if these activities were limited to specific areas?***

**Solution:**

Pollution will be reduced if human activities are isolated to specific areas. Pollution can be controlled if industries and factories are set up at a place, which is far away from our environment. Pollution of land, aquatic bodies and air caused by industries can be prevented.

**Question 22:**

***What is the role of forests in influencing the quality of natural resources?***

**Solution:**

1. Forests help in maintaining the balanced percentage of carbon dioxide and oxygen in the atmosphere. The process of photosynthesis controls the release of carbon dioxide.
2. It helps in increasing rainfall, maintaining good climatic conditions and flow of water in rivers.
3. It helps in prevention of droughts, soil erosion and land degradation.

