# NATURAL RESOURCES

Q.1: What is 'Water Cycle'? Explain the process of water cycle.

Ans: The process by which water continually changes its form and circulates between oceans, atmosphere and land is called 'Water cycle'.

When temperature increases water evaporates from the surface of water bodies and changes into water vapour. When these water vapours reach to a certain height they get cooled and turn into very tiny water droplets. These water droplets combine together to form clouds. When they become heavy they come down to the surface of the earth in the form of rain or snow. This is the process of circulation of water known as 'Water Cycle'.

Q.2: Write a short note on 'Nitrogen Fixation'.

Ans: It is a combination of natural and industrial processes by virtue of which the free atmospheric nitrogen is converted into nitrogen compounds such as - ammonia, nitrates, nitrites etc. that is essential for plant growth and is also used by chemical industries.

Nitrogen is also fixed as nitric oxide by physical processes e.g. Lightning and Ultraviolet (UV) Rays. But more significantly nitrogen is fixed as ammonia, nitrites and nitrates by soil micro-organisms like - *bacterium Rhizobium*. *Rhizobium* lives in the root nodules of leguminous plants (pulses, beans and peas) with which it has a symbiotic relationship. Due to nitrogen fixation the fertility of soil is increased.

Q.3: Explain the 'Nitrogen Cycle'. Or,
Write a short note on 'Nitrogen Cycle'

Ans:

## NITROGEN CYCLE

It is a natural cyclic process in the course of which atmospheric nitrogen enters the soil and becomes a part of living organisms before returning to the atmosphere. Nitrogen an essential part of the amino acids, proteins and nucleic acids is a basic element of life. Although 78% by volume of the atmosphere is nitrogen gas, but this gaseous nitrogen must be converted to some usable forms like nitrates and nitrites before it can be consumed by living organisms. This is accompanied through the nitrogen cycle.

Certain bacteria found in the roots of legumes and blue green algae present in the soil fix nitrogen from atmosphere and convert it into inorganic nitrogen compounds. Such compounds are directly taken up by plants through their root-system. The nitrogen then passes through the food-chain from plants to herbivores and carnivores. When plants and animals die, bacteria and fungi present in the soil convert the nitrogenous wastes back into nitrogenous compounds (nitrates and nitrites) to be used by plants again. Certain other bacteria convert some part of these nitrogenous wastes to free nitrogen through 'Denitrification', which goes back into the atmosphere.

As a result, the percentage of nitrogen in the atmosphere remains more or less constant. Thus, there is a nitrogen cycle in nature in which nitrogen passes from its elemental form in the atmosphere into simple molecules in the soil and water, which get converted to more complex molecules in living beings and back again to the simple nitrogen molecule in the atmosphere. [Please refer to the figure of *Nitrogen Cycle* given in the Class IX NCERT science textbook].

Q.4: Discuss the consequences of the increase in the concentration of Carbon Dioxide and other Green House gases in the atmosphere.

Ans: An increase in the content of Carbon Dioxide ($CO_2$) or any of other green house gases in the atmosphere would cause more heat to be retrained by the atmosphere leading to an increase in the earth's temperature.

This global warming is dangerous as it would cause melting of glacier and thereby flooding the coastal plains and also an ecological imbalance.

Q.5: What are the causes of Soil Erosion?

Ans:

## CAUSES OF SOIL EROSION

The soil that we see today has been created over a very long period of time. some of the main causes or factors of soil erosion are as follows:

1. Strong wind - The soil which is devoid of vegetation or loose, is eroded when exposed to strong winds. The wind carries away the soil particles with it and exposes the bed rock.

2. Heavy rain - When rain falls on the unprotected top soil, the loose soil particles are washed away down into the streams.

3. Human activities - Human activities such as various constructions, expansions of urban areas, industrialization etc. lead to deforestation leading to exposure of top soil to the various agencies of soil erosion.

4. Overgrazing - Overgrazing by our domestic animals not only destroys the biodiversity but leads to soil erosion.

5. Floods - Frequent flooding of rivers is another cause of soil erosion.

6. Improper farming and suspended cultivation - If the tilled (ploughed / loosened) soil is left uncultivated for long time for whatever reason, then it causes to soil erosion.

7. Deforestation - Deforestation due to so many reasons is a major cause for soil erosion.