GURU GOBIND SINGH PUBLIC SCHOOL

BIOLOGY ASSIGNMENT

CLASS: 8

Microorganisms

Study materials: Nitrogen cycle, Nitrogen fixation

Nitrogen Cycle

The cyclic process by which nitrogen is fixed, used by plants and animals and then returned to the atmosphere is called **nitrogen cycle**.

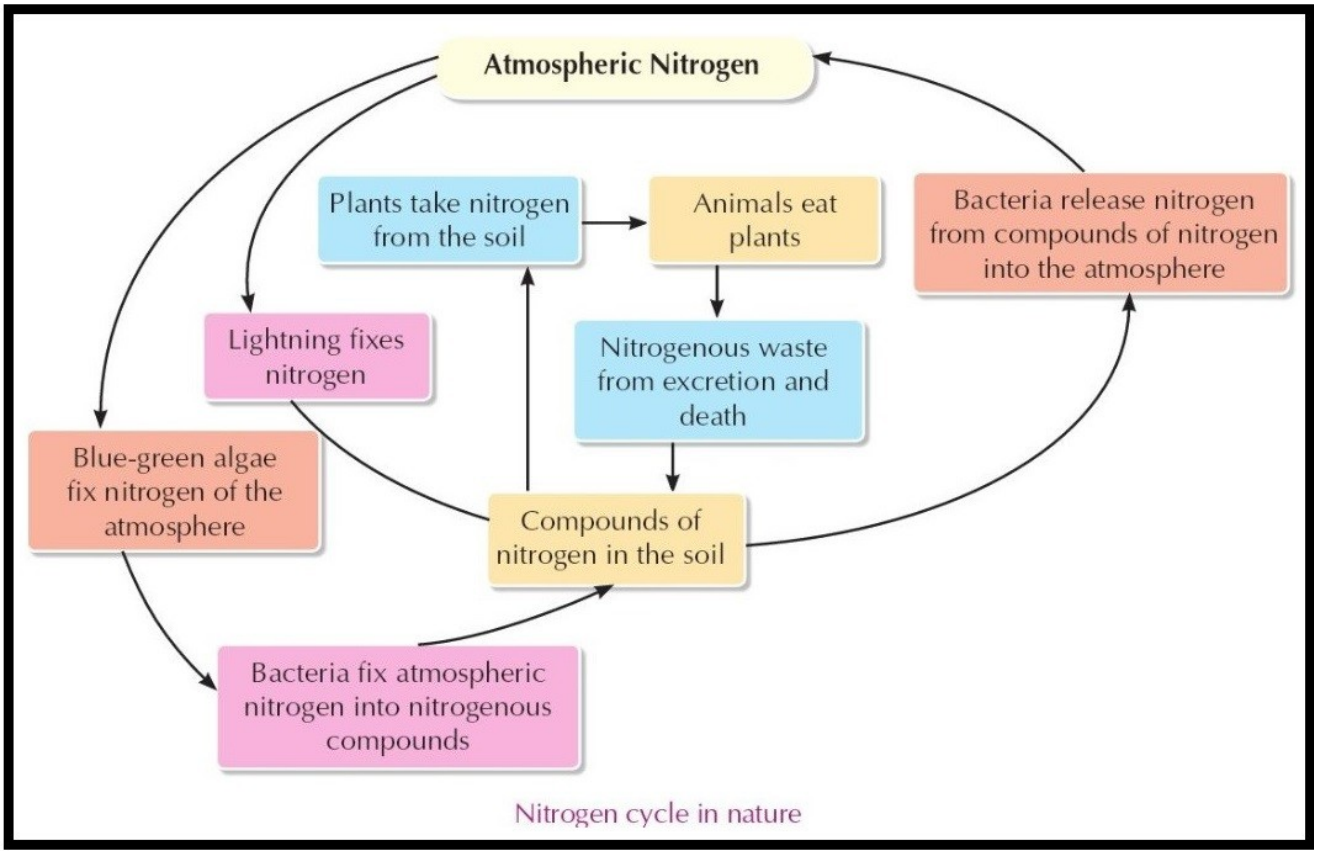
Important processes in the nitrogen cycle include nitrogen fixation, nitrogen assimilation, ammonification, nitrification and denitrification.

The atmosphere of earth contains approximately **78% nitrogen**. However, this atmospheric nitrogen has limited availability for biological use, leading to a scarcity of usable nitrogen. This atmospheric nitrogen must be processed or fixed to be used by plants.

Nitrogen Fixation

The conversion of atmospheric nitrogen into a form which is readily available to plants is called **nitrogen fixation**. It is an important step in the nitrogen cycle, for supply of this essential nutrient.

Fixation of nitrogen can be done in two ways.



Nitrogen cycle in nature

►By symbiotic bacteria (Biological Nitrogen Fixation)

Leguminous plants like peas and beans have a bacterium called Rhizobium in their root nodules. The bacterium can take up atmospheric nitrogen and converts it into nitrates. Nitrates get mixed up with the soil after decay of plants.

►During lightning (Atmospheric Nitrogen Fixation)

● When lightning occurs, the nitrogen and oxygen in the air react to form **oxides of nitrogen**.

● These compounds fall down to the earth with rainwater as nitric acid.

● The nitric acid reacts with soil **alkaline** such as limestone to form nitrates which are absorbed by the plants through their roots.

• Plants take nitrogen from the soil in the form of nitrate salts or ammonium salts by absorption through their roots and use them to synthesis amino acids, proteins, nucleic acids and other nitrogen compounds. This is called **nitrate assimilation**.

• This process of conversion of organic nitrogenous compounds into ammonia is called **ammonification.**

• The process of converting ammonia into nitrates is called nitrification. The nitrates in the soil are again absorbed by the plants.

• The conversion of nitrates (in the soil) to free molecular nitrogen is called **denitrification.**

► ASSIGNMENT:

1. Name one biological nitrogen fixer.

2. Name two leguminous plants which can fix nitrogen.

3. What is meant by nitrogen fixation?

4. Name two useful and 2 harmful microbes.

5. Draw a neat labelled diagram of nitrogen cycle in nature.

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