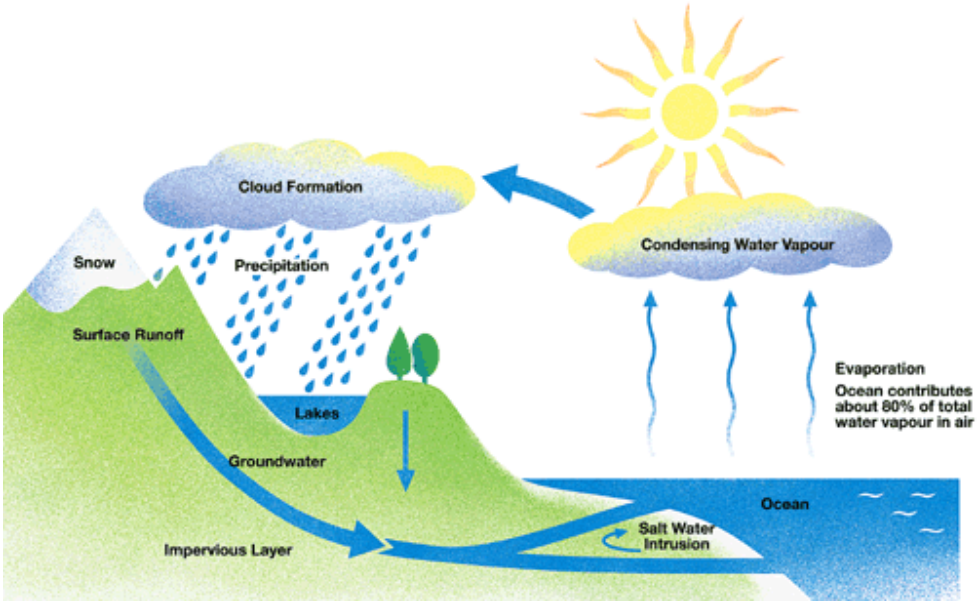
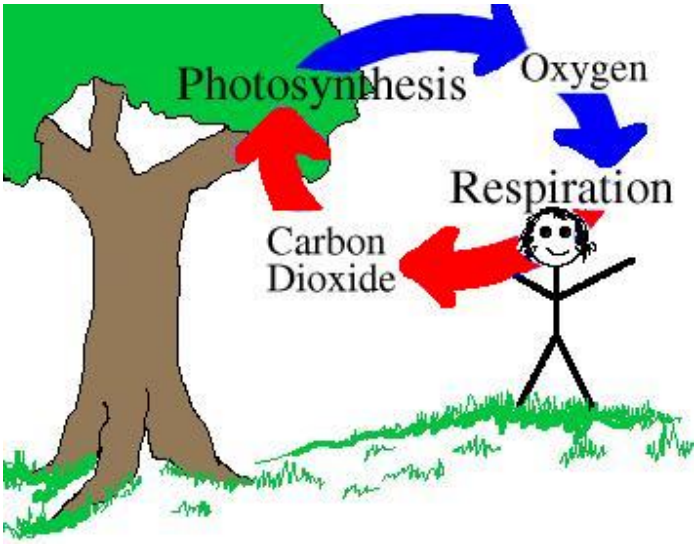
CLASS ----- 9 (bio)

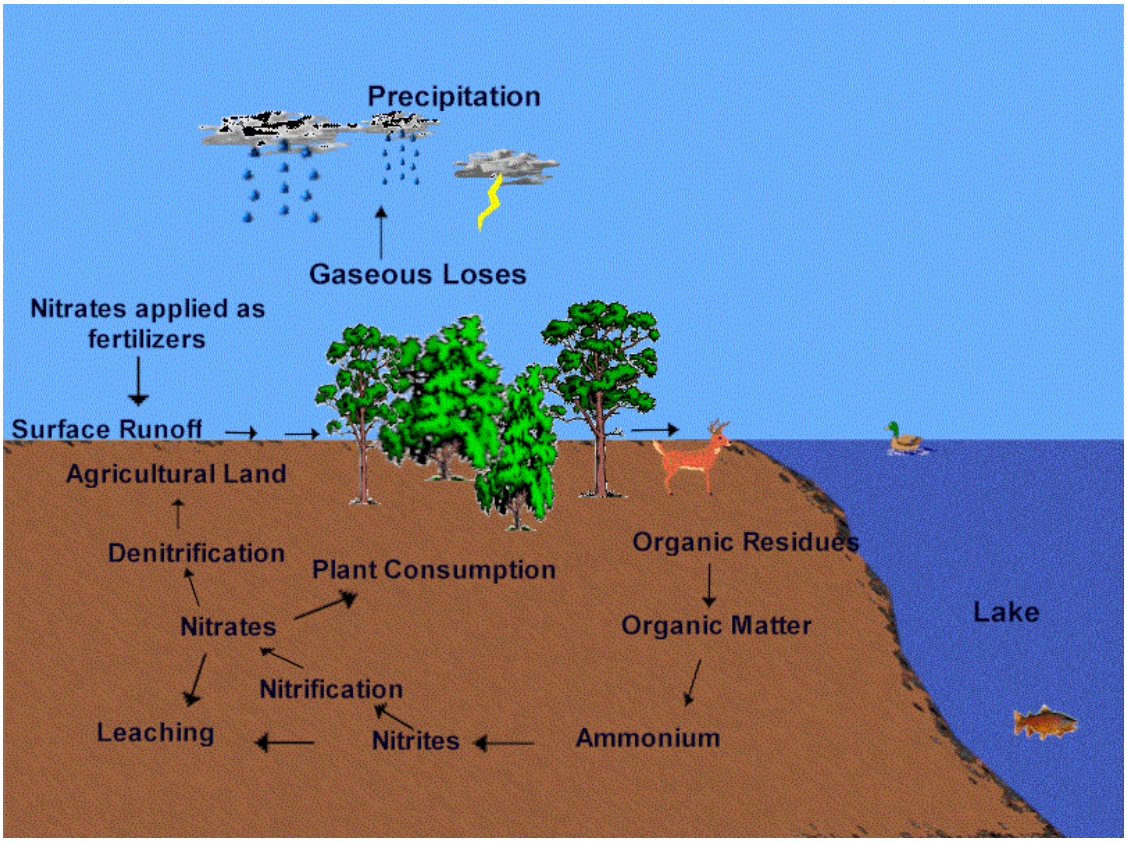
Q1. Prepare a diagrammatic representation of water cycle.



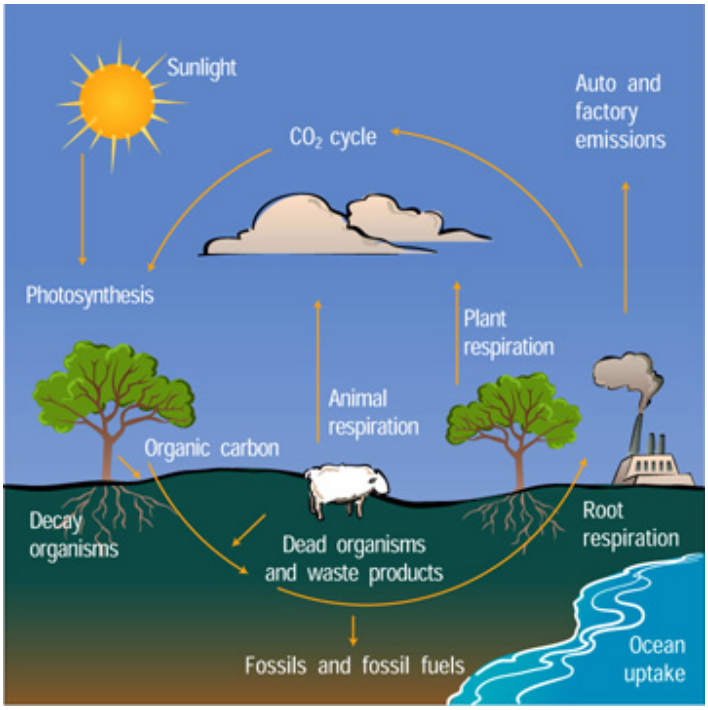
Q2. Show the recycling of oxygen in nature.



Q3.Explain the nitrogen cycle in nature with the help of a diagram.



Q4. Explain the recycling of carbon in nature.



Q5.What is ozone hole? What is its cause?

The discovery of a hole in the ozone layer above Antarctica was announced by a team of British scientists in 1985. The cause of the hole was attributed to ozone-depleting chemicals like chlorofluorocarbons (CFCs), which were primarily used in cooling units and propellants. When CFCs reach the ozone layer, they release chlorine atoms that rip ozone apart and peel away layers of Earth's natural sunscreen.

Q6.What can be the consequences of ozone depletion?

The stratosphere (the second layer of the Earth's atmosphere, just above the one in which we dwell, the troposphere) contains 90 percent of the Earth's ozone at altitudes between 6 and 31 miles (9.6 and 50 kilometers) above us, where it traps most of the sun's harmful ultraviolet (UV) rays before they can reach the Earth's surface. These high energy radiations can cause skin cancer, harm eyesight, weaken immune system etc..

Q7. Name the green house gases

Carbon dioxide, nitrous oxide, methane and CFC'S.

Q8. What can be the consequences of global warming?

a) melting of glaciers and polar ice
b) climatic changes
c) diseases
d) low plant yield

Q9. What is the importance of nitrogen?

Nitrogen (N) is an essential component of DNA, RNA, and proteins,enzymes,

Vitamins, amino acids and other building blocks of life. All organisms require

nitrogen to live and grow.

Q10 Why can't the living organisms use atmospheric nitrogen directly

Although the majority of the air we breathe is N_2, most of the nitrogen in the atmosphere is unavailable for use by organisms. This is because the strong triple bond between the N atoms in N_2 molecules makes it relatively inert. In fact, in order for plants and animals to be able to use nitrogen, N_2 gas must first be converted to more a chemically available form such as ammonium (NH_4^+), nitrate (NO_3^-), or organic nitrogen (e.g. urea - $(NH_2)_2CO$).

Q11. Define nitrogen fixation.

It is the conversion of inert nitrogen gas into biologically acceptable form. Its of 3 types –

Biological, atmospheric and industrial.

Q12. What are biogeochemical cycles.

The repeated circulation of nutrients between biotic and abiotic components of environment is called biogeochemical cycling.

Q13. Name the main ozone depleting substances.

CFC'S, halons, carbon tetrachloride, methyl bromide, nitrogen oxides and chlorine.

Q14. What is ODS?

Ozone depleting substances

Q15. What is denitrification?

Process of reduction of nitrates into gaseous nitrogen , which escapes into atmosphere.

Q16. Explain the role of rhizobium in nitrogen fixation.

Nitrogen fixation

N_2 NH_4^+ Nitrogen fixation is the process wherein N_2 is converted to ammonium, essential because it is the only way that organisms can attain nitrogen directly from the atmosphere. Certain bacteria, for example those among the genus *Rhizobium*, are the only organisms that fix nitrogen through metabolic processes. Nitrogen fixing bacteria often form symbiotic relationships with host plants. This symbiosis is well-known to occur in the legume family of plants (e.g. beans, peas, and clover). In this relationship, nitrogen fixing bacteria inhabit legume root nodules (Figure 2) and receive carbohydrates and a favorable environment from their host plant in exchange for some of the nitrogen they fix. There are also nitrogen fixing bacteria that exist without plant hosts, known as free-living nitrogen fixers. In aquatic environments, blue-green algae (really a bacteria called cyanobacteria) is an important free-living nitrogen fixer.

Q17. Explain some other ways of nitrogen fixation.

In addition to nitrogen fixing bacteria, high-energy natural events such as lightning, forest fires, and even hot lava flows can cause the fixation of smaller, but significant amounts of nitrogen (Figure 3). The high energy of these natural phenomena can break the triple bonds of N_2 molecules, thereby making individual N atoms available for chemical transformation.Within the last century, humans have become as important a source of fixed nitrogen as all natural sources combined. Burning fossil fuels, using synthetic nitrogen fertilizers, and cultivation of legumes all fix nitrogen.

Q18. What is the difference between nitrification and denitrification?
Nitrification converts ammonia to nitrates and denitrification converts nitrates to free Nitrogen.