Chapter- 1

The Atmosphere

STUDY NOTES

Atmosphere: An atmosphere is a layer of air surrounding our planet Earth. All living beings on this earth depend on the atmosphere for their survival. It is this mass of air that has made the temperature on the earth liveable.

Composition of the Atmosphere

In the atmosphere, nitrogen and oxygen are found in bulk quantities. Carbon dioxide, helium, ozone, argon and hydrogen are found in lesser quantities. Apart from these gases, tiny dust particles are also present in the air. Nitrogen is the most plentiful gas in the air. When we inhale, we take some amount of nitrogen into our lungs and exhale it.

Nitrogen is essential for plants to survive. They cannot take nitrogen directly from the air. Bacteria, that live in the soil and roots of some plants, take nitrogen from the air and change its form so that plants can use it.

Oxygen is the second most plentiful gas in the air. Humans and animals take oxygen from the air as they breathe. During photosynthesis, green plants produce oxygen. In this way, oxygen content in the air remains constant.

Carbon dioxide is another important gas. Green plants use carbon dioxide to make their food and release oxygen. Humans or animals release carbon dioxide. The amount of carbon dioxide released by humans or animals seems to be equal to the amount used by the plants which make a perfect balance.

Structure of the Atmosphere

The atmosphere is divided into five layers starting from the earth's surface. These are Troposphere, Stratosphere, Mesosphere, Thermosphere and Exosphere.

Troposphere: This layer is the most important layer of the atmosphere. Its average height is 13 km and the air we breathe exists here. In this layer, all-weather phenomena like rainfall, fog and hailstorm occur.

Stratosphere: Above the troposphere lies the stratosphere. It extends up to a height of 50 km. This layer is free from clouds and associated weather phenomenon, which makes it most ideal for flying aeroplanes. It contains a layer of ozone gas.

Mesosphere: This is the third layer of the atmosphere. It lies above the stratosphere. It extends up to a height of 80 km. Meteorites burn up in this layer on entering from space.

Thermosphere: In thermosphere, temperature rises very rapidly with increasing height. Ionosphere is a part of this layer. It extends between 80-400 km. This layer helps in radio transmission. In fact, radio waves transmitted from the earth are reflected back to the earth by this layer.

Exosphere: The uppermost layer of the atmosphere is known as exosphere. This layer has very thin air. Light gases like helium and hydrogen float into space from here.