

TENDER HEART HIGH SCHOOL

Section 33 B, Chandigarh

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Subject: Geography

Class: VII

Chapter 2 - Atmosphere

(1) Introduction

- **Atmosphere is the gaseous envelope that surrounds our Earth.**
- It has thin layer of Air that is held by the Gravitational Pull of the Earth.
- It extends over 1600 kms from the surface of the Earth.
- Around 99% of Total mass of Earth's Atmosphere is found below 100 kms from the Earth's Surface.

(2) Composition of Earth's Atmosphere:

- Atmosphere is composed of various components, mainly oxygen, Nitrogen, carbon dioxide, water vapour and Particulate Matter.

→ Nitrogen:

- * It forms 78% of Earth's Atmosphere.
- * It slows down the process of Oxidation.
- * It combines with other elements to form nitrogen compounds.
- * It is necessary for growth of plants.
- * It is used in manufacturing of fertilizers, ammonia, nitric acid etc.

→ Oxygen:

- * It is essential for respiration of all living organisms.
- * It helps in burning, breathing and decomposition of organic matter.
- * It combines with other elements to form oxide.
- * It forms 21% of Earth's Atmosphere.

→ Carbon dioxide:

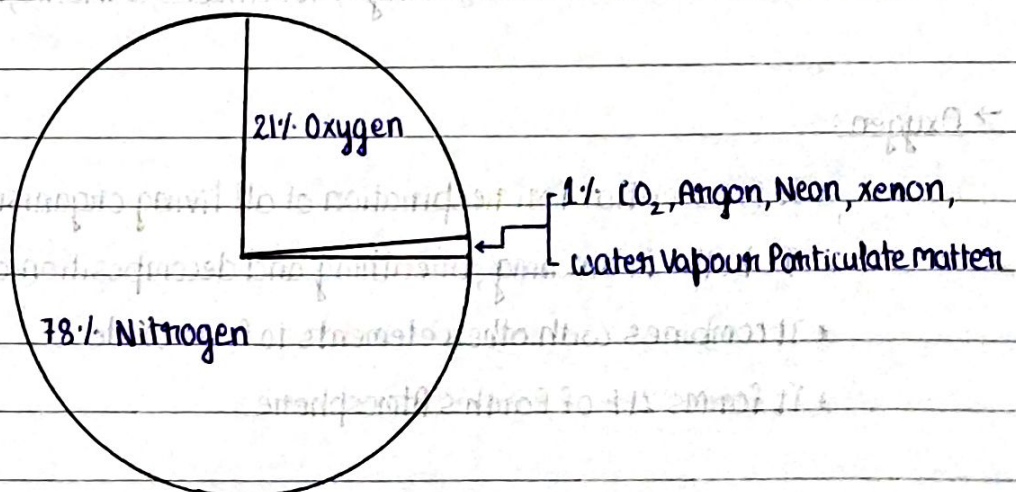
- * It is used by plants during the process of photosynthesis.
- * It absorbs terrestrial radiation and keeps the lower layer of Atmosphere warm at night.

→ Water Vapour:

- * It plays very important role in the atmosphere.
- * It is the source of condensation, clouds and all forms of precipitation.
- * It is added to atmosphere by the process of Evaporation of water from various waterbodies and also by transpiration from leaves of plants.
- * Water Vapour also absorbs the heat that is radiated by Earth and keeps the lower layer of Atmosphere warm at Night.

→ Particulate Matter:

- * The particulate matter consists of Dust, Smoke, Salt Grain, Pollen Grains etc.
- * They scatter Solar Radiation and causes red or orange colour in the sky during sunrise and sunset.
- * They also help in condensation.
- * The dust particles float in air and plays an important role in deciding weather phenomena.
- * The dust particles also absorb the terrestrial radiation and keeps the lower layer of Atmosphere warm at night.



(3) Significance of Atmosphere

- Atmosphere provides oxygen to support human life and Animal Life.
- It provides carbon dioxide to support plant life.
- Atmosphere protects us from harmful ultraviolet rays of the sun.
- The atmosphere helps to maintain suitable temperature of Earth that helps to sustain life.
- Atmosphere traps terrestrial radiation and keeps the Earth warm during nights.
- Atmosphere protects the earth from meteors by not allowing it to reach the earth's surface.
- All weather phenomena takes place in the lower layer of atmosphere, that is Troposphere.

(4) Structure of Atmosphere

(a) Troposphere:

- It is the lowermost layer of the Earth's atmosphere.
- It is nearest to the Earth's surface.
- All the weather phenomena takes place in this layer.
- This layer is also regarded as **a region of intense mixing** due to air turbulence created by horizontal and vertical circulation of air.
- Around 90% of atmosphere's total mass is found within this layer. so it is the densest layer of the atmosphere.
- The height of atmosphere is 18 kms at Equator and it gradually decreases to a height of 8 kms at Poles.
- There is decrease in temperature with increase in height in this layer at the rate of $6.4^{\circ}\text{C per 1 km}$.

(b) Stratosphere:

- This layer extends from tropopause to about 50 kms above the Earth's surface.
- In this layer the temperature does not decrease with increase in altitude.
- Jet Aircrafts flies in this layer because this layer is free from weather phenomena.
- This layer has no water vapour and dust particles and moreover the temperature here is constant.
- This layer has ozone layer that protects us from harmful UV rays.
- The end point of this layer is stratopause.