BA PART -1

**Composition and Structure of Atmosphere**

Composition of Atmosphere

The composition of Atmosphere is said to be a mixture of different gases. It envelops around the Earth. 99% of total mas of atmosphere is confined to highest of 32 km from the Earth’s surface.



Permanent gases of the Atmosphere

* Atmosphere is consists of various gases, water vapour and dust particles.
* The presence of oxygen becomes negligible at the height of 120 km from the surface of earth with regards to the composition of atmosphere.
* Carbon dioxide and water vapour occur only upto 90 km.
* Carbon dioxide is meteorically very important as it is transparent to incoming solar radiation but opaque to outgoing terrestrial radiation. It is also responsible for greenhouse effect.
* Ozone gas: 10-50 km above earth surface and acts as filter, absorbing ultraviolet rays from the sun. Ozone prevents the rays from reaching the surface of earth.
* Water vapour is variable gas, decreases with altitude.
* It also decreases from equator towards the poles.
* Acts like blanket allowing the earth to neither to become too cold nor too hot. Also contributes to the stability and instability in the air.
* Dust particles: are in higher concentration in subtropical and temperate regions due to dry winds in comparison to equatorial and polar regions.
* Dust particles act as a hygroscopic nuclei over which water vapour of atmosphere condenses to produce clouds.

The composition of atmosphere varies with local environmental factors also.

 Structure of Atmosphere:

There are five layers in the structure of atmosphere depending upon temperature.

I. Troposphere:

* **It is the lowermost layer.**
* **13 km height average with 8 km at poles and 18 km at equator (lesser at poles and greater at equator).**
* **The thickness is 18 km at equator because heat is transported to great heights by strong convectional currents.**
* **This layer has adult particles and water vapour.**
* **Climate and weather changes occur here.**
* **Temperature decreases at rate of 1 degrees celcius for every 165 m of height.**
* **Zone separating troposphere from stratosphere is called *tropopause*.**
* **Temperature at tropopause is minus eighty degrees celcius over equator and minus forty five degrees celcius over the poles. This remains constant through the year.**

**II. Stratosphere**

* **It is found above the troposphere.**
* **extends upto 50 km of height.**
* **Has ozone layer – absorbs ultraviolet radiation and shields life on earth from harmful energy.**

**III. Mesosphere:**

* **Above stratosphere**
* **reaches till 80 km height.**
* **Temperature decreases with altitude  here, by 80 km it reaches minus**

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* **hundred  degrees celcius .**
* **The upper limit is called *mesopause*.**

**IV. Ionosphere or Thermosphere:**

* **80 to 400 km above *mesopause*.**
* **Ionosphere consists of electrically charged particles known as ions.**
* **Radio waves which are transmitted from the earth are reflected back by this layer.**
* **Temperature here increases with height.**

**V. Exosphere:**

* **It is the outermost layer.**
* **Not much is known about this layer.**

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