

# NCERT MOST IMPORTANT QUESTIONS CLASS – 11

## GEOGRAPHY CHAPTER- 7 COMPOSITION AND STRUCTURE OF ATMOSPHERE

---

### Question 1.

**Why are the vapour and dust particles important variables of weather and climate?**

**Answer:**

The water vapour and dust particles are important variables of weather and climate because they are the source of all forms of condensation and principal absorbers of heat received from the sun or radiated from the earth. Besides, they affect the stability of the atmosphere.

### Question 2.

**What is meant by a normal lapse rate?**

**Answer:**

The temperature decreases with altitude because the atmosphere is heated more by the heat radiated from the earth's surface. Warmer air lying under the cooler air goes up or turns downward. In this layer, the temperature decreases vertically at a rate of  $0.65^{\circ}\text{C}$  per 100 metres. It is called the normal lapse rate.

### Question 3.

**What is homosphere?**

**Answer:**

The atmospheric layer up to an altitude of 90 km. above the surface of the earth is generally called homosphere. It is uniform in terms of these major gases – nitrogen, oxygen and argon. In addition, it also contains some rare gases like neon, krypton and xenon.

### Question 4.

**Name the gases and other materials which compose the atmosphere.**

**Answer:**

Nitrogen, oxygen and argon are the most important gases of the atmosphere. In addition, it contains gases like carbon dioxide, neon, helium, ozone, hydrogen, methane, krypton and xenon. Besides, there are also present huge amounts of solid and liquid particles collectively called aerosols.

### Question 5.

**Discuss the properties of nitrogen gas.**

**Answer:**

Nitrogen is the most abundant gas of the atmosphere. By volume, it constitutes 78.8% of

the total gases present in the atmosphere. Nitrogen does not easily enter into chemical union with other substances but gets fixed into the soil. It serves mainly as diluent or dissolver. It regulates combustion.

### Question 6.

**Distinguish between troposphere and stratosphere.**

**Answer:**

<b>Troposphere</b>	<b>Stratosphere</b>
(1) It is the lowermost layer of the atmosphere.	(1) It is the second layer of the atmosphere above the earth.
(2) Its height varies from 10-18 km. at the equator.	(2) Its height is up to 50 km.
(3) Temperature decreases at the rate of 1 °C per 165 metres in this layer.	(3) In this layer temperature is very low and fairly constant.
(4) It is the zone of convection currents of the atmosphere.	(4) It is a zone of non-convection currents of the atmosphere.
(5) Water vapour, dust particles, clouds are found in this layer.	(5) There is no water vapour but dust particles and clouds are found.
(6) Atmospheric processes occur in this layer.	(6) This zone is free from atmospheric disturbances.

### Question 7.

**What is the difference between condensation and precipitation?**

**Answer:**

Condensation is the physical process of the transition of a substance from the vapour to the liquid state, e.g., as a result of cooling or increase of pressure. It occurs in the atmosphere when the air is saturated or when it is cool. Thus, the change of state of the moisture from invisible water vapour to visible liquid (water) or solid (ice or snow ) state is known as condensation. It is opposite of evaporation.

Precipitation, on the other hand, means 'throwing down of moisture'. Continuous condensation in the body of the air helps the water droplets to grow in size so that the resistance of the air fails to keep them suspended. In such cases, only an ascending air current can keep them floating in the air. In the absence of such a current, the products of condensation begin to fall on the earth's surface. The process whereby the water vapour first condenses in the air and then falls on to the earth is called precipitation.

### Question 8.

**Discuss the principal elements of weather and climate and the major climatic controls.**

**Answer:**

The principal elements of weather and climate are temperature precipitation, moisture,

pressure and winds. These are called elements because they are the ingredients out of which various weather and climate types are compounded. The temperature and precipitation are the main basic elements to which pressure, winds and other elements are related.

Temperature expresses the intensity of heat. Practically all the heat energy on the earth is the result of insulation or the increasing solar radiation. Unequal distribution of temperature over the earth's surface causes differences in atmospheric pressure, which causes winds.

Higher the temperature, the greater is the capacity' of air to hold moisture on cooling. The air is not able to retain all the moisture it gathers while warm. This leads to condensation and precipitation.

Thus, the temperature is the basic element on which other elements of climate depend.

The climatic controls are :

Latitude (or sun), distribution of land and water, the great semi-permanent high and low-pressure belts, winds, altitude, mountain barriers, ocean currents and storms of various kinds.

### **Question 9.**

**Define the atmosphere. Explain its importance to human life.**

**Answer:**

The atmosphere is a mixture of air and various gases which envelopes the earth all around. It represents the gaseous realm of the earth. It is held to the earth by the force of gravity.

Importance of atmosphere:

1. It contains gases like oxygen (essential for breathing) for man and animals and carbon dioxide for plants.
2. By trapping the heat, it acts as a greenhouse. It keeps the earth warm.
3. One of its layer, the ionosphere, reflects radio waves back to the earth and makes radio communication possible.
4. It protects us from the deadly cosmic rays and meteors which are continuously showered on the earth from outer space.
5. All the weather phenomenon take place in the atmosphere. Presence of water vapour in the atmosphere brings many changes such as condensation and precipitation. These processes influence the human life, plants and animals.
6. It absorbs ultraviolet rays.
7. It acts as an air conditioner by moderating the extremes of heat ' and cold.
8. It is a storehouse of water vapour.

### Question 10.

**Discuss the proportion of the constituent gases of the atmosphere.**

**Answer:**

The atmosphere is a mixture of various gases. It includes :

Nitrogen (N<sub>2</sub>), Oxygen (O<sub>2</sub>), Argon (Ar), Carbon dioxide (CO<sub>2</sub>), Neon (Ne), Helium (He), Ozone (O<sub>3</sub>), Hydrogen (H<sub>2</sub>), Methane (CH<sub>4</sub>), Krypton (Kr) and Xenon (Xe).

**Nitrogen (N<sub>2</sub>):** It is a colourless, odourless gas, the main constituent (i.e. 78.8% by volume) of the atmosphere. It is an essential constituent of living organisms. It is an important element for plants.

**Oxygen (O<sub>2</sub>):** Constitutes 20.94% of the total volume of the atmosphere. It is the second most abundant gas. It is essential to plant and animal life.

**Argon (Ar):** It constitutes one per cent volume of the total atmosphere. It is an inert gas, does not take part in any chemical reaction.

**Carbon dioxide:** It constitutes a very small amount (0.03%). It is an important gas in the atmospheric process. It can absorb heat and thus allows the lower atmosphere to be warmed up by heat radiation from the sun and from the earth's surface. Green plants in the process of photosynthesis utilise carbon dioxide from the atmosphere.

**Neon (Ne):** Neon is an inert gaseous element occurring in trivial quantities (0.0018%) in the atmosphere.

**Helium (He):** It exists primarily in the sun's atmosphere. It is an inert element of the atmosphere.

**Ozone (O<sub>3</sub>):** It is an allotropic form of oxygen (O<sub>2</sub>). Its main concentration lies between 20 to 25 km. from the earth's surface.

**Hydrogen (H<sub>2</sub>):** It is the lightest element. It is gaseous and inflammable. It is used in many chemical processes.

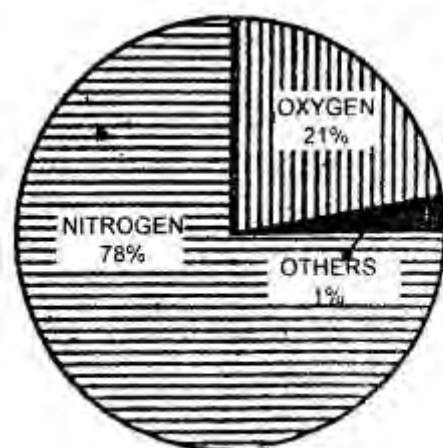


Fig.8.2