

Topic : Air

- A
1. decreases
 2. ozone
 3. thermosphere
 4. stratosphere
 5. stratosphere

- B
1. False
 2. True
 3. False
 4. True

- C
1. Atmosphere
 2. Sun
 3. Gravitational force
 4. Carbon dioxide
 5. Five
 6. Carbon dioxide

D 1. The lowest layer of the atmosphere is the troposphere. The uneven heating of the regions of the troposphere by the Sun causes convection currents and winds. Moreover the presence of dust particles and water vapour causes weather phenomena such as clouds, rainfall, storms and lightning in this layer. The temperature in this layer decreases by 1°C with every 166 metres of ascent. This is known as the lapse rate.

Oxygen is the gas we breathe in. Most of the living beings require oxygen present in air for respiration. Oxygen supports burning. An adequate supply of oxygen is necessary to

burn fuels. Oxygen is a heavy gas. So, much of it is found in the lower layers of the atmosphere. Mountaineers and divers carry oxygen cylinders to help them breathe where the oxygen content is low.

3. The atmosphere is held in place by the force of gravity. The earth's pull is the greatest near the earth's surface. As a result, the atmosphere is densest near the surface of the earth. The gravity decreases with the distance from the earth. Hence, the atmosphere thins out with height until it finally merges with the outer space.
4. When we move from vertically upwards from the earth, the gravity decreases with the distance from the earth.
5. Mountaineers carry oxygen cylinders while climbing high mountains to avoid suffocation. As we go higher and higher, at high altitudes, amount of oxygen present in the atmosphere is determined by atmospheric pressure. This decreases the number of oxygen molecules per breath making the person suffocated at high altitudes.
6. Meteoroids burn up in the mesosphere because of the presence of atmosphere. Due to the presence of gases, friction is created and heat is generated causing Meteoroids to burn in mesosphere.

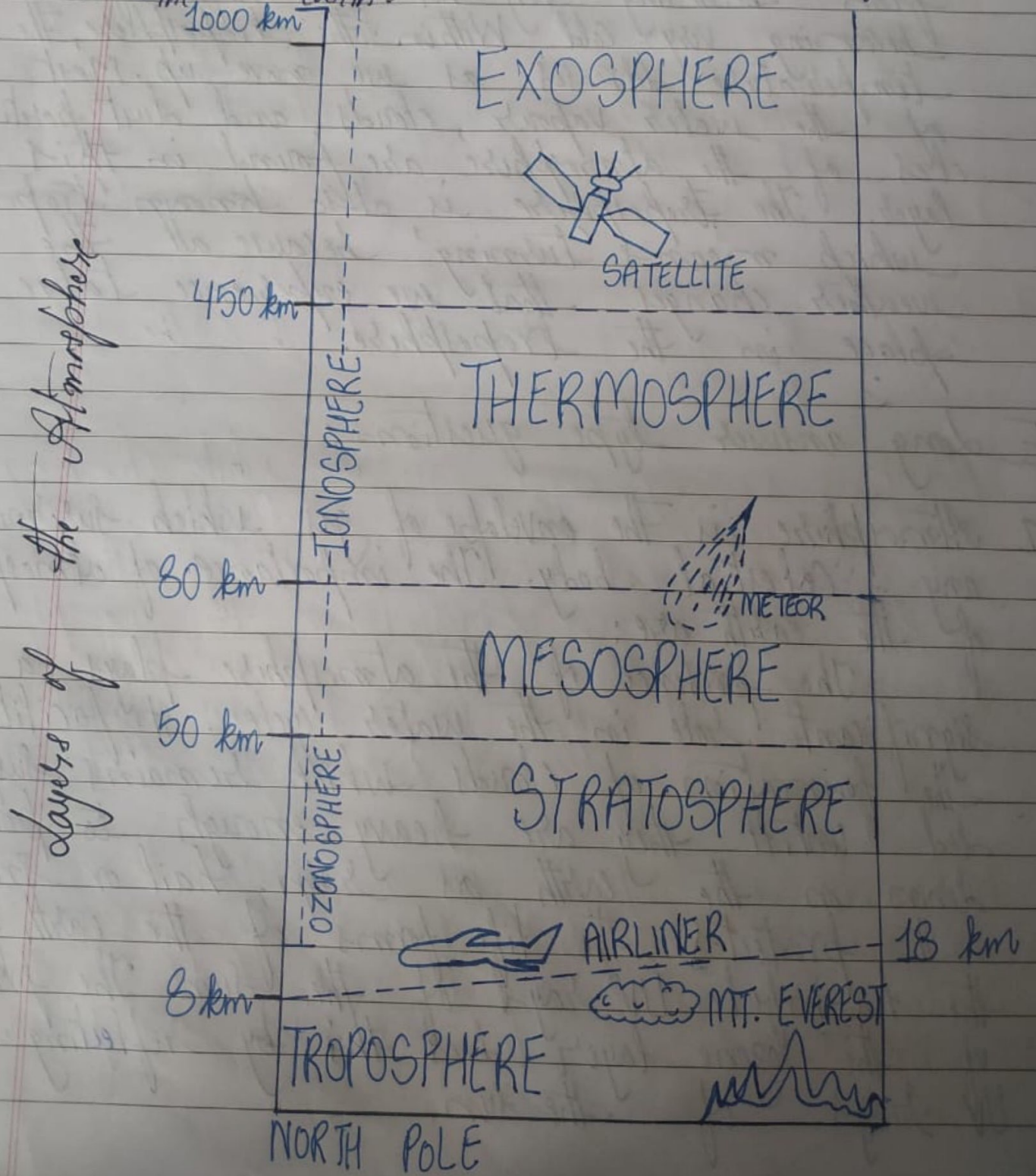
7. There is a layer in the atmosphere in which the molecules of the atmospheric gases are broken into charged particles called ions. This layer is called ionosphere. It reflects, or sends back, radio waves forwards the earth and, thus, help in radio communication.

8. The troposphere acts like a blanket. It prevents days from becoming very hot and nights from becoming very cold. Within the troposphere, the temperature decreases as we move up. Most of the water vapour, clouds and dust particles of the atmosphere are found in this layer. The troposphere is also known 'tropos' which means 'turning' because all the weather changes that we experience take place in the troposphere.

E Long answer type questions:

1. Atmosphere is the envelope of gas which surrounds any celestial body. The importance of atmosphere of the earth are:
The presence of the atmosphere plays a significant role in the water cycle. It facilitates the formation of clouds which remains suspended untill they are heavy enough to pour down on the earth as rain, hail or snow.
It protects the life forms of the earth from the harmful UV rays of the sun. The presence of the ozone layer does this by reflecting the UV rays of the sun.

It keeps the temperature of the earth constant so that it is suitable to support life. It also protects the earth from smaller meteors. It facilitates combustion and without the atmosphere combustion is not possible. It contains Nitrogen (N_2) and Oxygen (O_2) and other gases which are necessary to support the life form on the earth.



2. Global warming: The increased use of fossil fuels, pollution from industrial areas etc. has increased the level of carbon dioxide in the atmosphere which is a greenhouse gas. Greenhouse gases like CO_2 trap the heat during the day and increases the temperature of the atmosphere. This is known as the greenhouse effect. When greenhouse gases increase in the atmosphere they cause global warming.

What we can do — Conserve fossil fuels, use alternative energy sources wind, solar, tidal, geothermal energy, cut down on emissions from vehicles / factories / recycle, reuse waste material / deforestation, plant more trees etc.

3. All the gases present in air are important for us.

A. Nitrogen. This is the most abundant gas in the air. Nitrogen neither burns nor helps in burning. Nitrogen is an inactive gas, therefore, it is used in packaged food like chips. This allows the packaged food to remain fresh. It is also required by plants for growth.

B. Oxygen: Most of the living beings require oxygen present in air for respiration. It supports burning. An adequate supply of oxygen is necessary to burn fuels. It is a

heavy gas, so, much of it is found in the lower layers of the atmosphere.

C Carbon dioxide. It is an important gas. plants require this gas to make their food in sunlight by process of photosynthesis. It is dissolved in water to make soft drinks. It is also an important greenhouse gas.

{ Also draw the diagram of "Composition of Air" on page 140 of your Geography Books }

4. On the basis of composition, temperature and other properties, the atmosphere is divided into five layers. Starting from the bottom, the layers are called troposphere, stratosphere, mesosphere, thermosphere and exosphere.

• Troposphere : The lowest and densest layer of the atmosphere is known as the troposphere. It acts like a blanket and prevents days from becoming very hot and ~~in~~ nights from becoming very cold. The weather changes that we experience take place in the troposphere.

• Stratosphere : The stratosphere lies above the troposphere. It is very important for man's life as it contains the

ozone gas which absorbs the harmful Ultra-Violet radiations of the sun. This layer is also convenient for flying of aeroplanes.

• Mesosphere: The mesosphere lies above the stratosphere. Meteors entering the atmosphere usually burn up in the mesosphere.

• Thermosphere: Above the mesosphere lies the thermosphere. This layer greatly helps in protecting the earth and making complete exploration of the space. It is also known as ionosphere as it contains ions which make space communication possible.

• Exosphere: The outermost layer of the atmosphere is called the exosphere. It is the first line of defence against the sun's rays, meteors, asteroids and cosmic rays. The exosphere is perfect for placing satellites.

{ Also draw the diagram of "the different layers of the atmosphere" which is already drawn in this alignment }