



# UNIQUE STUDY POINT

## Air Around Us

### EXERCISES

**Question 1:** What is the composition of air?

**Answer:** Air is a mixture of 79% nitrogen, 20% oxygen, 1% carbon dioxide, water vapours and some other gases. Air also contains dust particles.

**Or**

Air contains some water vapour, dust particles and gases. The gases in air are mainly nitrogen, oxygen, small amount of carbon dioxide, and many other gases. In fact, nitrogen and oxygen together make up 99% of the air. The remaining 1% is constituted by carbon dioxide and a few other gases, water vapour and dust particles.

**Question 2:** Which gas in the atmosphere is essential for respiration?

**Answer:** Oxygen gas in the atmosphere is essential for respiration.

**Question 3:** How will you prove that air supports burning?

**Answer:** We can prove that air supports burning with the help of following activity:

Take two burning candles and place them on a table. Now cover one candle with an inverted glass tumbler as shown below:

You will notice that the candle covered with inverted glass tumbler blows out after some time whereas the other candle continues to burn. This happens because there is no air inside the glass tumbler. However, the air initially present in the glass tumbler is used up in burning. This shows that air supports burning.

**Question 4:** How will you show that air is dissolved in water?

**Answer:** We can show that air is dissolved in water with the help of following activity:

Take some water in a glass or metal container like pan and heat it. Just before water begins to boil, you will notice some bubbles at the inner surface of the pan. These bubbles come from the air dissolved in water. This shows that air is dissolved in water.

**Question 5:** Why does a lump of cotton wool shrink in water?

**Answer:** The lump of cotton wool shrink in water because the air inside the cotton lumps are replaced by water which makes the layer stick together.

**Question 6:** The layer of air around the earth is known as \_\_\_\_\_.

**Answer:** The layer of air around the earth is known as **atmosphere**.

**Question 7:** The component of air used by green plants to make their food, is \_\_\_\_\_.

**Answer:** The component of air used by green plants to make their food, is **carbon dioxide**.

**Question 8:** List five activities that are possible due to the presence of air.

**Answer:** Some activities that are possible due to the presence of air are: (any five)

- (i) Photosynthesis in plants
- (ii) Respiration in all living organisms
- (iii) Burning of substances
- (iv) Movement of sailing yachts, gliders, parachutes and aeroplanes
- (v) Flying of birds, bats and insects
- (vi) Generation of electricity by windmills

**Question 9:** How do plants and animals help each other in the exchange of gases in the atmosphere?

**Answer:** There is the interdependence of plants and animals. Plants and animals respire i.e. they intake oxygen and gives out carbon dioxide in the atmosphere. Plants take carbon dioxide from the atmosphere and prepare food and return oxygen to atmosphere by the process of photosynthesis. So, in this way plants and animals help each other in the exchange of gases in the atmosphere.

### Short Answer Type Questions

**Question 1.** What are the properties of air?

**Answer:**

- Air occupies space.
- Air is present everywhere around us.
- Air has no colour and one can see through it.
- It is transparent.

**Question 2.** What is atmosphere?

**Answer:** Our earth is surrounded by a thin layer of air. This layer is called atmosphere. It extends up to many kilometres above the surface of the earth.

**Question 3.** What do you mean by relative humidity?

**Answer:** The content of water vapour in the air is expressed in terms of humidity or relative humidity.

**Question 4.** The mountaineers carry oxygen cylinder with them while climbing high mountains. Why?

**Answer:** The availability of air decreases gradually as we go up in the atmosphere.

**Question 5.** Name the substances which are present in traces in air. What are these together called?

**Answer:** Xenon (Xe), Krypton (Kr), Neon (Ne) and Helium (He) are present in traces in the air. These together form 0.02% of air and are called inert gases.

**Question 6.** Describe the composition of air.

**Answer:** Air contains mostly nitrogen (78.03%) and oxygen (20.99%). The remaining 1% (by volume) is shared by argon (0.34%), carbon dioxide (0.33%), other noble gases, oxides of nitrogen and sulphur etc., in the decreasing order.

**Question 7.** What will happen if the amount of oxygen is increased in the air?

**Answer:** Air will become more combustible and many substances may undergo fast oxidation.

**Question 8.** Name the gases present in air. Which one of them is most abundant?

**Answer:**  $N_2$ ,  $O_2$ , Ar (argon),  $CO_2$ , water vapour, neon (Ne), helium (He), krypton (Kr), xenon (Xe) are present in air. Nitrogen is most abundant.

**Question 9.** Why do we feel suffocated in a closed room if something is becoming there?

**Answer:** We feel suffocated in a closed room if some material is burning there because burning causes excess of carbon dioxide and its accumulation causes suffocation.

**Question 10.** What is the role of long chimneys in factories?

**Answer:** Burning of fuel takes place in factories, it produces smoke which contains a few harmful gases and fine dust particles. The chimneys in factories take the harmful smoke and gases away from us.

**Question 11.** Why do policemen regulating traffic at a crowded crossing often wear a mask?

**Answer:** Wearing a mask at a crowded crossing saves the policemen from harmful smoke and dust particles emitted by vehicles, which may enter their nose.

**Question 12.** What is the importance of oxygen in daily life?

**Answer:** Oxygen plays a very important role in our daily life. Some of these are:

- As ozone, it provides a blanket in the atmosphere which protects us from harmful ultraviolet radiations emitted by the sun.
- It is used for breathing and as a breathing aid in hospitals, aeroplanes, and by deep-sea divers and astronauts

**Question 13.** Why is air dissolved in water richer in oxygen than ordinary air?

**Answer:** The air dissolved in water is richer in oxygen because oxygen has appreciable solubility in water, whereas nitrogen is insoluble in water.

**Question 14.** How does oxygen become available to the animals in water and soil?

**Answer:** Air remains dissolved in water. Air is also present between the particles of soil. Hence animals living there get oxygen.

**Question 15.** Are respiration and breathing same?

**Answer:** Breathing is just the intake of oxygen and giving out carbon dioxide. Respiration is a chemical process which generates energy in body.

**Question 16.** Why do earthworms come out of the soil during heavy rains?

**Answer:** When it rains heavily, water fills up all the spaces occupied by the air in the soil. In such a situation, animals like earthworms need to come out of the soil for respiration.

**Question 17.** How does oxygen occur in nature?

**Answer:** Oxygen is found in free state in air as diatomic molecule ( $O_2$ ) to the extent of 21% by volume or 23% by weight. In the combined state, it is present in water (89% by weight), earth's crust (about 50%) and in plants and animal tissues (50-70%).

**Question 18.** What happens if the percentage of oxygen in the air reaches to 70%?

**Answer:** If any substance catches fire, it will become difficult to extinguish the fire, as oxygen supports combustion.

**Question 19.** Define oxygen cycle.

**Answer:** The cycle of consumption of oxygen by respiration and its release by photosynthesis is called oxygen cycle.

### Long Answer Type Questions

**Question 1.** Why is atmosphere called the place where exchange of gases in nature occurs?

**Answer:** We know that various gases are found in air. Now some organisms live on land, some in water and some deep under the soil. But all need oxygen to respire. The terrestrial organisms take oxygen from the atmosphere. You know that during respiration by living beings and burning of materials, carbon dioxide is produced along with some other gases. Also,  $\text{CO}_2$  is used by the plants in the process of photosynthesis in which oxygen is released. All gases go into the atmosphere. Thus, it is a place in nature for gaseous exchange

**Question 2.** How will you prove that air is a mixture of several gases and not a compound?

**Answer:** The following points show that air is a mixture:

1. The composition of air varies slightly from place to place.
2. Different components of air are separable by physical processes.
3. Different components of air exhibit their characteristics, for example,  $\text{O}_2$  in air supports combustion,  $\text{CO}_2$  in air turns lime water milky.

**Question 3.** Why are fine hair and mucus present in our nostrils? Why should we not breathe in by mouth?

**Answer:** We inhale air when we breathe through our nostrils. We also know that air contains dust particles. To prevent dust particles from getting into the respiratory system, fine hair and mucus are present inside the nose.

Since, our mouth does not contain the above discussed barriers of dust, so if we breathe through it, dust particles may enter in our respiratory tract. That is why breathing through mouth is not suggested.

**Question 4.** Name the vital component of air. Specify its importance.

**Answer:** Oxygen is regarded as the most important and vital component of air. The living beings take in oxygen (respiration) and give off carbon dioxide. The oxygen used is replaced by plants

in photosynthesis. The concentration of oxygen in the air is thus maintained. Thus, it is very important to sustain life on the earth.

**Question 5.** What is the importance of the presence of carbon dioxide in the atmosphere? What will happen if its concentration in the air increases?

**Answer:** Carbon dioxide has the property of absorbing heat rays called infrared rays. Nature has a balance of carbon dioxide in the atmosphere, thus giving an optimum warmth to the atmosphere. The increase in the concentration of carbon dioxide in the air would cause increase in the temperature of the earth and would ultimately lead to melting of glaciers causing floods etc. This phenomenon is called global warming.

**Question 6.** Nature maintains a balance of carbon dioxide and oxygen in the atmosphere. Comment.

**Answer:** Nature in its own way has been maintaining a balance of carbon dioxide and oxygen in the atmosphere. Atmosphere and oceans are continuously exchanging these gases with the rocks, plants and living organisms. However, due to rapid industrialization in the past, the concentration of CO<sub>2</sub> near the earth's surface is increasing though in very small proportions till now.

**Question 7.** How is air important for life on the earth?

**Answer:** Air helps in the movements of sailing yachts, gliders, parachutes and aeroplanes. Birds, bats and insects can fly due to the presence of air. Air also helps in the dispersal of seeds and pollen of flowers of several plants. Air plays an important role in water cycle. Thus, air is important for life on the earth.

FOR MORE STUDY MATERIALS VISIT: [WWW.UNIQUESTUDYONLINE.COM](http://WWW.UNIQUESTUDYONLINE.COM)

JOIN US ON:

