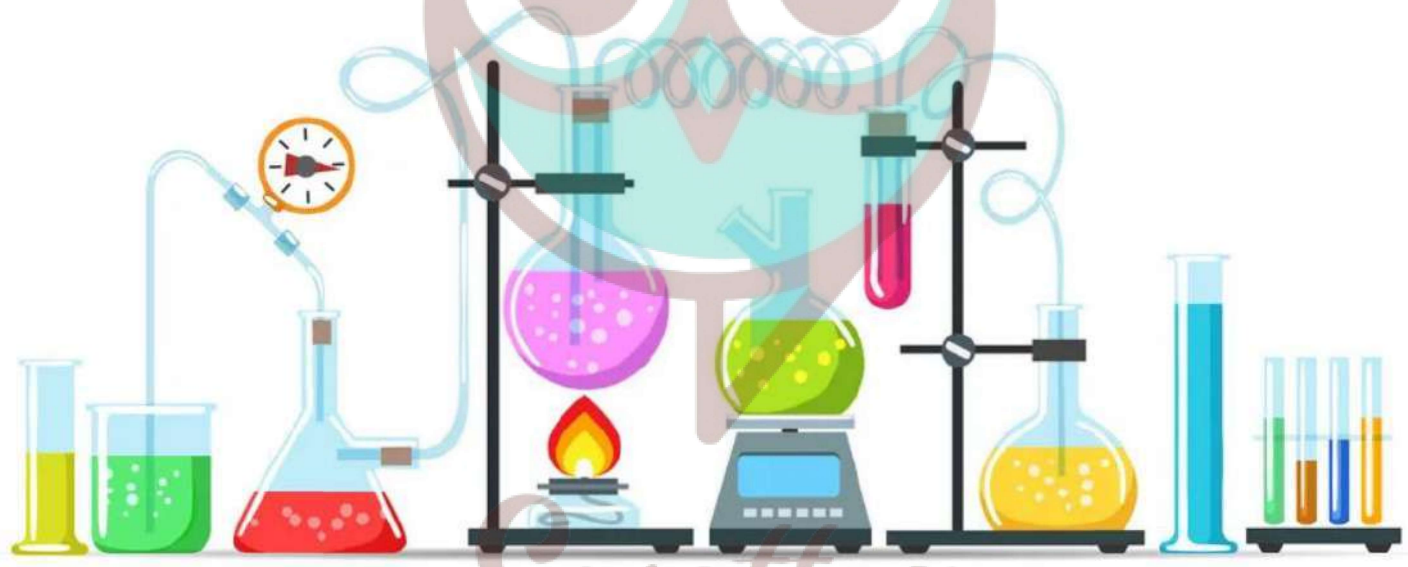
CHEMISTRY

Chapter 15: Air Around Us



Important Questions

Multiple Choice Questions:

Question 1. Major part of the air is constituted by

(a) nitrogen

(b) oxygen

(c) carbon dioxide

(d) inert gases

Question 2. Which of the following gas helps in burning?

(a) Nitrogen

(b) Oxygen

(c) Carbon dioxide

(d) Carbon monoxide

Question 3. Which of the following gas we use in breathing?

(a) Carbon dioxide

(b) Nitrogen

(c) Oxygen

(d) None of these

Question 4. Wind is

(a) air around us

(b) rising hot air

(c) air in motion

(d) none of these

Question 5. Air is present in

(a) atmosphere

(b) soil

(c) water of ponds, lakes and seas

(d) everywhere

Question 6. Air is

(a) a mixture

(b) a pure substance

(c) an element

(d) anything, that depends on the place where it is found

Question 7. Envelope of air that surrounds the earth is known as

(a) biosphere

(b) atmosphere

(c) environment

(d) ecosystem

Question 8. Which is not a property of air?

(a) It occupies space.

(b) It is transparent,

(c) It is a solution.

(d) It is a compound.

Question 9. The ratio of nitrogen to oxygen in the air is

(a) 1:4

(b) 4:1

(c) 3:1

(d) 1:2

Question 10. The main constituent of the air is.

(a) nitrogen

(b) oxygen

(c) carbon dioxide

(d) hydrogen

Very Short Question:

1. Name the main component of air.
2. What is the source of oxygen gas in air?
3. What is the percentage of nitrogen in air?
4. What is the percentage of oxygen in air?
5. What is the source of carbon dioxide in air?
6. Mention one necessary condition for the combustion to take place.

Short Questions:

1. Why is air considered as a mixture?
2. Name the major gas present in the (a) inhaled air (b) exhaled air.
3. Write the necessary conditions for rusting of iron to take place.

4. Name a device which uses wind energy to generate electricity.

5. What is wind energy? Mention its two advantages.

6. Mention two uses of air.

7. Describe balance of oxygen in the air.

8. What happens if the percentage of oxygen in the air reaches to 70%?

Long Questions:

1. What is air? Name the major constituents of air. Also give their volume proportions in air.

2. Demonstrate through a simple experiment that the air mainly contains nitrogen and oxygen in the volume ratio of 4: 1.

3. Air is a mixture. Prove this statement.

Answer Key-

Multiple Choice Answers:

1. (a) nitrogen
2. (b) Oxygen
3. (c) Oxygen
4. (c) air in motion
5. (d) everywhere
6. (a) a mixture
7. (b) atmosphere
8. (d) It is a compound.
9. (b) 4:1
10. (a) nitrogen

Very Short Answers:

1. Answer: Nitrogen gas
2. Answer: Photosynthesis by green plants is source of oxygen gas in air.
3. Answer: 78.1%
4. Answer: 20.9%
5. Answer: Respiration by animals and plants and burning of fuel.
6. Answer: Presence of air.

Short Answer:

1. Answer: Air contains oxygen and nitrogen as its major constituents of air. These gases retain their properties in air. So, the air is called a mixture.

2. Answer: (a) Oxygen (b) Carbon dioxide.
3. Answer: Rusting of iron takes place in the presence of moisture and air. So the presence of air and water vapour in air are two necessary conditions for rusting of iron.
4. Answer: Windmills use the wind energy to convert wind energy into electrical energy
5. Answer: Blowing air is called wind. Wind possesses kinetic energy. The kinetic energy possessed by wind is called wind energy.

   Uses of Wind Energy are:

   (i) Wind energy is used to pump the ground water.

   (ii) Wind energy is used to generate electricity with the help of windmills.
6. Answer: The two uses of air are as below:

   (a) For respiration all organisms need air.

   (b) For burning of any substance air is needed.
7. Answer: The oxygen in air is used by the organisms present in air, water or soil or on earth for their respiration. During respiration carbon dioxide gas is released to air. But green plants during photosynthesis use carbon dioxide of air for preparing food and they release oxygen gas in the air. Thus the balance of oxygen in air is maintained.
8. Answer: If any substance catches fire it will become difficult to extinguish the fire, as oxygen supports combustion.

Long Answer:

1. Answer: Air is a mixture of gases. The major constituents of air are nitrogen, oxygen, carbon dioxide and argon. The percentage composition of constituents of air are as given below:

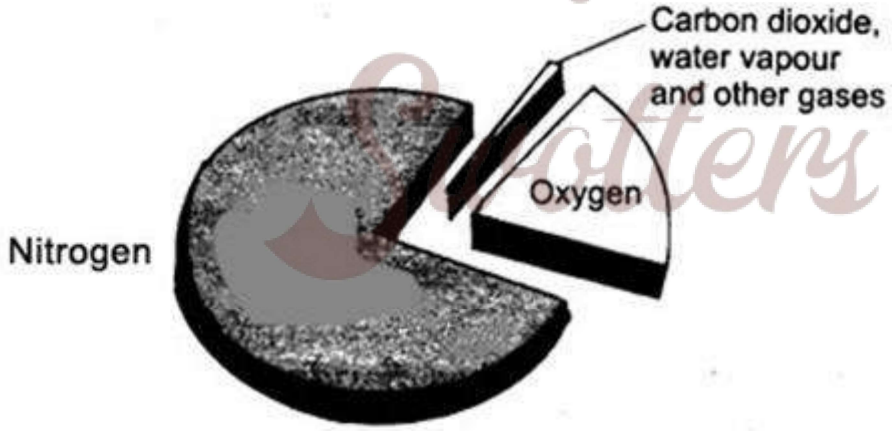


Fig. 15.8 Composition of air.

Name of Constituents	% Composition
Nitrogen gas	78.1%
Oxygen gas	20.9%
Carbon dioxide gas	0.03%
Argon	0.9%

Other components of air are water vapour and dust particles.

2. Answer: Aim of experiment: To show that air contains nitrogen and oxygen in the ratio 4 : 1 by volume:

   Procedure: Take a glass container and fix a candle at its centre. Put some quantity of water in the container. Place an empty, dry gas jar over it. Mark five marks above water surface on the jar at equal distances shown in the figure given below.

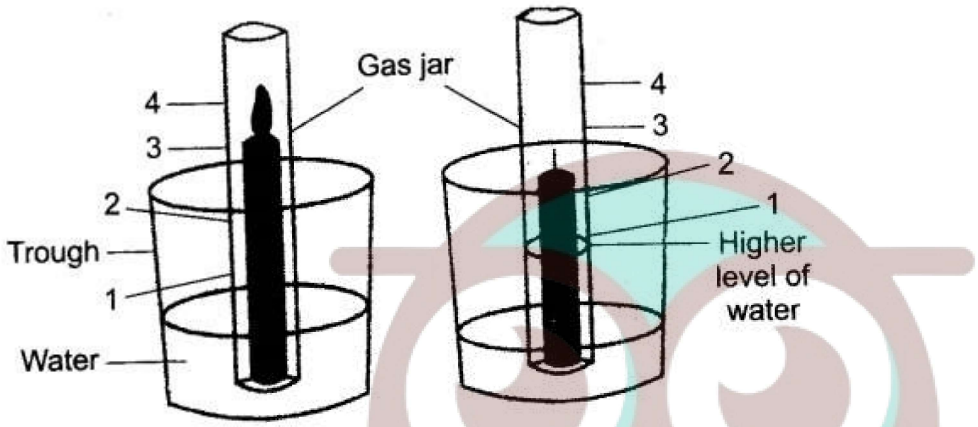
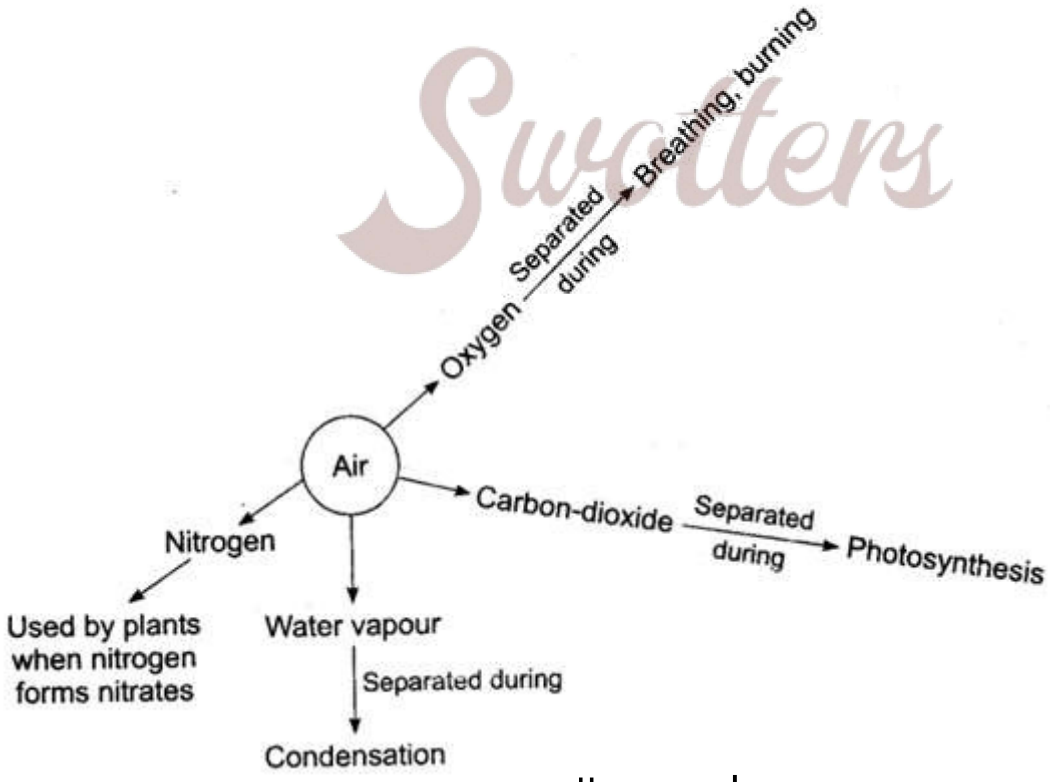


Fig. 15.9 Experiment with a candle

   The candle is lightened and is covered with the gas jar. After some time the candle is extinguished and the water level is raised in gas jar. The raised level in water is 1 / 5 of the volume of air in the gas jar.

   This proves that one part of the air of the jar is a gas which supports combustion, i.e., oxygen. Hence, 1/5 by volume is oxygen in air.

3. Answer: The components of mixture can be easily separated and they retain their properties.



The components of air are: oxygen, nitrogen, water vapour and carbon-dioxide, all these gases can be easily separated and they retain their properties.