

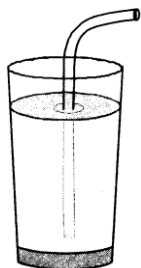
**Air around us**

1. Which of the following processes need oxygen?  
(a) Combustion                      (b) Respiration  
(c) Oxidation                        (d) All of the above
2. Which of the following statements is true regarding the earth's atmosphere?  
(a) It gets denser with an increase in the altitude.  
(b) It gets thinner with an increase in the altitude.  
(c) It remains the same.  
(d) It contains no solid particles.
3. When we heat water, we find bubbles coming from it. This shows that  
(a) water contains air.  
(b) air contains water.  
(c) water itself converts into bubbles.  
(d) water contains dissolved minerals.
4. Which of the following plays a very important role in the oxygen cycle?  
(a) Birds                                (b) Animals  
(c) Plants                               (d) Soil
5. Mountaineers carry oxygen cylinders with them because  
(a) oxygen supports combustion.  
(b) oxygen is less at higher altitudes.  
(c) more oxygen is needed to cook food.  
(d) oxygen does not support combustion.
6. Which of the following can show the direction of the wind?  
(a) An anemometer                (b) A wind mill  
(c) A windvane                       (d) A barometer
7. Which of the constituents of air on increasing, causes global warming?  
(a) Nitrogen                            (b) Oxygen  
(c) Inert gases                        (d) Carbon dioxide
8. The percentage of water vapour present in air is called  
(a) density.                            (b) humidity.  
(c) mass.                                (d) solubility.
9. Plants require nitrogen for  
(a) reproduction.                    (b) photosynthesis.  
(c) transpiration.                    (d) their growth.
10. Which of the following gases cause the harmful greenhouse effect?  
(a) Hydrogen                          (b) Oxygen  
(c) Carbon dioxide                  (d) Nitrogen
11. The percentage of nitrogen in air is  
(a) 21%  
(b) 0.1%  
(c) 54% .  
(d) 78% .

**12.** Breathing of air through our mouth is not hygienic because

- (a) dust particles will enter our lungs.
- (b) we will inhale more carbon dioxide.
- (c) our throat will become sore.
- (d) we will easily catch cold.

**13.** Which of the following enables us to drink a liquid through a straw?



- (a) Humidity
- (b) Temperature
- (c) Atmospheric pressure
- (d) Composition of air

**14.** The humidity of a place

- (a) lies between 10% – 20% .
- (b) is always more than 50%
- (c) is always less than 80%
- (d) varies from time to time.

**15.** Lime water turns milky when exposed to air. This shows that air contains

- (a) carbon dioxide.                      (b) hydrogen.
- (c) nitrogen.                                (d) oxygen.

**16.** The correct ascending order of gases as per their composition in air is

- (a) oxygen < carbon dioxide < nitrogen.
- (b) hydrogen < oxygen < nitrogen.
- (c) nitrogen < hydrogen < oxygen.
- (d) oxygen < carbon dioxide < hydrogen.

**17.** Air is useful for

- (a) generating electricity.
- (b) the dispersal of seeds.
- (c) bird's flight.
- (d) all of the above.

**18.** Which of the following is combustible?

- (a) Oxygen
- (b) Carbon dioxide
- (c) Hydrogen
- (d) All of these

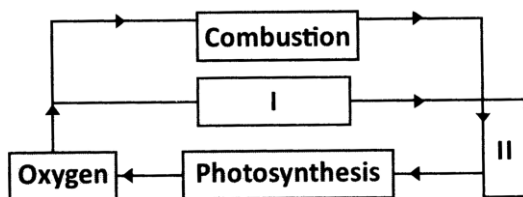
**19.** Which of the following statements is true regarding the properties of air?

- (a) Air is a good conductor of electricity.
- (b) Air is a good conductor of heat.
- (c) Air is translucent in nature.
- (d) The composition of air varies from place to place.

20. Match the following terms in Column-I with those in Column-II correctly.

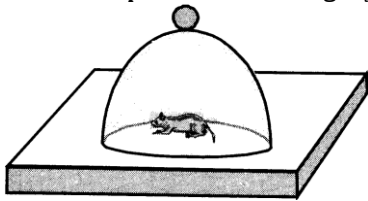
Column-I		Column-II	
a.	Aquatic animals	1.	Sail boat
b.	Mountaineers	2.	Soot and dust
c.	Factories	3.	Oxygen cylinders
d.	Wind	4.	Dissolved oxygen

- (a)  $a-1, b-2, c-3, d-4$   
 (b)  $a-2, b-1, c-4, d-3$   
 (c)  $a-3, b-4, c-1, d-2$   
 (d)  $a-4, b-3, c-2, d-1$
21. Which of the following is NOT associated with air?  
 (a) Having a campfire  
 (b) Flying a paper aeroplane  
 (c) Blowing out candles on a birthday cake  
 (d) Sunbathing at the beach
22. The proportion of oxygen and carbon dioxide in the atmosphere is maintained by  
 (a) plants. (b) animals.  
 (c) machines. (d) Both (A) and (B).
23. What can be said about the nature of air?  
 (a) Air is heterogeneous.  
 (b) Air is a compound.  
 (c) Air is homogeneous.  
 (d) Air is an alloy.
24. Which of the choices can best fill in the boxes I and II given below?



- (a) I-carbon dioxide, II-oxygen  
 (b) I-oxygen, II-respiration  
 (c) I-respiration, II-carbon dioxide  
 (d) I-respiration, II-oxygen
25. Rita fixed a candle at the bottom of a trough containing water. After lighting the candle, she inverted a gas jar over it.  
 What did she observe?  
 (a) The flame continued to burn and water rose in the jar.  
 (b) The flame was put off and water rose in the jar.  
 (c) The flame continued to burn and water became milky.  
 (d) The flame was put off and black smoke was deposited on the sides of the jar.
26. Wind mills produce energy and convert it into  
 (a) heat energy. (b) light energy.  
 (c) sound energy. (d) electrical energy.

- 27.** What is the percentage of carbon dioxide present in air?  
 (a) 0.3% (b) 0.03 %  
 (c) 0.003 % (d) 1 %
- 28.** Which of the following activities help in in- creasing the content of water vapour in air?  
 (a) Transpiration  
 (b) Evaporation  
 (c) Respiration  
 (d) All of the above
- 29.** When a person is caught with fire, he or she is wrapped in a thick blanket so as to  
 (a) cut off the oxygen supply.  
 (b) cut off the nitrogen supply.  
 (c) keep the body cool.  
 (d) cut off the inert gases supply.
- 30.** Air moves with great speed during  
 (a) drought.  
 (b) cyclones.  
 (c) volcanic eruptions.  
 (d) floods.
- 31.** An animal placed in an air tight jar is kept in sunlight as shown in the figure.



How can the animal be helped to survive for a longer time?

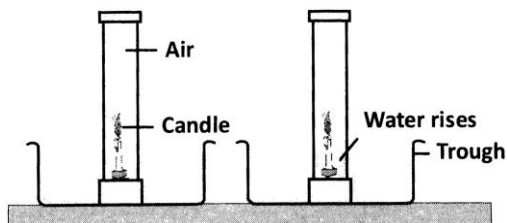
- (a) By placing another mouse in it  
 (b) By placing a green plant in it  
 (c) By removing all the air through a vacuum pump  
 (d) By placing a burning candle in it
- 32.** Given below are some applications of compressed air.

- |   |
|---|
| (i) Tyres<br>(ii) Sprayers<br>(iii) Gas cylinders |
|---|

In which of the following is compressed air used?

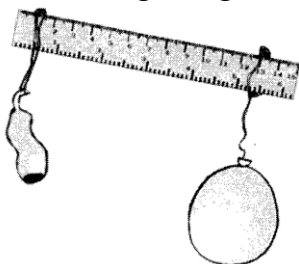
- (a) Only (i) and (ii)  
 (b) Only (ii) and (iii)  
 (c) Only (i) and (iii)  
 (d) (i), (ii) and (iii)
- 33.** The amount of water vapour in air is greater in  
 (a) the rainy season.  
 (b) the dry season.  
 (c) the summer season.  
 (d) the autumn season.

34. In the given figure, a burning candle is kept in the trough containing water. It is put off after some time when covered by an inverted gas jar.



What can be concluded from the above activity?

- (a) Oxygen is  $\frac{1}{5}$ th the volume of air.
  - (b) The ratio of oxygen and nitrogen in air is 1:4.
  - (c) Oxygen is required for burning the candle.
  - (d) All of the above
35. Which of the following gases is the component of air?
- (a) Hydrogen
  - (b) Oxygen
  - (c) Nitrogen
  - (d) All of the above
36. Which of the following is the most abundant element in the earth's crust?
- (a) Nitrogen
  - (b) Oxygen
  - (c) Silicon
  - (d) Hydrogen
37. Which of the following activities releases carbon dioxide into the atmosphere?
- (a) Respiration
  - (b) Burning
  - (c) Photosynthesis
  - (d) Both (A) and (B)
38. Which of the following gases when decreased in the air causes breathing faster?
- (a) Nitrogen
  - (b) Oxygen
  - (c) Carbon dioxide
  - (d) Inert gases
39. Glass panes usually appear hazy because
- (a) water vapour settles on tiny dust particles on glass surfaces.
  - (b) chemical reactions take place on the glass surfaces.
  - (c) it is the property of all transparent substances.
  - (d) they have been used over a long time.
40. Observe the given figure.



What is the purpose of this experiment?

- (a) To show that air has mass.
- (b) To show that air has oxygen.
- (c) To show that we can only feel air.
- (d) To show that air is compressible.

41. Which of the following is true about air?

- (i) Air is a mixture of several gases.
- (ii) Air exerts pressure.
- (iii) The composition of air is constant in all places.

- (a) Only (i) and (ii)
- (b) Only (ii) and (iii)
- (c) Only (i) and (iii)
- (d) (i), (ii) and (iii)

42. In which of the following processes do plants require carbon dioxide?

- (a) Photosynthesis
- (b) Transpiration
- (c) Growth
- (d) Reproduction

43. Carbon dioxide gas can be tested by using

- (i) blue litmus paper.
- (ii) lime water.
- (iii) burning splinter.

- (a) Only (i) and (ii)
- (b) Only (ii) and (iii)
- (c) Only (i) and (iii)
- (d) (i), (ii) and (iii)

44. Which of the following gases in air helps burning?

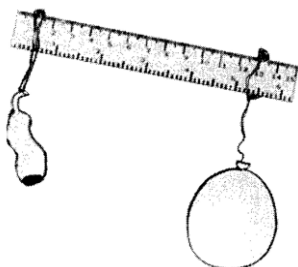
- (a) Oxygen
- (b) Nitrogen
- (c) Carbon dioxide
- (d) Methane

45. For which of the following processes is air essential?

- (i) Respiration
- (ii) Combustion
- (iii) Buring

- (a) Only (i) and (ii)
- (b) Only (ii) and (iii)
- (c) Only (i) and (iii)
- (d) (i), (ii) and (iii)

46. In an experiment shown by the class teacher, the side of the ruler which holds the inflated balloon dips as compared to the balloon without air.



What is the conclusion drawn from this experiment?

- (a) Balloon with air has greater force of gravity.
- (b) Air has definite mass.
- (c) Masses of the balloons are different.
- (d) Balloon has more matter than air.

47. Which of the following methods need air?

- (a) Hand picking
- (b) Sieving
- (c) Winnowing
- (d) Filtration

- 48.** Which of the following can reduce air pollution on roads?
- (a) The widening of roads.
  - (b) Having more traffic lights on roads.
  - (c) Having less traffic lights on roads.
  - (d) Reducing the number of vehicles on roads.
- 49.** We cannot feel the pressure of atmosphere because
- (a) pressure increases with decrease in altitude.
  - (b) pressure decreases with increase in altitude.
  - (c) pressure acts equally in all directions.
  - (d) pressure difference between atmosphere and inside our body is small.
- 50.** Read the two sentences given in the box.

- (i) The compressed air in a tyre exerts a force large enough to lift a heavy car.  
(ii) In a syringe, the plunger compresses the liquid.

- (a) Both the statements are true.
- (b) Both the statements are false.
- (c) Statement (i) is true but statement is false.
- (d) Statement (i) is false but statement (ii) is true.

## Answers and Solutions

1. (d) Oxygen is necessary for combustion, respiration and oxidation.
2. (b) The density of air decreases with an increase in altitude.
3. (a) Water contains dissolved air.  
Note: Sol ability of gases decreases on increase of temperature.
4. (c) Plants play an important role in the oxygen cycle, as they release oxygen during the process of photosynthesis. Thus, they help in balancing the oxygen content in the atmosphere.
5. (b) The density of air decreases with altitude, so the oxygen needed for breathing also decreases and becomes difficult to breathe.  
Hence, mountaineers carry oxygen cylinders.
6. (c) A wind vane is used to find the direction of the wind.
7. (d) Carbon dioxide traps the reflected rays of the sun that fall on the earth's surface. This results in the increase of the earth's temperature, which is referred as global warming.
8. (b) The percentage of water vapour present in the air is called humidity.
9. (d) Plants require nitrogen for their growth and for the formation of proteins.
10. (c) High levels of carbon dioxide in the atmosphere cause the harmful greenhouse effect.
11. (d) The percentage of nitrogen in the air is 78%.
12. (a) If we breathe air through our mouth, the dust particles present in the air may enter the lungs and cause harm. But if the nose is used for breathing, the hair present in the nose filters the air and prevents the dust particles from entering the lungs.
13. (c) When a straw is used for drinking, air is expelled out from the straw due to which there is a decrease in the air pressure inside the straw. Therefore, the liquid in the container enters the straw, rises up and comes out from the straw. So, we are able to drink the juice/liquid. When we stop using the straw the process stops.



- 14.** (d) Humidity varies from time to time and from place to place. It is not fixed because it depends on the temperature of that place at that particular time.
- 15.** (a) Carbon dioxide in air turns lime water milky.
- 16.** (b) The correct ascending order of gases as per their composition in air is hydrogen and other gases (1%), oxygen (21%) and nitrogen (78%).
- 17.** (d) Air is useful in many ways, like in the generation of electricity, the dispersal of seeds and in bird's flight.
- 18.** (c) Hydrogen is a combustible gas. It burns with a pale blue flame.
- 19.** (d) Air is transparent, a bad conductor of electricity and heat and also its composition varies from place to place.
- 20.** (d) The correct combination is  
a - 4, b - 3, c - 2, d - 1  
(i) Aquatic animals-Dissolved oxygen  
(ii) Mountaineers-Oxygen cylinders  
(iii) Factories-Soot and dust  
(iv) Wind - Sail boat
- 21.** (d) Sunbathing at the beach is not associated with air. Sunbathing requires sunlight not air.
- 22.** (d) During respiration in animals, oxygen is taken in and carbon dioxide is released.  
During photosynthesis in plants, carbon dioxide is absorbed and oxygen is released.  
The proportion of oxygen and carbon dioxide in the atmosphere is maintained both by plants and animals.
- 23.** (c) Air is a mixture of several gases. It is homogeneous in nature.
- 24.** (c) During photosynthesis in plants, oxygen is released which is taken in by human beings and animals for respiration. They in turn release carbon dioxide needed for photosynthesis by plants.
- 25.** (b) The flame of the candle goes on burning till there is oxygen available in the jar. After sometime, when all the oxygen is exhausted, candle flame goes off and water from the trough rises into the jar to replace the oxygen gas consumed.

26. (d) Wind mills produce energy and convert it into electrical energy.
27. (b) The percentage of carbon dioxide present in air is about 0.03%
28. (d) Transpiration, respiration and evaporation help in increasing the content of water vapour in air.
29. (a) When a person is caught with fire, he or she is wrapped in a thick blanket so as to cut off the oxygen supply, since oxygen is a supporter of combustion.
30. (b) A cyclone is a storm accompanied with whistling and howling winds blowing at high speeds.
31. (b) The animal that is kept in the jar uses oxygen and releases carbon dioxide while respiring. If we place a green plant in the jar, the plant uses  $\text{CO}_2$  and releases oxygen which enables the animal to breathe and survive for a longer time.
32. (d) Compressed air is used for filling inflating tyres, sprayers and gas cylinders.
33. (a) The amount of water vapour in air is more in the rainy season.
34. (d) From the given activity, we can conclude that
- (i) water level in the gas jar is  $\frac{1}{5}$ th of the jar's volume which shows that the ratio of  $\text{O}_2$  is  $\frac{1}{5}$ th the volume of air.
  - (ii) this also proves that the ratio of  $\text{O}_2$  and  $\text{N}_2$  in the air is approximately 1:4.
  - (iii) oxygen is required for burning because the flame of the candle goes off when  $\text{O}_2$  is used up.
35. (d) Gases like hydrogen, oxygen, nitrogen, carbon dioxide and many other gases, together form a mixture called air.
36. (b) Oxygen is the most abundant element in the earth's crust and next to it is silicon.
37. (d) Respiration and burning release carbon dioxide into the atmosphere, whereas photosynthesis releases oxygen into the atmosphere.
38. (b) Breathing becomes faster, if the oxygen content in the air decreases as it is the breath of life.
39. (a) Glass panes usually appear hazy because water vapour settles on the tiny dust particles on glass surfaces.

- 40.** (a) The purpose of this experiment is to prove that air has mass.
- 41.** (a) Air is a mixture of several types of gases. It can exert pressure. The composition of air is not constant in all places.
- 42.** (a) Plants require carbon dioxide to carry out photosynthesis.
- 43.** (d) Carbon dioxide gas can be tested using a blue litmus paper, lime water and a burning splinter.
- 44.** (a) Oxygen gas in air helps in burning.
- 45.** (d) Air is essential for respiration, combustion and burning.
- 46.** (b) The balloon with air has more mass than the balloon without air.
- 47.** (c) Winnowing is a method used by farmers to separate grains like wheat or rice and husk. Moving air blows away the husk which is lighter than the grain.
- 48.** (d) Air pollution is due to increase in the level of harmful gases in the atmosphere. These are increased by the combustion of fuels in the vehicles. Therefore, on reducing the vehicles on the roads, air pollution can be reduced.
- 49.** (d) We have evolved under the temperature and pressure conditions on the earth such that pressure inside or outside our bodies is almost the same. If we go to higher attitudes, we can feel the difference in pressure.
- 50.** (c) (i) The compressed air in a tyre exerts a force large enough to lift a heavy car.  
(ii) In a syringe, the plunger does not compress the liquid. Pressure is applied on the liquid causing it to flow out.