

Class: 7

Subject: Biology

Topic: Respiration in Organisms

No. of Questions: 20

Q1. Why do we yawn when we are sleepy?

Sol. When we are sleepy our brain needs more oxygen to function properly. We yawn to gather a large amount of oxygen for our brain, to help it function faster and control drowsiness.

Q2. Can respiration take place in absence of oxygen?

Sol. Yes, Respiration takes place in absence of oxygen when we are doing some strenuous activity. It is called anaerobic respiration.

Q3. What do you mean by Vital Capacity? What is vital capacity of a normal man?

Sol. The maximum volume of air inhaled or exhaled by lungs is called vital capacity. It is measured by Spirometer. The vital capacity of a normal man is 4 to 6 liters.

Q4. Why do we respire?

Sol. We respire to use the oxygen, to oxidize our food and release energy. This is similar like burning but a slower process. It also needs respiratory enzymes. Respiration is a slower process than burning and energy released can be stored for later use.



Q5. What happens to the air we breathe in?

Sol. The air we breathe in transported to every parts of body and ultimately it is transported to each cell, in the cells, oxygen in the air helps in the breakdown of food, this process of breakdown of food in the cell with the release of energy is called cellular respiration.

Q6. Differentiate between aerobic and anaerobic respiration.

Sol.

Aerobic respiration	Anaerobic respiration
1. Aerobic respiration takes place using oxygen, inhaled in breathing.	1. Whereas anaerobic respiration requires no oxygen.
2. In aerobic respiration, breakdown of glucose results in production of Carbon Dioxide, Water and Energy	2. In anaerobic respiration, the breakdown of glucose first results in Lactic Acid and energy then lactic acid break down into carbon dioxide and water.
3. Aerobic respiration uses respiratory organs such as lungs or gills	3. anaerobic respiration take place at cellular or muscular level

Q7. Explain similarities between aerobic and anaerobic respiration.

Sol. Both aerobic and anaerobic respirations are necessary for the survival of living organism.

In both type of respiration, the food is broken and energy is released for the functioning of an organism. In both type of respiration, Carbon Dioxide, Water and Energy is produced finally.

Q8. Why human breathing mechanism is called tidal breathing?

Sol. Human breathing mechanism is called tidal breathing because air comes in and out using the same path.

Q9. Humans use yeast every day. What is yeast?

Sol. If we want to make our own bread, we can buy yeast in the grocery store. This yeast consists of little brown grains. The little brown grains of yeast may not seem to be alive, but if we put them in water with sugar, the yeast will carry out cellular respiration and grow. We can grow yeast in a test tube filled with water and sealed with a balloon. Under anaerobic conditions, yeast carries out alcoholic fermentation, so it produces lactic acid and energy.

Q10. Explain respiration in yeast.

Sol. Yeast is single celled organism that respire anaerobically and during this process yield alcohol. Yeast get energy through anaerobic respiration, in the absence of oxygen, glucose breaks down into oxygen and carbon dioxide, the equation for the reaction is as follow:
Glucose (in absence of oxygen) \rightarrow alcohol + carbon dioxide + energy

Q11. Why does an athlete breathe faster and deeper than usual after finishing the race?

Sol. The food has stored energy, which is released during respiration. Therefore, all living organisms respire to get energy from food by breathing the air. During heavy exercise, fast running, cycling, walking for many hours or heavy weight lifting, the demand for energy is high. Therefore, to meet the extra demand of energy, an athlete breathes faster and deeper than usual after finishing the race.

Q12. Why do we often sneeze when we inhale a lot of dust-laden air?

Sol. When we inhale a lot of dust-laden air, the dust particles get trapped in the hair present in our nasal cavity. However, sometimes these particles may get past the hair in the nasal cavity. Then they irritate the lining of the cavity, as a result of which we sneeze. Sneezing expels these foreign particles from the inhaled air and a dust free, clean air enters our body.

Q13. Why mountaineers carry oxygen with them?

Sol. Mountaineers carry oxygen with them because the amount of air available to a person is less than that available on the ground.

Q14. Why we get muscle cramps after heavy exercise?

Sol. During heavy exercise the demand for energy is high. But the supply of oxygen to produce energy is limited. Then anaerobic respiration takes place in the muscle cells to fulfill the demand of energy.
Glucose (in absence of oxygen) \rightarrow Lactic Acid + Energy
The cramps occur only when the muscle cells respire anaerobically. The partial breakdown of glucose produces lactic acid. The accumulation of lactic acid causes muscle cramps.

Q15. Write a short note on inhalation.

Sol. The process of taking in of air rich in oxygen into the body is called 'inhalation'. During inhalation, ribs move up and outwards and diaphragm moves down. This movement increases space in our chest cavity and air rushes into the lungs.

Q16. Write short notes on gills.

Sol. Gills in fish help them to use oxygen dissolved in water and thus, help them in breathing. Gills are projections of their skin. These are well supplied with blood vessels for exchange of gases.

Q17. Do the plants also respire?

Sol. Like all other organisms, plants also respire for their survival. They take oxygen from the air and give out carbon dioxide. In the cells oxygen is used to breakdown glucose into carbon dioxide and water as in other organisms.

Q18. How do we breathe?

Sol. We take in air through our nostrils, when we inhale air, it passes through our nostril into nasal cavity and from there it reaches our lungs through the wind pipe. Lungs are present in chest cavity which is surrounded by ribs on the sides; diaphragm forms the floor of chest cavity. Breathing involves the movement of diaphragm and the rib cage. During inhalation ribs move up and outwards and diaphragm moves down, because of this movement space in our chest cavity increases and air rushes into the lungs. During exhalation ribs move down and inward and diaphragm moves up to its former position, this reduces the size of chest cavity and air is pushed out of the lungs.

Q19. What role does hair present in nasal cavity play in the process of respiration?

Sol. Air around us contains various unwanted particles like smoke, dust, pollens, etc. during inhalation of air these particles get trapped in the hair of nasal cavity and thus these hairs allow clean air to enter our body.

Q20. What is the total percentage of oxygen and carbon dioxide in inhaled air and exhaled air?

Sol. The percentage of oxygen and carbon dioxide in inhaled air is 21% and 0.04% respectively and the percentage of oxygen and carbon dioxide in exhaled air is 16.4% and 4.4% respectively.