



RESPIRATION IN ORGANISM

Chapter: 10



SCIENCE
CLASS: - 7TH
[Company address]

Chapter: 10

Respiration in Organism

Q1: Why does an athlete breathe faster and deeper than usual after finishing the race?

Ans: An athlete breathes faster and deeper after a race to replenish the oxygen used during exercise. This helps to repay the body's oxygen debt and restore proper oxygen levels. Additionally, faster breathing helps to remove metabolic waste products and maintain a healthy pH level.

Q2: List the similarities and differences between aerobic and anaerobic respiration.

Ans: Similarities: -

- (a) Both types of respiration involve the breakdown of glucose molecules to release energy.
- (b) Both produce ATP as a source of energy for the cell.
- (c) Both start with the process of glycolysis, which occurs in the cytoplasm of the cell.

Differences: -

- (a) Aerobic respiration requires oxygen, while anaerobic respiration does not require oxygen.
- (b) Aerobic respiration produces a large amount of ATP, while anaerobic respiration produces a relatively small amount of ATP.
- (c) Aerobic respiration occurs in the mitochondria of the cell, while anaerobic respiration occurs in the cytoplasm of the cell.
- (d) Aerobic respiration produces carbon dioxide and water as by-products, while anaerobic respiration produces lactic acid or alcohol as by-products.

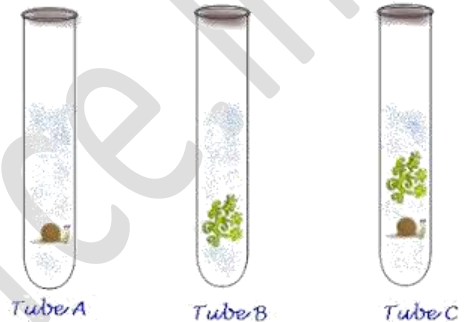
Q3: Why do we often sneeze when we inhale a lot of dust-laden air?

Ans: We often sneeze when we inhale a lot of dust-laden air because sneezing is the body's natural defence mechanism to protect the respiratory system from harmful particles and irritants. When dust or other foreign

particles enter the nose, they can irritate the nasal passages and trigger a reflex action known as the sneeze reflex.

Q4: Take three test-tubes. Fill $\frac{3}{4}$ th of each with water. Label them A, B and C. Keep a snail in test-tube A, a water plant in test-tube B and in C, keep snail and plant both. Which test-tube would have the highest concentration of CO₂?

Ans: Test Tube A has greater concentration of CO₂ because snail is an organism which require O₂ for their respiration and exhale CO₂ as a byproduct.



Q5: Tick the correct answer:

(a) In cockroaches, air enters the body through

- (i) Lungs
- (ii) Gills
- (iii) Spiracles
- (iv) Skin

Ans: - (i) Skin

(b) During heavy exercise, we get cramps in the legs due to the accumulation of

- (i) carbon dioxide
- (ii) lactic acid
- (iii) alcohol
- (iv) water

Ans: - (ii) lactic acid

(c) Normal range of breathing rate per minute in an average adult person at rest is:

- (i) 9–12
- (ii) 5–18
- (iii) 21–24

(iv) 30–33

Ans: - (ii) 5–18

(d) During exhalation, the ribs

(i) move outwards

(ii) move downwards

(iii) move upwards

(iv) do not move at all

Ans: - (ii) move downwards

Q6: Match the items in Column I with those in Column II:

Column I	Column II
(i) Yeast	1. Earthworm
(ii) Diaphragm	2. Gills
(iii) Skin	3. Alcohol
(iv) Leaves	4. Chest cavity
(v) Fish	5. Stomata
(vi) Frog	6. Lungs and skin
	7. Tracheae

Ans:

Column I	Column II
(i) Yeast	Alcohol
(ii) Diaphragm	Chest cavity
(iii) Skin	Earthworm
(iv) Leaves	Stomata
(v) Fish	Gills
(vi) Frog	Lungs and skin

Q7: Mark 'T' if the statement is true and 'F' if it is false:

- (i) During heavy exercise the breathing rate of a person slows down. (F)
- (ii) Plants carry out photosynthesis only during the day and respiration only at night. (F)
- (iii) Frogs breathe through their skins as well as their lungs. (T)
- (iv) The fishes have lungs for respiration. (F)

(v) The size of the chest cavity increases during inhalation. (T)

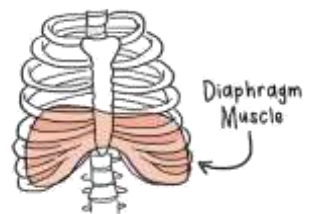
Q8: The mountaineers carry oxygen with them because:

- (a) At an altitude of more than 5 km there is no air.
- (b) The amount of air available to a person is less than that available on the ground.
- (c) The temperature of air is higher than that on the ground.
- (d) The pressure of air is higher than that on the ground.

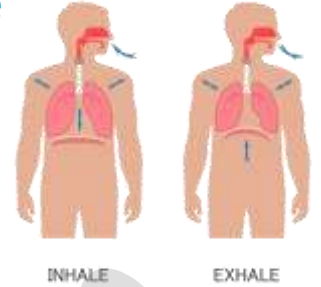
Ans: - (b) The amount of air available to a person is less than that available on the ground.

Key Words

- (i) **Aerobic respiration:** - Aerobic respiration is the process by which cells convert glucose into energy, carbon dioxide, and water in the presence of oxygen.
- (ii) **Anaerobic respiration:** - anaerobic respiration is the process by which cells convert glucose into energy, Lactic acid in the lack of oxygen.
- (iii) **Breathing rate:** - Breathing rate refers to the number of breaths taken per minute, typically measured by counting the number of inhalations or exhalations.
- (iv) **Cellular respiration:** - Cellular respiration is the metabolic process that occurs in cells to convert nutrients, such as glucose, into usable energy.
- (v) **Diaphragm:** - The diaphragm is a muscular partition that separates the chest cavity from the abdominal cavity, assisting in breathing by contracting and relaxing to facilitate the movement of air in and out of the lungs.



(vi) **Inhalation:** - Inhalation, also known as inspiration, is the process of breathing in or taking in air into the lungs.



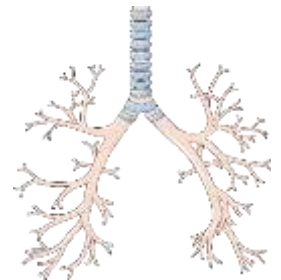
(vii) **Exhalation:** - Exhalation is the process of breathing out or expelling air from the lungs.

(viii) **Gills:** - Gills are specialized respiratory organs found in aquatic animals, such as fish.

(ix) **Lungs:** - Lungs are the primary respiratory organs in mammals, including humans, responsible for the exchange of oxygen and carbon dioxide during breathing.

(x) **Spiracles:** - Spiracles are small openings or pores found on the bodies of certain insects and arthropods, serving as respiratory structures through which they exchange their gases.

(xi) **Tracheae:** - Tracheae are a network of tiny tubes found in insects and some other arthropods that serve as the respiratory system, allowing for the exchange of gases.



(xii) **Ribs:** - Ribs are a set of curved bones that form the ribcage, providing structural support and protection to the chest cavity.