

CLASS NOTES

Class: VII

Topic: CHAPTER 10

RESPIRATION IN ORGANISMS

Subject: SCIENCE

BOOK EXERCISES

To be written in notes copy

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

Answer: During the race, the demand of energy is high but the supply of oxygen to produce energy is limited. After finishing the race, an athlete breathes faster and deeper than usual so that more oxygen is supplied to the cells. While running, all the reserved energy is used and more oxygen is required for the generation of energy. As a result, an athlete breathes faster and deeper than usual after finishing the race.

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

Answer:

Similarity: In both aerobic and anaerobic respiration:

- (i) Food is broken down to release energy.
- (ii) Both takes place inside cells.
- (iii) Both produce byproducts.

Differences:

Aerobic Respiration	Anaerobic Respiration
(i) It takes place in the presence of oxygen.	(i) It takes place in the absence of oxygen.
(ii) Energy is released in higher amount.	(ii) Energy is released in lesser amount.
(iii) Byproducts are carbon dioxide and water.	(iii) Byproducts are lactic acid, carbon dioxide and water.
(iv) It is a slow process.	(iv) It is a fast process.
(v) Examples: Animals and plants cells.	(iv) Examples: Human cells, yeast, Bacteria etc.

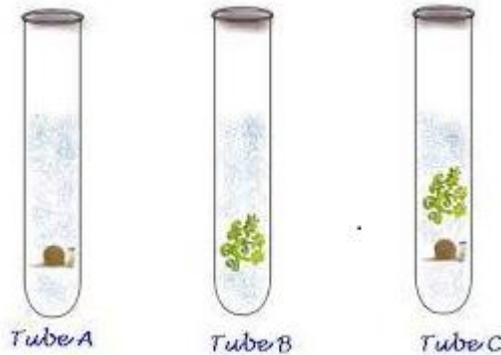
Q3. Why do we often sneeze when we inhale a lot of dust-laden air?

Answer:

Sneezing expels the foreign particles from the inhaled air, so that only clean air enters

our body. It usually occurs because of the irritation in the upper breathing passage. This irritation happens when we inhale some unwanted particles and they get trapped in our nasal cavity. Smoke, dust, pollen, etc. are some of the unwanted particles that may cause sneezing.

Q4. Take three test-tubes. Fill each of them 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?



Answer:

- Test tube A will have the highest concentration of CO₂. This is because test tube A contains snail. Snail is an organism that breathes in (inhales) O₂ and breathes out (exhales) CO₂. Hence, CO₂ concentration increases in test tube A.
- Test tube B contains a water plant, which takes in CO₂ for food synthesis and gives out O₂. Hence, more O₂ concentration is found in test tube B.
- Test tube C contains both a snail and a plant. The CO₂ produced by the snail is utilized by the plant for its food synthesis and the O₂ released by the plant is utilized by the snail for respiration.
- **Therefore, test tube A has the highest concentration of CO₂.**

Q5. Tick the correct answer: (TO BE DONE IN TEXT BOOK)

(a) In cockroaches, air enters the body through:

- (i) lungs
- (ii) gills
- (iii) spiracles
- (iv) skin

Answer: (iii) spiracles

(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

Answer: (ii) lactic acid

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

- (i) 9 – 12
- (ii) 15 – 18
- (iii) 21 – 24
- (iv) 30 – 33

Answer: (ii) 15 – 18

(d) During exhalation, the ribs:

- (i) move outwards
- (ii) move downwards
- (iii) move upwards
- (iv) do not move at all

Answer: (ii) move downwards

Q6. Match the items in Column I with those in Column II: (TO BE DONE IN TEXT BOOK)

Answer:

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

Q7: Mark 'T' if the statement is true and 'F' if it is false: (TO BE DONE IN TEXT BOOK)

- Answer:** (i) During heavy exercise the breathing rate of a person slows down - **False**
(ii) Plants carry out photosynthesis only during the day and respiration only at night - **False**
(iii) Frogs breathe through their skins as well as their lungs - **True**
(iv) The fishes have lungs for respiration - **False**
(v) The size of the chest cavity increases during inhalation - **True**

Q8. Find the words for your respiratory system. (TO BE DONE IN TEXT BOOK)

Answer:

- (i) The air tubes of insects → **Trachea**
- (ii) Skeletal structures surrounding chest cavity → **Ribs**
- (iii) Muscular floor of chest cavity → **Diaphragm**
- (iv) Tiny pores on the surface of leaf → **Stomata**
- (v) Small openings on the sides of the body of an insect → **Spiracles**

- (vi) The respiratory organs of human beings → **Lungs**
- (vii) The openings through which we inhale → **Nostrils**
- (viii) An anaerobic organism → **Yeast**
- (ix) An organism with tracheal system → **Ant**

Q9. 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.

Answer:

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

EXTRA QUESTION ANSWERS

Q10. Paheli participated in a 400 m race competition held at her school and won the race. When she came home she had mixed feelings of joy and pain as she had cramps in her leg muscles. After a massage, she was relieved of the pain. Answer the following questions related to the situation.

- (a) What can be the possible reasons for the pain in her legs?**
- (b) Why did she feel comfortable after a massage?**

Answer:

(a) Paheli had cramps in her leg muscles after running. She felt pain in her legs because of accumulation of lactic acid in the leg muscles. Lactic acid is formed due to anaerobic respiration in the muscle cells after heavy exercise or running. After heavy exercise, we require large amount of energy.

To produce more energy & to meet the oxygen requirement of muscles, muscle cells perform anaerobic respiration for a short duration.

Lactic acid is formed due to partial breakdown of glucose. It gets accumulated in the muscle cells and causes pain and muscle cramps.

(b) The massage or hot water bath gives the relief from muscle cramp or pain, because it improves the circulation of blood leading to increase supply of oxygen to the muscle cells. It helps in complete breakdown of lactic acid into carbon dioxide and water.

Q11. There are three animals named A, B and C. Among them A can stay on land as well as in water. When it stays at land it respire through lungs but when it goes into water, it respire through its moist skin. Animal B has specific organs to respire in the water which is not found in any other water animal. While animal C is a water animal which respire through nostrils and lungs. Now give the name of animal A, B and C.

Answer:

Animal A can live on land as well as in water and can respire through lungs as well as moist skin. The animal is frog.

Animal B lives in water and respire through a specific organ called gills. These are found in the tadpoles besides fishes. The animal B is a fish.

Animal C is also an aquatic animal which lives in sea water and respire through nostrils and lungs not by the gills. The animal is whale.

Question number 12, 13 & 14 not to be written in copy.

(Answers will be discussed by ST during online class)

Q12. Whenever we feel drowsy or sleepy, we start yawning. Does yawning help us in anyway?

Q13. Name one organism who respire anaerobically. How does this organism help in beverage and baking industry?

Q14. Pick the odd one out from each of the groups given below on the basis of respiratory organs. Give reason for your answer.

(a) Cockroach, grasshopper, snail, ant

(b) Lizard, cow, earthworm, snake

(c) Crocodile, whale, dolphin, fish

(d) Snake, tadpole, crow, goat