Chapter - 10
Respiration in Organisms

Multiple Choice Questions

1. Sometimes when we do heavy exercise, anaerobic respiration takes place in our muscle cells. What is produced during this process?

(a) alcohol and lactic acid
(b) alcohol and CO2
(c) lactic acid and CO2
(d) lactic acid only

Soln:

Answer is (d) lactic acid only

Explanation:

During exercise oxygen gets used up faster, to meet the energy requirement our body shift to anaerobic respiration because of which lactic acid is produced in place of pyruvic acid.

2.Yeast is used in wine and beer industries because it respires

(a) aerobically producing oxygen.
(b) aerobically producing alcohol.
(c) anaerobically producing alcohol.
(d) anaerobically producing CO2.

Soln:

Answer is (c) anaerobically producing alcohol.

Explanation:

Yeast respires anaerobically to produce ethanol and CO_2. Due to this property it is used in the production of ethanol and alcoholic drinks.

3. During the process of exhalation, the ribs move
(a) down and inwards.
(b) up and inwards.
(c) down and outwards.
(d) up and outward.

Soln:

Answer is (a) down and inwards.

Explanation:

During exhalation, the diaphragm moves up and ribs move downwards and inwards, decreasing the space in the chest cavity, this increases the air pressure inside the lungs and forces the air out of the lungs.

4. Breathing is a process that
(i) provides O2 to the body.
(ii) breaks down food to release energy.
(iii) helps the body to get rid of CO2.
(iv) produces water in the cells.

Which of the following gives the correct combination of functions of breathing?
(a) (i) and (ii)
(b) (ii) and (iii)
(c) (i) and (iii)
(d) (ii) and (iv)

Soln:

Answer is (c) (i) and (iii)

Explanation:

Breathing is a process oxygen rich air is taken inside the body and carbon-di-oxide rich air is expelled from the body with the help of respiratory organs.

5. Fish breathe with the help of gills which are richly supplied with blood vessels. The gills help the fish to

(a) take in oxygen from air.
(b) take in oxygen dissolved in water.
(c) absorb nutrients present in water.
(d) release waste substances in water.

Soln:

Answer is (b) take in oxygen dissolved in water.

Explanation:

Fishes use gills for the exchange of gases. As the water enter through mouth it flows through gills. Capillaries in the gills absorbs oxygen dissolved in water and also help in expelling out CO_2 from the body.

6. Earthworms and frogs breathe through their skin because of which the skin of both the organisms is
(a) moist and rough.
(b) dry and rough.
(c) dry and slimy.
(d) moist and slimy.

Soln:
Answer is (d) moist and slimy.

Explanation:

Exchange of gases in earthworms and frogs take place by diffusion through moist body hence their skin appears moist and slimy.

Very Short Answer Questions

7. Mark the following statements as True or False. Correct the false statements.
(a) Oxygen breaks down glucose outside the cells of organisms.
(b) Frogs can breathe through their skin as well as lungs.
(c) Insects have spiracles on the lower surface of the body.
(d) Exhaled air has more percentage of CO_2 than inhaled air.

Soln:

a) False- Oxygen breaks down glucose inside the cells of organisms.
b)True
c) False- Insects have spiracles on the sides of the body.
d) True

8. Fill in the blanks with suitable words. (a) The roots of a plant take up oxygen from the _____ trapped between the _____ particles. (b) Diaphragm forms the _____ of the chest cavity. (c) Exchange of gases in the leaves take place with the help of _____. (d) Cockroaches breathe with the help of air tubes called _____.

Soln:

(a) The roots of a plant take up oxygen from the **Air** trapped between the **soil** particles. (b) Diaphragm forms the **floor** of the chest cavity. (c) Exchange of gases in the leaves take place with the help of **stomata**. (d) Cockroaches breathe with the help of air tubes called **tracheae.**

Short Answer Questions

9. 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

Soln:

a) Snail- Because snail does not breathe by trachea whereas cockroach, grasshopper and ants breathe by trachea

b) Earthworm-because it breathes through its skin and it does not have lungs.

c) Fish- because fish don't have lungs and they breathe by their gills.

d) Tadpoles- because tadpoles don't have lungs and they breathe by their gills.

10.Which gas present in air is essential for aerobic respiration? What is the role of oxygen during respiration?

Soln:

Atmospheric oxygen is essential for the process of aerobic respiration. Respiration is important because oxygen breaks down food and releases energy.

11. On an average, an adult human being at rest breathes 15–18 times per minute. The breathing rate, however, may differ under different conditions. Arrange the following activities given in the box in order of increasing breathing rates and give reason for your answer.

sleeping, cycling, brisk walk, watching T.V.

Soln:

sleeping > watching T.V. > brisk walk > cycling

When a person performs physical activity, breathing becomes faster. Because of which more oxygen is required by the cells to get more energy.

12. On a very cold morning, Boojho and Paheli were talking with each other as they walked down to their school. They observed that the air coming out of their mouth looked like smoke. They were amused and wondered how it happened. Help them find the answer.

Soln:

When the climate is cold warm and moist air exhaled by us condenses into mist when it comes in contact with the cold air of the atmosphere. This looks like smoke coming out of our mouth.

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

Soln:

When we feel sleepy rate of respiration slows down. Because of this lungs will not get enough oxygen and we yawn. Yawning bring extra oxygen to the lungs and helps us in being awake.

14. Insects and leaves of a plant have pores through which they exchange gases with the atmosphere. Can you write two points of differences between these pores with respect to their position, number and extension into the body.

Soln:

(i) Spiracles are present on the sides of insects' body while stomata are present on the lower surface of leaves.
(ii) Spiracles are fewer in number as compared to stomata.
(iii) Spiracles lead to an extensive network of tracheal system which is absent in the leaves.

15. 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?

Soln:

a) Pain in her legs might be because of accumulation of lactic acid in her muscles. During heavy physical activity muscle cells respire anaerobically producing lactic acid.

b) The massage gave her relief because it improves the circulation of blood leading to increased supply of oxygen to the muscle cells which helps in complete breakdown of lactic acid into CO_2 and water.

16. Observe Figure 10.1 carefully and answer the following questions.

Fig. 10.1

(a) In which jar, will the amount of CO_2 be the highest and why?
(b) In which jar, will the amount of CO_2 be the lowest and why?

Soln:

a) Amount of CO_2 will be the highest in jar C because mice in Jar C will breathe out CO_2 which results in accumulation CO_2 in the jar C.
b) Amount of CO_2 will be the lowest in jar A because CO2 in jar A will be utilized by plats to breathe.

17. Observe Figure 10.2 carefully and answer the following questions.

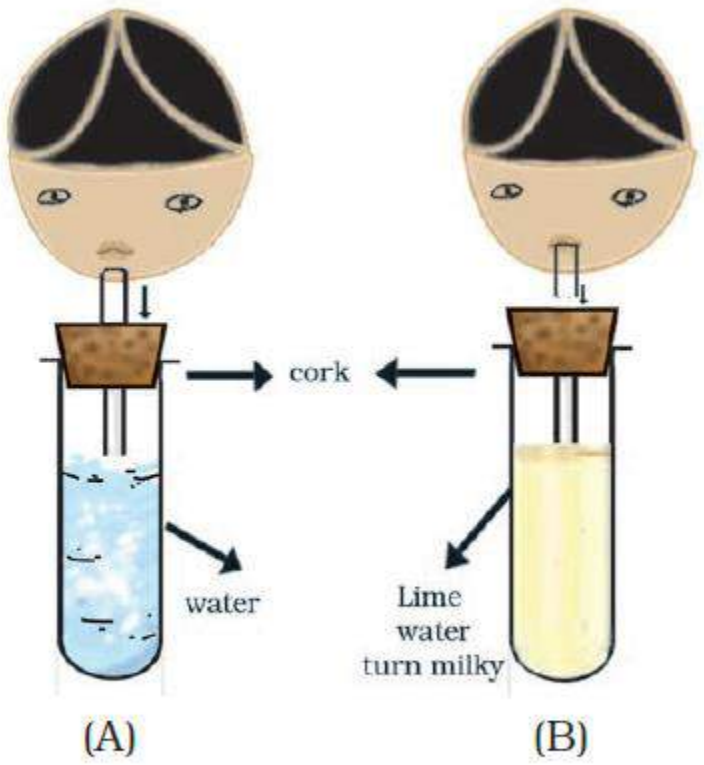


Fig. 10.2

(a) Which process is being tested in the activity?
(b) What is the result of the activity? Give reasons.

Soln:

a) This experiment is used to test Exhalation process during respiration.

b) Lime water turns milky in test tube B and test tube A remains unchanged because CO_2 is present in the exhaled air mixes with lime water in 'B' and turns it milky.

18. A food stall owner was preparing dough for making bhaturas. He added a pinch of yeast and sugar to the dough and left it in a warm place. After few hours, the dough had risen. There was a sour smell too.
(a) Why did the dough rise?
(b) Why did the dough smell sour?
(c) Why was sugar added to the dough?
(d) What would have happened if the dough was kept in the refrigerator, soon after it was prepared?

Soln:

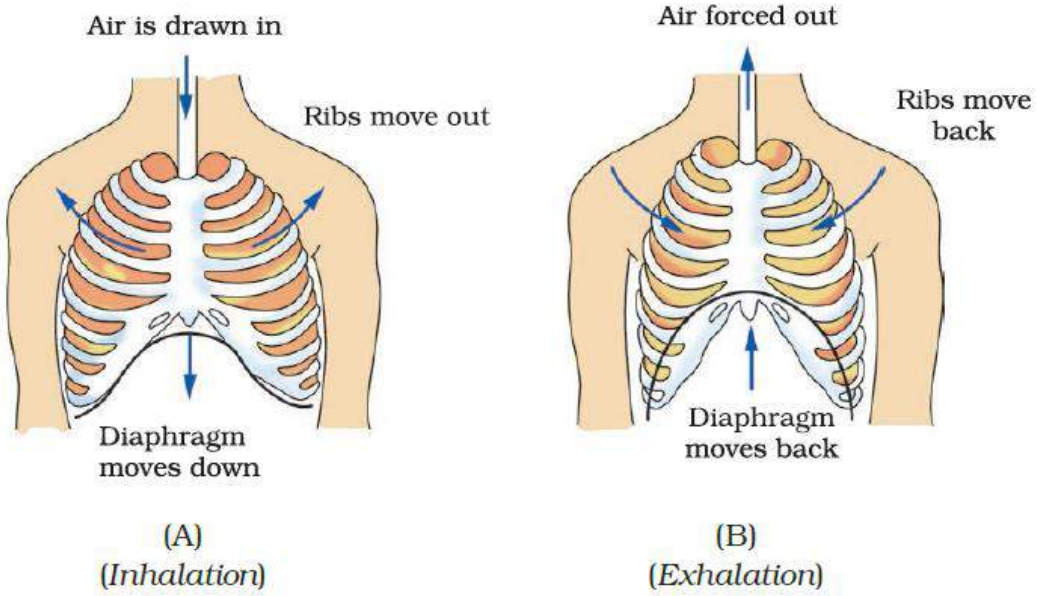
a) CO_2 produced by yeast during respiration makes the dough rise
b) During anaerobic respiration yeast produces alcohol. This gives sour smell to dough.
c) Sugar acts as food for yeast
d) If kept in refrigerator, yeast will not respire and multiply and the dough will not rise and will not produce sour smell.

19.Observe the figures given as Figure 10.3 (A) and (B) and answer the following.
(a) Which of the figures A or B indicates the process of inhalation and which the process of exhalation?
(b) In the figure label the arrows and indicate the direction of
(i) movement of air
(ii) movement of diaphragm
(iii) movement of ribs

Soln:

a) Fig. (A) indicates inhalation, and Fig. (B) indicates exhalation.

b)



20. Match the names of organisms in Column I with their organs of breathing given in Column II.

Column-I	**Column-II**
a) Butterflies	**i) Lungs**
b) Earthworms	**ii) Gills**
c) Sparrow	**iii) Spiracles**
d) Fish	**iv) Skin**

Soln:

Column-I	**Column-II**
a) Butterflies	iii) Spiracles
i) Earthworms	iv) Skin
ii) Sparrow	i) Lungs
iii) Fish	ii)Gills