

# NCERT SOLUTIONS

CLASS - 7TH



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Class : 7th  
Subject : Science  
Chapter : 10

Chapter Name : Respiration In Organisms

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

Answer. An athlete needs to supply extra energy to his muscle cells which have worked hard during running. For this, he breathes faster and deeper so that more oxygen is supplied to the cells. This speeds up the breakdown of food and as a result, more energy is released.

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

Answer. **Similarity between aerobic and anaerobic respiration:**

In both aerobic and anaerobic respiration, the food is broken down to release energy.

**Differences between aerobic and anaerobic respiration:**

Aerobic respiration	Anaerobic respiration
It is the process of breakdown of food in the presence of oxygen.	It is the process of breakdown of food in the absence of oxygen.
Its end products are CO <sub>2</sub> and H <sub>2</sub> O.	End products of anaerobic respiration can be lactic acid or CO <sub>2</sub> and alcohol.
It takes longer time to release energy.	It is a fast process as compared to aerobic respiration.
It produces large amount of energy.	It produces small amount of energy as compared to aerobic respiration.
Examples: It occurs in most plants and animals.	Examples: Yeast, bacteria, human muscle cells, etc. respire anaerobically.

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

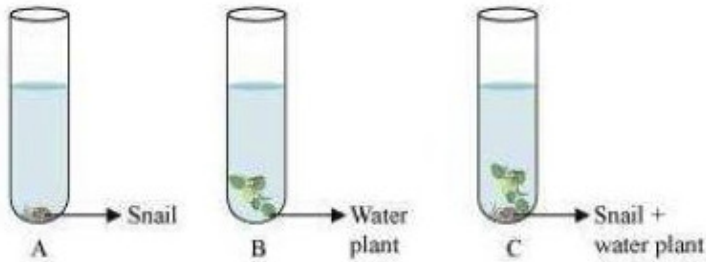
Answer. Sneezing expels the foreign particles from the inhaled air, so that only clean air enters our body. It usually occurs because of the irritation in the upper breathing passage. This irritation

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.

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Q4 Take three test-tubes. Fill 3/4th 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  $\text{CO}_2$ ?

Answer.



Test tube A will have the highest concentration of  $\text{CO}_2$ . This is because test tube A contains snail. Snail is an organism that breathes in  $\text{O}_2$  and breathes out  $\text{CO}_2$ . Hence,  $\text{CO}_2$  concentration increases in test tube A.

Test tube B contains a water plant, which takes in  $\text{CO}_2$  for food synthesis and gives out  $\text{O}_2$ . Hence, more  $\text{O}_2$  concentration is found in test tube B.

Test tube C contains both a snail and a plant. The  $\text{CO}_2$  produced by the snail is utilized by the plant for its food synthesis and the  $\text{O}_2$  released by the plant is utilized by the snail for respiration. Therefore, test tube A has the highest concentration of  $\text{CO}_2$ .

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Q5 Tick the correct answer:

(a) In cockroaches, air enters the body through

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

(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

(d) During exhalation, the ribs

- (i) move outwards

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

Answer. (a) In cockroaches, air enters the body through

(iii) spiracles

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

(ii) lactic acid

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

(ii) 15-18

(d) During exhalation, the ribs

(ii) move downwards

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

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

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

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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. (T/F)
- (ii) Plants carry out photosynthesis only during the day and respiration only at night. (T/F)
- (iii) Frogs breathe through their skins as well as their lungs. (T/F)
- (iv) The fishes have lungs for respiration. (T/F)
- (v) The size of the chest cavity increases during inhalation. (T/F)

- Answer. (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)

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Q8 Given below is a square of letters in which are hidden different words related to respiration in organisms. These words may be present in any direction – upwards, downwards, or along the diagonals. Find the words for your respiratory system. Clues about those words are given below the square.

S	V	M	P	L	U	N	G	S
C	Z	G	Q	W	X	N	T	L
R	M	A	T	I	D	O	T	C
I	Y	R	X	Y	M	S	R	A
B	R	H	I	A	N	T	A	Y
S	T	P	T	B	Z	R	C	E
M	I	A	M	T	S	I	H	A
S	P	I	R	A	C	L	E	S
N	E	D	K	J	N	S	A	T

- (i) The air tubes of insects
- (ii) Skeletal structures surrounding chest cavity
- (iii) Muscular floor of chest cavity
- (iv) Tiny pores on the surface of leaf
- (v) Small openings on the sides of the body of an insect
- (vi) The respiratory organs of human beings
- (vii) The openings through which we inhale
- (viii) An anaerobic organism
- (ix) An organism with tracheal system

Answer.

S	V	M	P	L	U	N	G	S
C	Z	G	Q	W	X	N	T	L
R	M	A	T	I	D	O	T	C
I	Y	R	X	Y	M	S	R	A
B	R	H	I	A	N	T	A	Y
S	T	P	T	B	Z	R	C	E
M	I	A	M	T	S	I	H	A
S	P	I	R	A	C	L	E	S
N	E	D	K	J	N	S	A	T

- (i) Trachea
- (ii) Ribs
- (iii) Diaphragm
- (iv) Stomata
- (v) Spiracles
- (vi) Lungs
- (vii) Nostrils
- (viii) Yeast

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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:

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

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