

**Exercise Questions**

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**1. Why does an athlete breathe faster and deeper than usual after finishing the race?****Solution:**

Athletes need a lot of energy during the race, and for the release of energy, they need a lot of oxygen; hence they breathe faster than usual after finishing the race.

**2. List the similarities and differences between aerobic and anaerobic respiration.****Solution:****Similarities:**

1. In both kinds of respiration, food particles are broken down to release energy
2. Both occur inside the cells
3. Both supply by-products

**Differences**

<b>Aerobic respiration</b>	<b>Anaerobic respiration</b>
Takes place in the presence of oxygen	Takes place in the absence of oxygen
End products are CO <sub>2</sub> and H <sub>2</sub> O	End products are CO <sub>2</sub> and alcohol
Produces a large amount of energy	The energy released is less when compared to aerobic respiration
It occurs in most plants and animals	Occurs in yeast and some bacteria

**3. Why do we often sneeze when we inhale a lot of dust-laden air?****Solution:**

When we inhale dust-laden air, the dust irritates the nose; as a reflexive action, dust is thrown out through sneezing.

**4. 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 both the snail and plant. Which test tube would have the highest concentration of CO<sub>2</sub>?****Solution:**

Test tube A will have the highest concentration of  $\text{CO}_2$  because test tube A has a snail which expels out  $\text{CO}_2$  into the tube. Since a plant is present in both test tubes B and C, the plant will inhale  $\text{CO}_2$  to decrease  $\text{CO}_2$  concentration. Thus, there will be less concentration of  $\text{CO}_2$  in these tubes.

5. 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

**Solution:**

a) (iii) spiracles

b) (ii) lactic acid

c) (ii) 15–18

d) (ii) move downwards

6. 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) Trachea

Solution:

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

7. 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) Fishes have lungs for respiration. (T/F)
- (v) The size of the chest cavity increases during inhalation. (T/F)

Solution:

- i) False
- ii) False
- iii) True

iv) False

v) True

8. 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 the chest cavity

(iii) Muscular floor of the chest cavity

(iv) Tiny pores on the surface of a 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 a tracheal system

**Solution:**

(i) Trachea

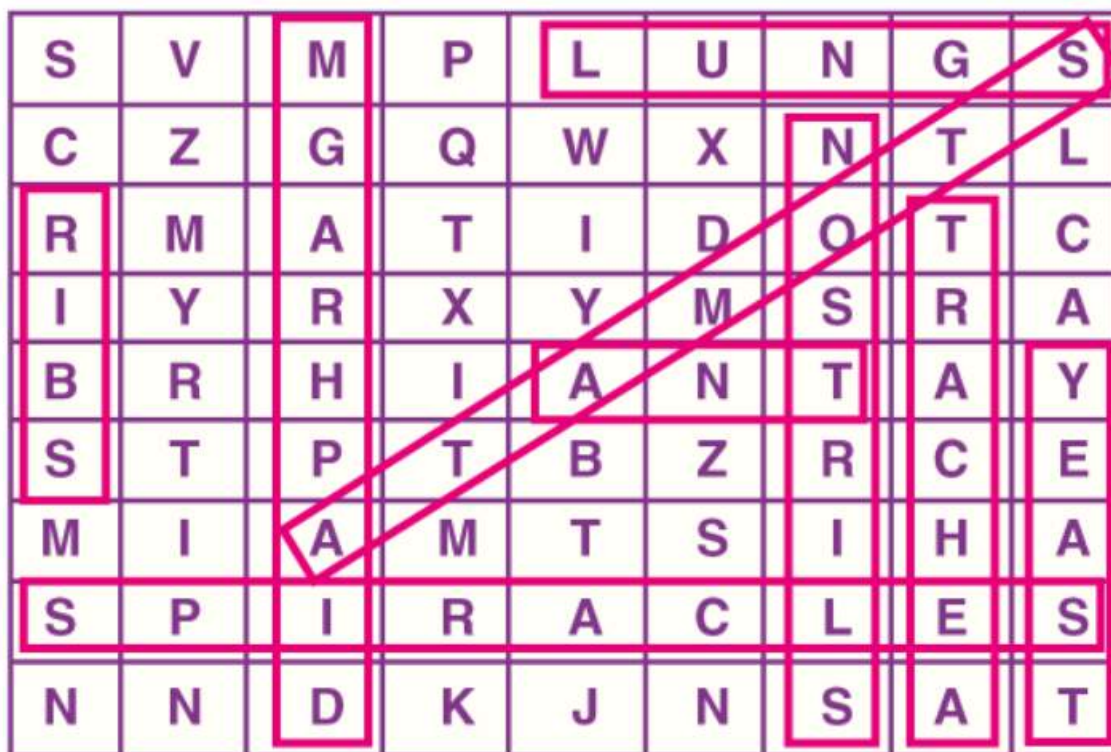
(ii) Ribs

(iii) Diaphragm

(iv) Stomata

(v) Spiracles

- (vi) Lungs
- (vii) Nostrils
- (viii) Yeast
- (ix) Ant



9. 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.

**Solution:**

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