NCERT solution for Respiration in Organisms Science

Question 1

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

Answer

During the running, the demand of energy is high but the supply of oxygen to produce energy is limited. Therefore, anaerobic respiration takes places in the muscle cells to fulfill the demand of energy. After finishing the race, an athlete breathes faster and deeper than usual so that more oxygen is supplied to the cells. Extra oxygen is required to burn this lactic acid into carbon dioxide.

Question 2

List the similarities and differences between aerobic and anaerobic respiration.

Answer

Similarities

(i) In both aerobic and anaerobic respiration, food is broken down to release energy.
(ii) Both takes place inside cells.
(iii) Both produces byproducts

Differences:

Aerobic Respiration	Anaerobic Respiration
(i) It breaks down food in the presence of	(i) It breaks down food in the

oxygen.	absence of oxygen.
(ii) Energy is released in higher amount.	(ii) Energy is released in lesser amount.
(iii) CO_2 and H_20 are it ends product	(iii) It end product are Lactic acid, CO_2 and alcohol
(iv) It is a slow process and takes longer time to release energy	(iv) It is a fast process.
(v) Examples: Animals and plants cells.	(iv) Examples: Human cells, yeast, Bacteria etc.

Question 3

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

Answer

When we inhale dust laden air, these particles get past the hair in the nasal cavity and irritate the lining of the cavity which results in sneezing. We often sneeze when we inhale a lot of dust-laden air to expel out these foreign particles

Question 4

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 CO_2 ?

Answer

Test-tube A will have the highest concentration of CO_2 because snail inhales dissolved oxygen from water during breathing and releases carbon dioxide(CO_2)
In test-tubes B and C, the CO_2 will be utilized by the water plant for synthesizing food(photosynthesis) and hence there will be less concentration of CO_2 in these.

Question 5

Tick the correct answer:
(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

Question 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) 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

Question 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) The fishes have lungs for respiration. (T/ F)

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

Answer

(i) F

(ii) F

(iii) T

(iv) F

(v) T

Question 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 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

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

Question 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.

Answer

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