Respiration in Organisms

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

Sol: During running, the demand of energy is high. So, an athlete uses lots of its stored energy and this comes from the breakdown of glucose. So, for production of more new energy, more oxygen is required. That's why the athlete breathe faster for taking lots of oxygen after finishing the race.

Q.2 List the similarities and differences between aerobic and anaerobic respiration.

Sol: Similarities: Both respiration process, glucose is breakdown and release energy. Carbon dioxide is produced in both the process.

Differences: Anaerobic nutrition happens in absence of oxygen but aerobic respiration requires oxygen. Glucose is completely broken down in aerobic respiration while in anaerobic respiration incomplete oxidation happens.

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

Sol: We often sneeze when we inhale a lot of dust-laden air. Because the air we breathe contains various unwanted foreign particles like dust, dirt, and smoke etc. When we inhale these particles, these get past the hair in nasal cavity and create unnecessary irritation. Which results in sneezing.

Q.4 Take three test-tubes. Fill 3/4th of each with water. Label them A, B, and C. keep a snail in the 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?

Sol: Test-tube A would have the highest concentration of CO_2 because snail will take in oxygen and gives out CO_2. But in test-tubes B and C, the CO_2 will be utilized by the water plant for synthesizing food.

Q.5 Tick the correct answer:

(a) In cockroaches, air enters the body through

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

Sol: (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

Sol: (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

Sol: (ii) 15-18

(d) During exhalation, the ribs

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

Sol: (ii) move downwards

Q.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

Sol:

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

Q.7 Mark 'T' if the statement is true and 'F' if it is false:

(i)During heavy exercise the breathing rate of 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)

Sol:

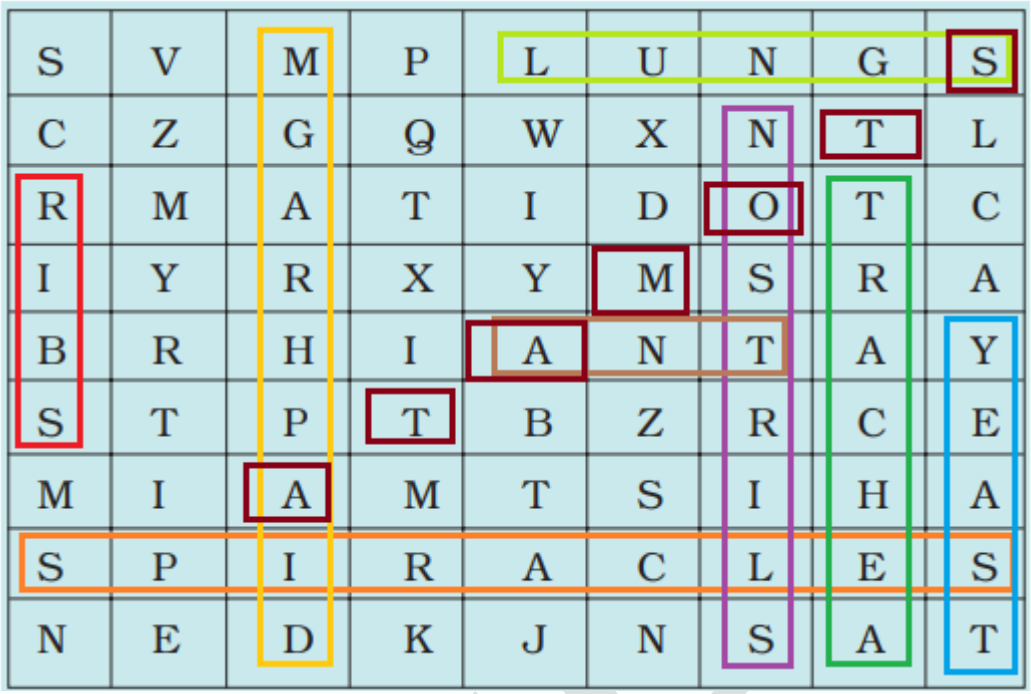
(i)During heavy exercise the breathing rate of person slows down. (F)
(ii) Plants carry out photosynthesis only during the day and respiration only at night. (F)
(iii) Frogs breathe through their skins as well as their lungs (T)
(iv) The fishes have lungs for respiration. (F)
(v) The size of the chest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

Q.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 these 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 structure surrounding chest cavity.
(iii) Muscular floor of chest cavity.
(iv) Tiny pores on the surface of leaf.
(v) Small opening on the sides of the body of an insect.
(vi) The respiratory organ of human beings.
(vii) The opening through which we inhale.
(viii)An anaerobic organism.
(ix) An organisms with tracheal system.

Sol:



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

Sol:
(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

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