Chapter 10: Respiration in Organisms

Multiple Choice Questions **Page-98**

1. (c) 2. (d)

Multiple Choice Questions **Page-101**

1. (a) 2. (b)

EXERCISE

A. Tick (✓) the correct options.

1. (c) 2. (c) 3. (d) 4. (d) 5. (a) 6. (b)
7. (c) 8. (b) 9. (c) 10. (c)

B. Fill in the blanks.

1. breathing rate
2. bronchi
3. aerobes
4. downwards
5. cramps
6. oxyhaemoglobin

C. Match the following.

1. (d)
2. (c)
3. (b)
4. (a)
5. (f)
6. (e)

D. Very Short Answer Questions.

1. (a) Tracheae: Insects
   (b) Gills: Fishes
   (c) Skin: Earthworms
   (d) Lungs: Humans
2. Lenticels
3. Anaerobic respiration
4. Spiracles
5. Gills
6. Root hair and woody stem
7. The breathing rate becomes slowest when we go to sleep.
8. We get relief from cramps after a hot water bath or a massage.

E. Short Answer Type-I Questions.

1. During inhalation, the ribs are pushed upwards and outwards.
2. The taking in of air, rich in oxygen, into the body is called inhalation. The giving out of air, rich in carbon dioxide, out from the body is called exhalation.
3. The breathing becomes faster during exercise because when we do heavy exercise, we need extra energy. As a result, more oxygen is inhaled and supplied to our cells. It speeds up the breakdown of food and more energy is released to fulfil our requirements.
4. Respiration is the process of taking in oxygen, using it for the release of energy by breakdown of food, and removing the waste products, carbon dioxide and water.
5. When we inhale air, the unwanted particles present in the air get trapped in the hair of nasal cavity. However, sometimes these particles may pass through the hair in the nasal cavity. There they cause irritation of the lining of the nasal cavity, as a result of which we sneeze. Sneezing expels these unwanted particles from the inhaled air and a dust-free, clean air enters our body.
6. An athlete breathes faster and deeper than usual after finishing the race because, during the race, athlete needs extra energy. He/she breathes fast and takes deep breaths so that more oxygen is inhaled and supplied to cells. It speeds up the breakdown of food and thus, more energy is released.

F. Short Answer Type-II Questions.

1. Differences between breathing and cellular respiration

S. No.	Parameters	Breathing	Cellular Respiration
1.	Process	It is a physical process in which exchange of gases (oxygen and carbon dioxide) takes place. No chemical reaction takes place.	It is a biochemical process in which the breakdown of food takes place.
2.	Energy	Energy is not released.	Energy is released.
3.	Occurrence	It occurs outside the cells.	It occurs inside the cells.
4.	Enzymes	Enzymes are not involved.	Enzymes are involved at certain stages of respiration.

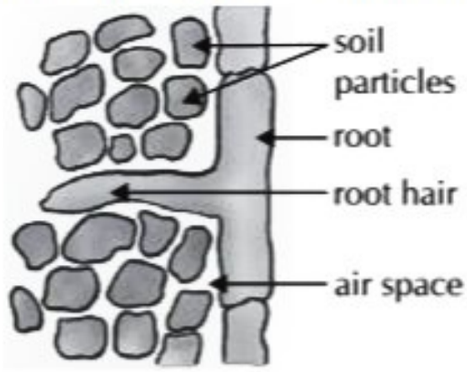
2. Differences between aerobic and anaerobic respiration

S.No.	Parameters	Aerobic respiration	Anaerobic respiration
1.	Presence of oxygen	It takes place in the presence of oxygen.	It takes place in the absence of oxygen.
2.	Breakdown of food	Complete breakdown of food (glucose) takes place.	Incomplete breakdown of food (glucose) takes place.
3.	End products	The end products are carbon dioxide and water.	The end products are carbon dioxide and alcohol.
4.	Amount of energy released	A large amount of energy is released.	A very small amount of energy is released.

3. When we exhale or breathe out air from our mouth on a clean mirror, the clean mirror becomes cloudy. We also find some water drops on the mirror. This water vapour condenses on the mirror surface to form tiny droplets of water. This shows that the air we breathe out contains water vapour.

4. The root hair, present on the roots of a plant, are in contact with the air present in the soil particles. So, oxygen from air in soil particles diffuses into root hair and reaches all the cells of the root where it is utilised

in respiration. Carbon dioxide produced during respiration goes out through the root hair by the process of diffusion.



Roots absorb air (oxygen) from the soil.

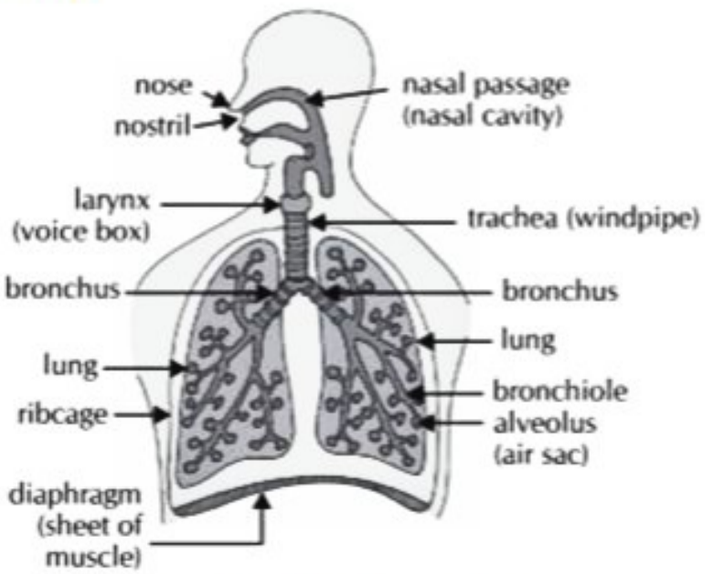
5. (a) Nitika felt pain due to a muscle cramp which happened because of anaerobic respiration in muscle cells in which lactic acid is formed.

$$\text{Glucose (food)} \xrightarrow[\text{anaerobic respiration}]{\text{in the muscle cells}} \text{Lactic acid + Energy}$$

(b) Kind and helping nature

G. Long Answer Questions.

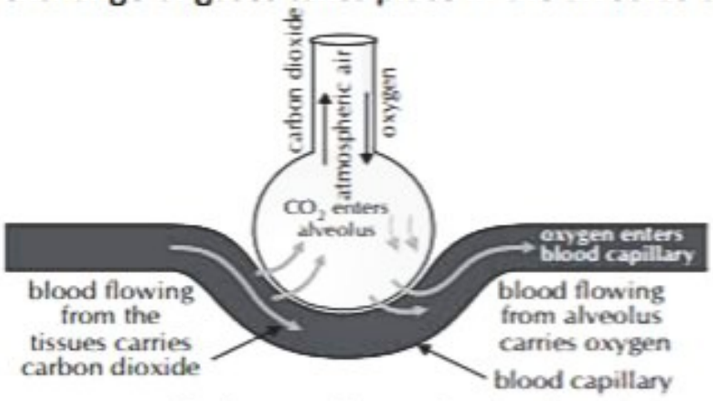
1.



The human respiratory system

The exchange of gases takes place in the alveolus of lungs.

2.



Exchange of gases in the alveolus