

St. Andrews Scots Sr. Sec. School

9th Avenue, I.P. Extension, Patparganj, Delhi – 110092

Session: 2023-2024

Answer Key

Class: VII

Subject: Science

Chapter: Respiration in Organisms

Multiple Choice Questions (MCQs).

Tick (✓) the correct options: Page No. 132

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

Multiple Choice Questions (MCQs). Tick (✓) the correct options: Page No. 135

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

Section A

Class Response

A. Oral questions:

1. (i) External respiration (breathing)
(ii) Internal respiration (cellular respiration)
2. The taking in of air, rich in oxygen, into the body is called inhalation.
3. The giving out of air, rich in carbon dioxide, outside the body is called exhalation.
4. (a) During exercise, breathing rate increases.
(b) While sleeping, breathing rate decreases.

B. Science quiz:

1. Tracheae
2. Spiracles
3. (i) Stomata (ii) Lenticels
4. (a) gills (b) tracheae (c) moist skin (d) lungs (on land), moist skin (in water)

Worksheet**A. Tick (✓) the correct options:**

1. (c)
2. (c)
3. (d)
4. (d)

B. Circle the odd ones. Give reasons for your choice:

1. Stomach → Stomach is a part of digestive system whereas others are parts of respiratory system.
2. Sulphuric acid → Sulphuric acid is an acid whereas others are produced during anaerobic respiration.
3. Earthworm → Earthworm breathes through its moist skin whereas others breathe through spiracles.
4. Oesophagus → Oesophagus is the organ of digestive system whereas others are organs of respiratory system.

C. Fill in the blanks:

1. breathing rate
2. bronchi
3. aerobes
4. upwards, outwards

Section B**A. Multiple Choice Questions (MCQs) Scientific/Practical skills:**

1. (a)
2. (a)
3. (a)

4. (b)

B. Very short answer questions:

1. (a) cockroach (b) fish (c) earthworm/frogs (d) humans/frogs
2. The number of times a person breathes in a minute is called the breathing rate. The breathing rate of an adult human being at rest is 15-18 times a minute.
3. 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.
4. During exhalation, ribs move downwards and inwards while the diaphragm relaxes and moves upward to its original position.
5. Anaerobic respiration.

C. Short Answer Type-I Questions:

1. We should breathe only through the nose because the hair and mucus present on the inner lining of nostrils trap unwanted particles and germs and prevent their entry into the nasal passage.

2.

S.No.	Parameters	Breathing	Cellular respiration
i.	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.
ii.	Energy	Energy is not released.	Energy is released.
iii.	Occurrence	It occurs outside the cells.	It occurs inside the cells.
iv.	Enzymes	Enzymes are not involved.	Enzymes are involved at certain stages of respiration.

3. During inhalation

(i) the ribs are pushed upwards and outwards.

(ii) the diaphragm contracts and moves downwards.

4. The taking in of air, rich in oxygen, into the body is called inhalation. The giving out of air, rich in carbon dioxide, outside the body is called exhalation.

5. The breathing becomes faster during exercise because when we do heavy exercise, we need extra energy. We breathe fast and take deep breaths. 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 requirement.

D. Short Answer Type-II Questions:

1. The oxygen of the air diffuses in from the thin walls of alveolus into blood capillaries. The oxygen combines with haemoglobin in the blood to form oxyhaemoglobin which is carried to all the cells of the body. Similarly, carbon dioxide produced by breakdown of food during respiration enters the blood and reaches alveolus in the lungs through diffusion.

2.

S.No.	Parameters	Aerobic respiration	Anaerobic respiration
i)	Presence of oxygen	It takes place in the presence of oxygen.	It takes place in the absence of oxygen.
ii)	Breakdown of food	Complete breakdown of food (glucose) takes place.	Incomplete breakdown of food (glucose) takes place.
iii)	End products	The end products are carbon dioxide and water.	The end products are carbon dioxide and alcohol.
iv)	Amount of energy released	A large amount of energy is released.	A very small amount of energy is released.
v)	Occurrence	It takes place in living organisms.	It takes place in yeast and in some form of bacteria.

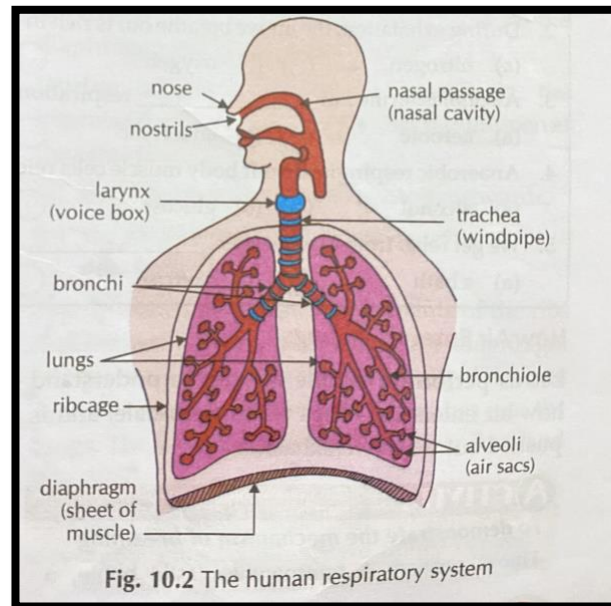
3. The roots of the plants have tiny hair called root hair. The root hair are in contact with the air present in the soil particles. Oxygen from the air in soil particles diffuses into root hair

and reaches all the cells of the plant, where it is used for respiration. Carbon dioxide produced during respiration goes out through the root hair by diffusion.

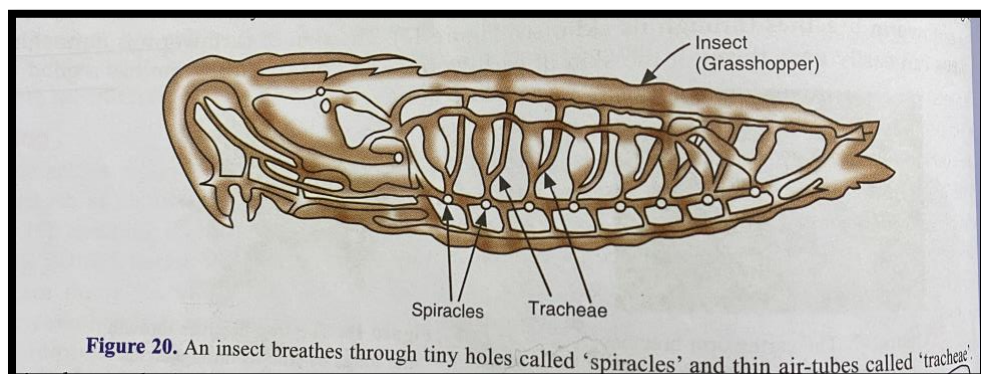
4. Photosynthesis is the process of synthesising food by utilisation of carbon dioxide and releasing of oxygen whereas respiration is the process of taking in oxygen for the breakdown of food and releasing carbon dioxide and water.

E. Long Answer Questions.

1.

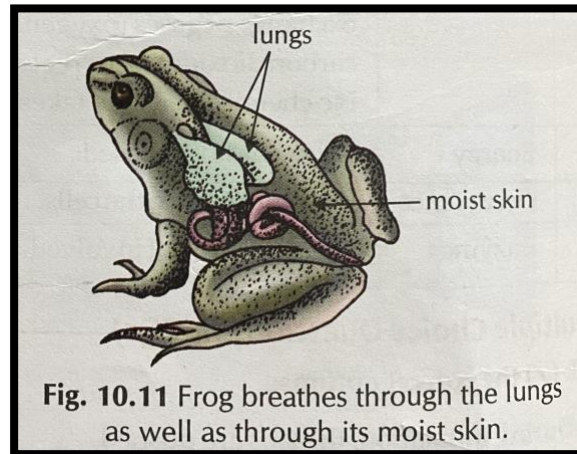


2. (a) Insects — Insects breathe through spiracles. From spiracles, oxygen goes into tracheae, diffuses into the body tissues and reaches every cell. Oxygen is used for the breakdown of food to produce energy and carbon dioxide. This carbon dioxide from the cells goes into the tracheae and moves out of the body through spiracles.

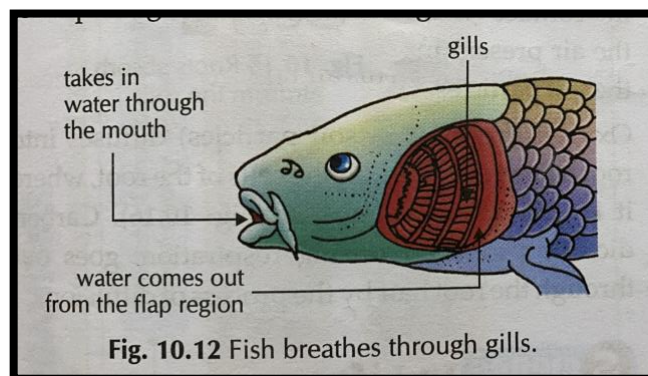


(b) Earthworms — Earthworms breathe through their moist skin. The oxygen enters the body through the skin by diffusion. After respiration, the carbon dioxide diffuses out through the skin.

(c) Frogs — Frogs live both on land and in water. On land, frogs breathe through lungs. In water, they breathe through their moist skin.



(d) Fish — The fish breathes by taking water through its mouth and sending it over to the gills which are found in both sides of its head. The blood vessels present in the gills absorb the dissolved oxygen from the water and send it to all parts of the body. The carbon dioxide from different parts of the body comes back into the gills by the blood and is then expelled into the surrounding water.



3.

The air containing oxygen reaches alveoli through the trachea, bronchi and bronchioles.



From alveoli, the oxygen of the air diffuses into the blood capillaries.



The oxygen combines with the hemoglobin in the blood and forms oxyhaemoglobin which is carried to all cells of the body.



During breakdown of food, carbon dioxide is produced which is diffused out from the blood to alveoli of lungs.



From lungs, carbon dioxide is removed along with the air we breathe out.

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

in the muscle cells

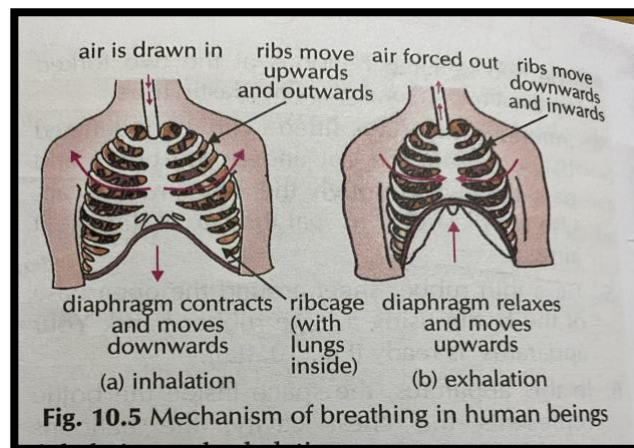
anaerobic respiration

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

(b) Kind, concerned, compassionate and helping nature.

5. (a) Figure (a) shows inhalation and figure (b) shows exhalation.

(b) During inhalation, the intercostal muscles contract, the ribs are pushed upwards and outwards. The diaphragm contracts and moves downwards. It increases the space in the chest



cavity. Thus, the air rushes into the lungs. The lungs get filled up with air and expand. During exhalation, the intercostal muscles relax, the ribs move downwards and inwards. The diaphragm relaxes and moves upward to its original position. It decreases the space in the chest cavity and the air rushes out of the lungs. The lungs get emptied and contract.