St. Andrews Scots School

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Session: 2025-26
(Answer Key)

Class: VII	Subject : Science	Chapter: Respiration in Animals and Plants

CHECKPOINT 1

1. Respiration
2. Aerobic
3. Lactic acid
4. Anaerobic

CHECKPOINT 2

1. Nasal passage
2. Bronchi
3. Thoracic cavity
4. Haemoglobin
5. Cellular respiration

CHECKPOINT 3

1. (T) 2. (F) 3. (F) 4. (T) 5. (F)

PRACTICE TIME

A. Tick the correct options:

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

B. Assertion-Reason Type Questions

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

C. Match the column:

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

D. Very short answer type questions :

1. Roundworms, Flatworms
2. Lungs
3. Glucose
4. Rib muscles and muscles of diaphragm
5. Aerobic and anaerobic are two types of respirations found in living organisms.

a) Aerobic respiration occurs in the presence of oxygen and its end products are carbon dioxide, water and energy.

b) Anaerobic respiration occurs in the absence of oxygen. Its end products are ethyl alcohol or lactic acid, carbon dioxide and energy.

E. Short answer type questions :

1. **Mechanism of inhalation:**

- The ribs are raised upwards and outwards by the contraction of rib muscles and the diaphragm moves down (flattens).
- The volume of thoracic cavity and lungs increases and the air pressure inside the lungs decreases.
- Air from the atmosphere having higher pressure rushes into lungs through nostrils and air passages and the lungs get filled with fresh air.

2. (a) Anaerobic breakdown of sugars into alcohol is called fermentation.
   (b) The end products of fermentation are ethyl alcohol, carbon dioxide and energy.

3. **Composition of inhaled and exhaled air:**

Inhaled Air		Exhaled Air	
1. Oxygen	21%	1. Oxygen	16.4%
2. Carbon dioxide	0.03%	2. Carbon dioxide	4.4%

Their composition differs because oxygen is used and carbon dioxide is released during respiration.

4. One should always breathe through nose because when air passes through nasal passages, it becomes moist and warmed up to body temperature. Dust, smoke particles, pollen or microbes that enter with inhaled air are trapped by the hair of nasal passages. Thus, a clean and filtered air enters the lungs.

5. Plants do not release carbon dioxide during daytime because carbon dioxide formed during respiration is utilised in the process of photosynthesis.

F. Long answer type questions :

1. Differences between aerobic and anaerobic respiration:

Aerobic respiration	Anaerobic respiration
1. It occurs in the presence of oxygen.	1. It occurs in the absence of oxygen.
2. Glucose is completely oxidised.	2. Glucose is oxidised incompletely.

3. End products are carbon dioxide and water.	3. End products are either ethyl alcohol or lactic acid and carbon dioxide.
4. More energy is produced.	4. Very little energy is produced.
5. It occurs in most of the plants and animals.	5. It occurs in few organisms like yeast, bacteria and some parasitic flatworms.

2. (a) 1. Bronchiole 2. Pulmonary artery 3. Alveolus
4. Alveolar cavity
(b) Exchange of gases takes place in alveoli.

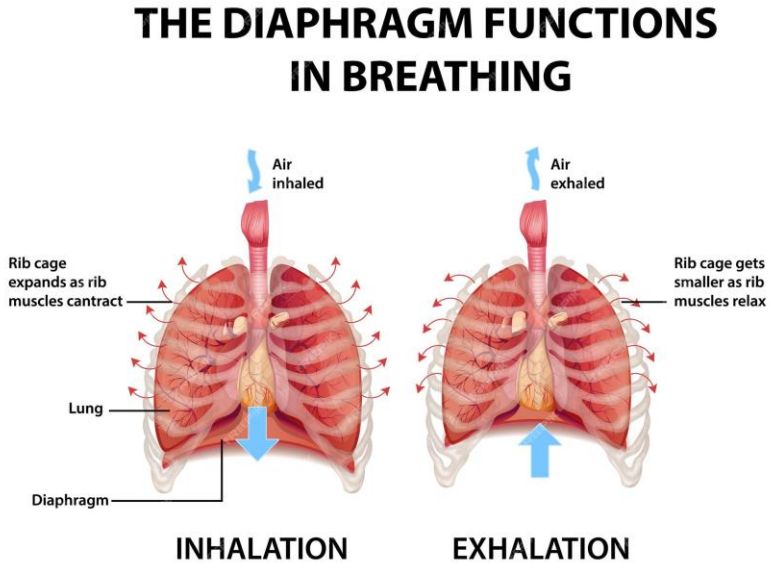
3. The mechanism of breathing involves inhalation, i.e., taking in air rich in oxygen and exhalation, i.e., giving out air rich in carbon dioxide.
During breathing, ribs, diaphragm and their muscles work together as follows:

During inhalation:

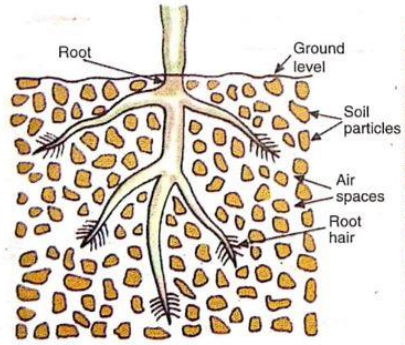
- The ribs are raised upwards and outwards by the contraction of rib muscles and the diaphragm moves down (flattens).
- The volume of thoracic cavity and lungs increases and the air pressure inside the lungs decreases.
- Air from the atmosphere having higher pressure rushes into lungs through nostrils and air passages and the lungs get filled with fresh air.

During exhalation:

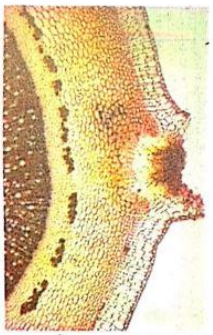
- The ribs move downwards and inwards and the diaphragm moves upwards (ribs and diaphragm return to their original position).
- The volume of thoracic cavity and lungs decreases and the air pressure inside the lungs increases.
- Air from the lungs is pushed out through air passages and nostrils.



4. Plants do not have respiratory organs. Each part of plant independently takesin oxygen and gives out carbon dioxide into surrounding air. Different parts of plants have different structures for obtaining oxygen as follows:
   a) Leaves and young stems have stomata for gaseous exchange.
   b) Old woody stems have lenticels below bark for gaseous exchange.
   c) Roots have root hair that extend into air spaces present between soil particlesfor gaseous exchange.



Roots absorb oxygen from air present in-between the soil particles through the root hair.



Woody stems of plants (or trees) have lenticels for the exchange of respiratory gases.

The exchange of respiratory gases in leaves takes place through tiny pores called stomata.

Respiration in Plants

5. (a) It is anaerobic respiration.
   (b) Yeast is used for making cakes, breads, wine and beer.

G. HOTS Questions:

1. The respiratory organs of cockroach are tracheae which open outside through small openings called spiracles. Through these openings gaseous exchange occurs. When a cockroach is put in water, its spiracles get blocked and gaseous exchange does not take place. The respiration gets stopped. Hence, the cockroach dies ultimately.

2. Whales and dolphins have lungs for respiration but they live in water. For inhaling and exhaling air, they often come to the surface of water. When they exhale, they release a fountain of water.

3. (a) Downward (b) Diaphragm (c) Upward or becomes dome shaped
   (d) Increases (e) Increases

Passage/Case-based Questions :

1. Tree releases carbon dioxide at night. So, there is more CO_2 under a tree at night which may cause respiratory problems.

2. Plants breathe through tiny pores called stomata present on their leaves.

H. Complete the equations.

1. Ethyl alcohol
2. Oxygen

L. Value-based Questions :

1. (a) Cramps in her legs were caused due to accumulation of lactic acid in muscles. The lactic acid was formed during anaerobic respiration by muscle in the absence or insufficient supply of oxygen.

(b) Yes, it is because more oxygen is needed to release more energy by Respiration.

(c) Somya’s mother has loving and caring nature.