Long Answer Questions

Q.1. Paheli participated in a 400 m race competition held at her school and won the race. When she came home she had mixed feelings of joy and pain as she had cramps in her leg muscles. After a massage she was relieved of the pain. Answer the following questions related to the situation.

Q. What can be the possible reasons for the pain in her legs?

Ans. The pain in her legs could be because of the accumulation of lactic acid in the muscles. During heavy exercise or running, etc., the muscle cells respire anaerobically and produce lactic acid.

Q. Why did she feel comfortable after a massage?

[NCERT Exemplar]

Ans. The massage gave her relief because it improves the circulation of blood leading to increased supply of oxygen to the muscle cells which helps in complete breakdown of lactic acid into CO2 and water.

Q.2. Observe the figure given below carefully and answer the following questions.

[NCERT Exemplar]

Q. In which jar, will the amount of CO_2 be the highest and why?

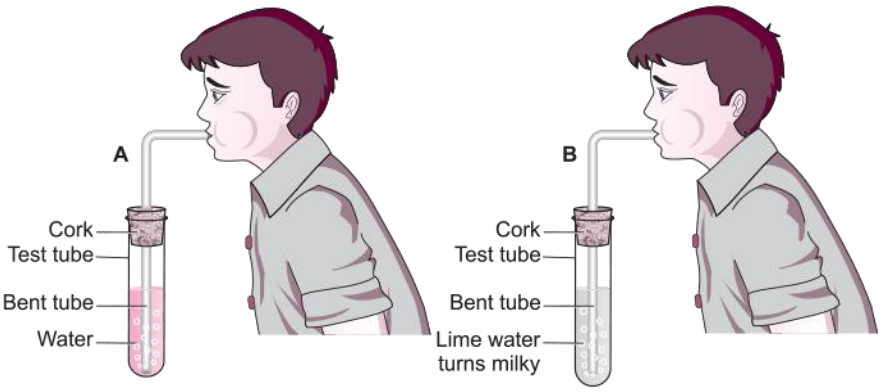
Ans. 'C'. The mice kept under the jar will breathe out CO_2 continuously increasing its amount in the bell jar.

Q. In which jar, will the amount of CO_2 be the lowest and why?

Ans. 'A'. In jar 'A', the CO_2 released during respiration is used by the plants during photosynthesis.

Q.3. Observe the figure given below carefully and answer the following questions.

Ans.



[NCERT Exemplar]

Q. Which process is being tested in the activity?

Ans. Exhalation process during respiration.

Q. What is the result of the activity? Give reasons.

Ans. The lime water in test tube 'B' turns milky but water in tube 'A' remains unchanged. Because CO_2 is present in the exhaled air, it mixes with lime water in 'B' and turns it milky.

Q.4. A food stall owner was preparing dough for making bhaturas. He added a pinch of yeast and sugar to the dough and left it in a warm place. After few hours, the dough had risen. There was a sour smell too.

Q. Why did the dough rise?

Ans. The CO2 released during respiration by the yeast results in the rise of dough.

Q. Why did the dough smell sour?

Ans. During anaerobic respiration, yeast produces alcohol resulting in sour smell.

Q. Why was sugar added to the dough?

Ans. Sugar acts as food for yeast.

Q. What would have happened if the dough was kept in the refrigerator, soon after it was prepared?

[NCERT Exemplar]

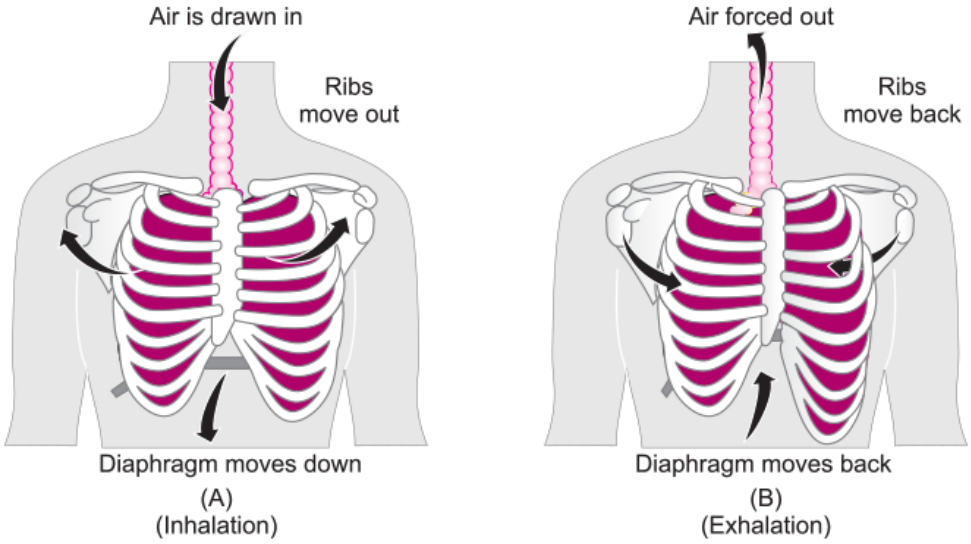
Ans. At low temperatures, yeasts will not multiply and respire because of which the dough will not rise or become sour.

Q.5. In the figure, label the arrows and indicate the direction of

1. **movement of air.**
2. **movement of diaphragm.**

3. **movement of ribs.**

Ans.



Q.6. Distinguish between the following.

Q. Breathing and Respiration

Ans.

S.No.	Breathing	Respiration
i. **ii.** **iii.** **iv.**	It is a physical process. There is no release of energy. Enzymes are not involved. Modes of breathing differ among organisms.	It is a chemical process. Energy is released. Enzymes are involved. Process of respiration is same in all.

Q. Respiration in plants and Respiration in animals

Ans.

S.No.	Respiration in plants	Respiration in animals
i. **ii.**	Transport of air occurs through stomata Carbon dioxide is absorbed and oxygen is released out.	Transport of air occurs through nose. Oxygen is absorbed and carbon dioxide is released out.

Q.7. How does gaseous exchange take place in (a) earthworms (b) fish?

Ans. Earthworm: The earthworm inhabits burrows in damp soil and emerges to feed in the darkness. Gaseous exchange occurs through its skin. The thin, moist skin is supplied with a network of capillaries which absorb oxygen from the atmosphere and deliver it to the rest of the body. The absorbing surface or the network of capillaries also gets rid of carbon dioxide from the body.

Fish: Fish absorbs dissolved oxygen from the water by means of gills. Gills are projection of the skin. These are well supplied with blood vessels for exchange of gases.

Q.8. Explain the mechanism of breathing in human beings.

Ans. In human beings, as in most vertebrates and mammals, gaseous exchange occurs in a pair of lungs. They are enclosed in an air-tight compartment called thorax (or chest). This region is bound by the ribs and the diaphragm. Several organs participate in the process of respiration in human beings. They are the nasal cavity, larynx, trachea, bronchi, alveoli and lungs. Air is inhaled or exhaled by the body as lungs are expanded or contracted by the simultaneous contraction and expansion of muscles attached to the ribs and diaphragm. The air containing oxygen is taken in through the nose where it is filtered and cleaned from dust particles, bacteria and other foreign substances by the mucus (stick liquid) and hair present in the nostrils. This air then passes through the larynx, the voice-box chamber situated in the neck region, to reach the tracheal tube or the windpipe. The trachea is a tube that runs from the larynx down the neck region into the thorax. From the thorax air reach the alveoli through bronchioles.