CONCEPTS

1.

Respiration

Aerobic

Oxygen is used up.

$C_6H_{12}O_6 + 6O_2 \longrightarrow 6CO_2 + 6H_2O + 38\ ATP$

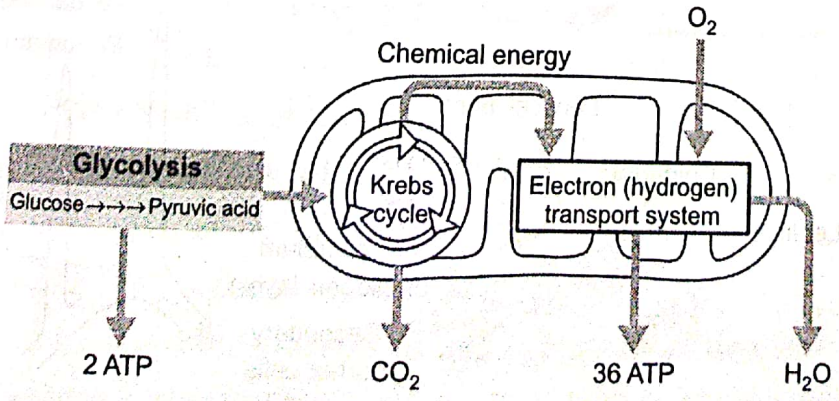
Glucose — Oxygen — Carbon dioxide — Water

Anaerobic

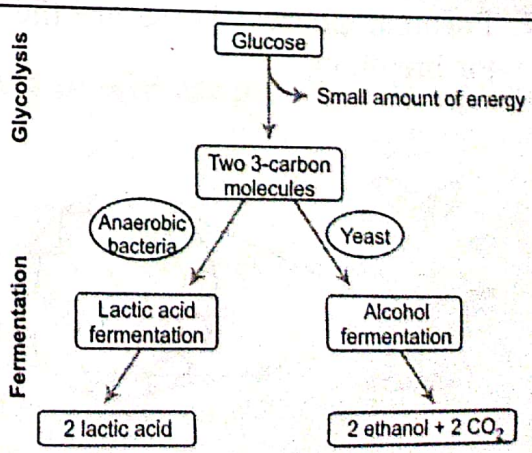
Oxygen is not used up.

$C_6H_{12}O_6 \longrightarrow 2C_2H_5OH + 2CO_2 + 2\,ATP$

Glucose — Ethyl alcohol — Carbon dioxide



Aerobic respiration



Anaerobic respiration

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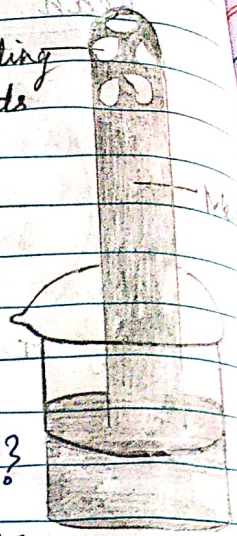
Chapter - 7 Respiration in Plants

I: Application based Questions

Q. The figure alongside shows an experiment performed by using germinating seed. Observe it carefully and answer the following questions:



a) What is the aim of the experiment?

Ans. To demonstrate anaerobic respiration in plants using germinating seeds.

b) What change will you observe in the setup after a day?

Ans. The leathe level of the mercury within the test tubes falls.

c) Why do you use the seeds after removal of their seedcoat?

Ans. Peeling the testa (seedcoat) from soaked seeds will increase the diffusion of CO_2 from the seeds.

d) Will you obtain the same results if water is used instead of mercury?

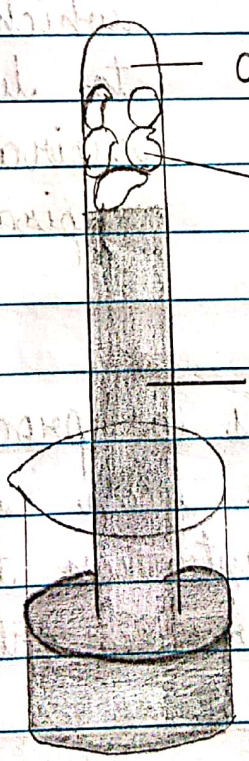
Ans. No, we cannot obtain the same results as water contains oxygen in dissolved form whereas mercury is used to create anaerobic conditions.

e) Write the chemical equation for the process occuring in the experiment?

Ans: $C_6H_{12}O_6 \longrightarrow 2C_2H_5OH + 2CO_2 + 2ATP$
Glucose — Ethyl alcohol — carbon dioxide — energy.

f) Draw a neat labelled diagram of the apparatus as it would appear after twenty four hours.

Ans:



After 24 hours.

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II

II. Define these terms:

1)- **Fermentation** :- It is a type of anaerobic respiration in which glucose is incompletely broken down into ethyl alcohol and CO_2 by micro-organisms.

2)- **Respiration** :- It is a process of step-wise oxidation of glucose in the living cells to release energy.

3)- **Respiratory substrate** :- The organic substances which can be catabolized to liberate energy during respiration are called respiratory substrate.

)- **Diffusion** :- It is a process by which gases move from a region of higher concentration to a region of lower concentration.

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III. Differentiate between the following on the basis of the given parameters.

1.)	Glycolysis	Kreb's Cycle
ation:	1. It takes place in cytoplasm	1. It takes place in mitochondria
	2. Pyruvic acid is produced during glycolysis.	2. Pyruvic acid is used in Kreb's cycle.

2.)	External Respiration	Internal respiration
1.	It is a physical process.	1. It is a biochemical process.
2.	It does not release any energy.	2. It releases energy in the form of ATP molecules
3.	It takes place outside the cell.	3. It takes place inside the cell.
	It does not require any enzymes.	4. It requires many enzymes
	It involves the gaseous exchange between the cells and atmosphere.	It involves the oxidation of glucose breaking into carbon dioxide, water and energy

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3. Catabolic	Anabolic
1. It is a destructive process in which energy is produced.	1. It is a constructive process in which energy is used.

IV.

1. List different ways of gaseous exchange in plants

Ans. Gaseous exchange in plants occur through -

1. Stomata (on leafs)
2. Lenticels (on the bark of old trees)
3. General surface of the root.
4. Pneumatophores. (eg - mangrove plants)

2. What do you mean by control setup?

Ans. The setup in which the conditions understudy is lacking is known as control setup.

V. Give reasons.

1.)- Respiration occurs at optimum temperature.

Ans. Respiration is a catabolic process which requires enzymes. At high temperature, the enzymes are denatured and at a very low temperature they cannot function. So, optimum temperature is required.

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2.)- One should not sleep under a tree at night.

Ans. During night plants take in oxygen and give out carbon dioxide only. This results in concentration of carbon dioxide under big trees. Therefore it is not advisable to sleep under the trees during night.

3.)- We use yeast for manufacturing wine.

Ans. ~~We~~ Yeast helps in the fermentation of glucose. Yeast respires anaerobically to produce ethyl alcohol and carbon dioxide.

4.)- Farmers plough the field before planting crops.

Ans. Ploughing the field makes the soil airy and porous. When the soil is losen, the roots of the plants can take O_2 present in the soil by diffusion.