19. Nutrition and Respiration

Exercises

1 A. Question

The process of obtaining food and utilizing it in the body is

A. respiration

B. nutrition

C. excretion

D. reproduction

Answer

Nutrition is a method of taking in food and using it for growth, metabolism (sum of chemical reactions), and repair. Stages of nutrition are ingestion, digestion, absorption, transport, assimilation, and excretion.

1 B. Question

One of these is a product of photosynthesis

A. starch

B. Fructose

C. maltose

D. sucrose

Answer

With the help of carbon dioxide and water, glucose is produced during photosynthesis. But glucose is stored in the form of starch.

1 C. Question

Insectivorous plants commonly grow in areas where soil is deficient in

A. carbon

B. nitrogen

C. potassium

D. phosphorus

Answer

Insectivorous plants such as Venus fly trap, *Utricularia* are autotrophs making food through photosynthesis, but kills insects to fulfill the requirement of nitrogen. As these plants commonly grow in areas where the soil is deficient in nitrogen.

1 D. Question

A person applies hydrogen peroxide on his wound.

This is to kill

A. anaerobic bacteria

B. aerobic bacteria

C. fungi

D. protozoa

Answer

A person applies hydrogen peroxide on his wound, the oxygen in hydrogen peroxide can kills an anaerobic bacteria, *Clostridium tet*ani before it could settle on the wound and produce toxin.

1 E. Question

Amylase converts starch to

A. glucose

B. sucrose

C. lactose

D. maltose

Answer

Amylase is an enzyme secreted by salivary glands and pancreas which converts starch into maltose.

2 A. Question

Answer the following:

What are life processes?

Answer

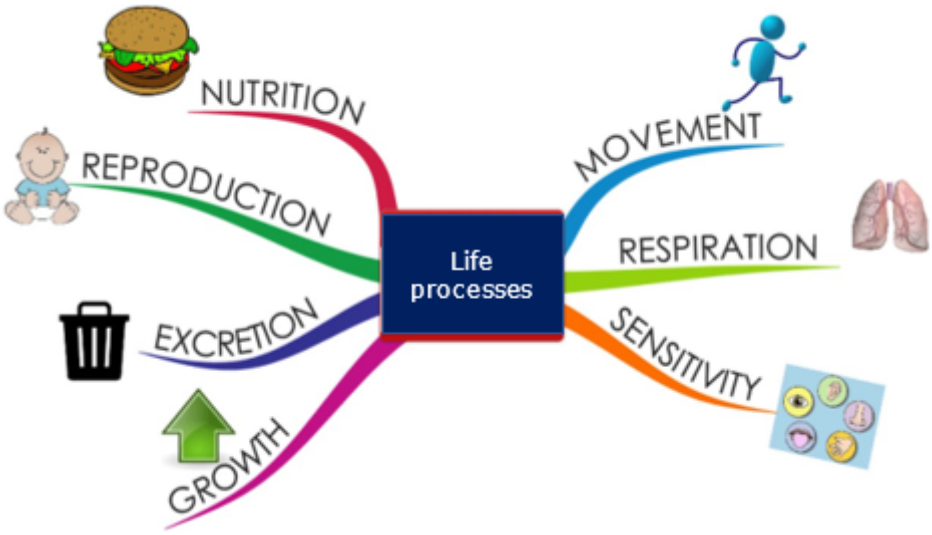
● All living beings either it many tiny one-celled organism like *Amoeba* to large trees and animals perform certain life activities in order to survive.

● The life activities are called **life processes.**

● There are seven life processes.

● These are **respiration** (turning food into energy, **nutrition** (getting food to stay alive), **growth** (growing to adult), **movement** (change of place, or moving body parts), **response to stimuli**, **excretion** (removal of waste) and **reproduction** (producing offspring).

● These life processes keep all the organisms alive.



2 B. Question

Answer the following:

Explain the method of testing a leaf for starch.

Answer

Aim: To test the presence of starch in a leaf.

Material required:

Electric water bath or hot plate, 3 beakers of 250 ml, boiling tube, forceps, test tube holder, leaf to be tested (leaf of China rose will be good), 90 % ethanol and iodine solution.

Procedure:

● Remove a green leaf from a plant that has been exposed to sunlight for a few hours.

● Fill three 250ml beakers half with water. Heat the water until it boils. Keep the water at boiling point. Put the leaf in the boiling water using forceps.

● Boil for 2 minutes.

● Put the boiled leaf in a boiling tube containing 90% ethanol.

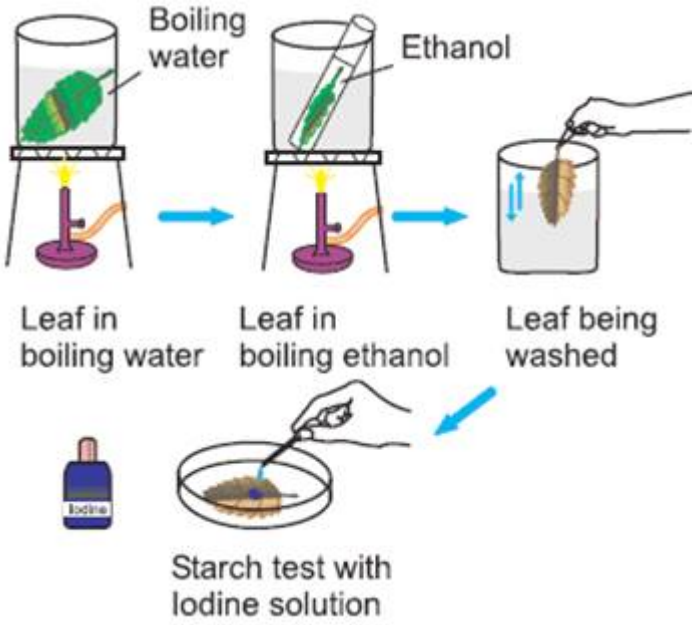
● Put the boiling tube in hot water and boil for 10 minutes to decolorize leaf.

● Remove the leaf and wash cold water.

● Add a few drops of iodine solution to the leaf and observe.

After iodine solution was added...

Observation	Interpretation
No color change, iodine solution remains brown.	Starch is not present
Iodide solution changed from brown to blue-black.	Starch is present



2 C. Question

Answer the following:

Explain an experiment to demonstrate that oxygen is released during photosynthesis.

Answer

The aim of the experiment:

Demonstrate that oxygen is released during photosynthesis.

Material required:

Beaker, water, test tube, funnel, *Hydrilla* plant.

Procedure:

Take a beaker to fill it with water and put *Hydrilla* plant in the beaker. Cut the base of the plants, tie them with a thread and cover them with an inverted

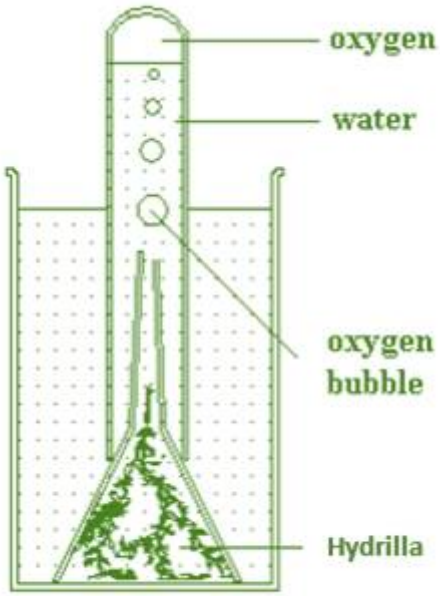
funnel in such a manner that the cut end of the plant is towards the neck of the funnel. Keep the whole apparatus in sunlight for some time and observe.

Observation:

It is observed that some bubbles are coming out continuously from the cut ends of the plant and bubbles are collected at the top of the test tube by displacing the water.

Results:

On testing, it is confirmed that the gas is oxygen. The liberated gas is evolved due to the breakdown of water in presence of water.



Apparatus set up to demonstrate oxygen is released during photosynthesis

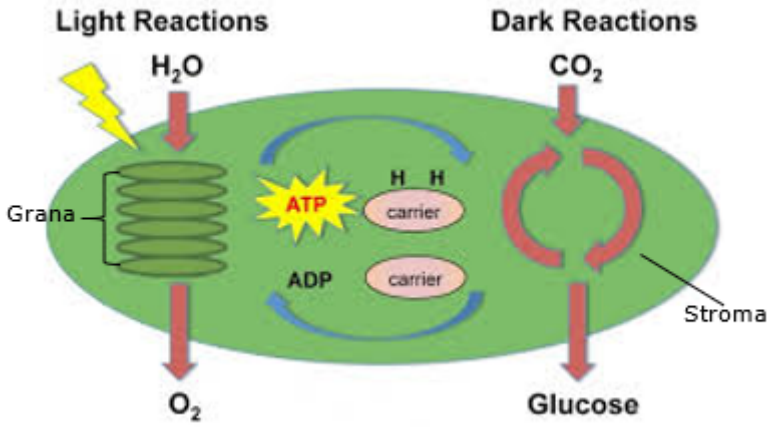
2 D. Question

Answer the following:

Differentiate between the two phases of photosynthesis.

Answer

Light reaction	Dark reaction
It takes place in grana of the chloroplast.	It takes place in the stroma of the chloroplast.
It is a light-dependent process Involves breaking of water into hydroxyl (OH^-) and hydrogen (H^+) ions in the presence of light.	It is a light-independent process Involves reduction of carbon dioxide.
Oxygen is released.	Carbon dioxide is absorbed.
ATP and NADPH are produced during the light reaction.	ATP and NADPH are utilized to produce glucose from carbon dioxide.



2 E. Question

Answer the following:

What are parasites? Give two examples.

Answer

Parasites are plants or animals that live on or in the other organisms and get food from them. The organism on which a parasite is associated is called **host**. The parasite may be ectoparasite, if it lives outside the body such as lice, leech or parasite may be endoparasite**,** if it lives inside the body such as tapeworm, roundworm.

2 F. Question

Answer the following:

Amoeba cannot digest fats. Why?

Answer

● *Amoeba* is a unicellular organism.

● It is an **omnivore** as it feeds on bacteria, diatoms, unicellular algae, minute protozoa, and zooplankton.

● The ingested prey enters the food vacuole where digestion takes place.

● Digestive enzymes contains amylase and protease

● Amylase converts complex carbohydrates into simple sugars.

● Protease converts proteins into amino acids.

● There is no fat digesting enzyme is secreted by lysosome, hence fats cannot be digested in *Amoeba*.

● Digested food is diffused into the cytoplasm from the food vacuole.

2 G. Question

Answer the following:

Explain respiration in cockroach.

Answer

● Respiration in a cockroach is carried out with the help of a system called **tracheal system.**

● The tracheal system includes Trachea, Tracheoles, and Spiracles. Spiracles are small openings present on the lateral side of the body.

● There are ten pairs of respiratory spiracles.

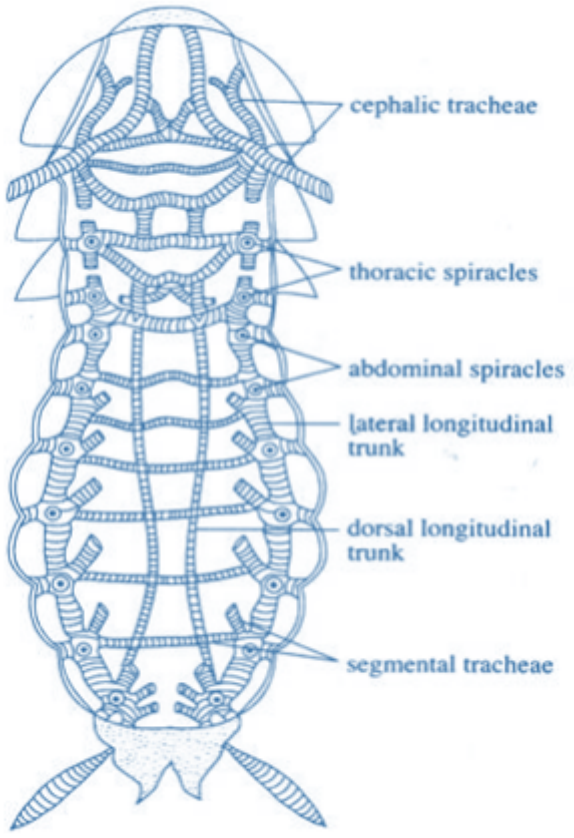
● Two pairs are present in the thoracic region and eight pairs are in the abdominal region.

● Air from outside enters through spiracles into the body. Tubular trachea and tracheoles carry oxygen from the diffused air to all parts of the body.

● Cells take in oxygen by diffusion and give out carbon dioxide to the tracheoles.

● The blood of a cockroach is hemolymph by which gaseous exchange occurs between the cells.

● Carbon dioxide is diffused out of the body through spiracles.



Respiratory system of cockroach

2 H. Question

Answer the following:

Explain respiration in human beings.

Answer

● Taking in and giving out air is called **breathing.**

● Breathing is done with the help of the respiratory system.

● The respiratory system consists of nose, pharynx, larynx, trachea, bronchi, and lungs.

● Lungs include bronchioles and alveoli.

● **The process of breathing**:

● Air enters the nasal cavity through the **nostrils.**

● Dust particles present in the air are prevented from reaching the lungs.

● Air passes to the pharynx, and then into the trachea with the help of **epiglottis**.

● The trachea is supported by 'C' cartilaginous rings which prevent the trachea from collapsing.

● The trachea is divided into two branches called **bronchi**.

● One bronchus enters the left lung and the other enters the right lung.

● These bronchi are further branched into **bronchioles**.

● Air sacs are present at the terminals of bronchioles. These are called **alveoli**.

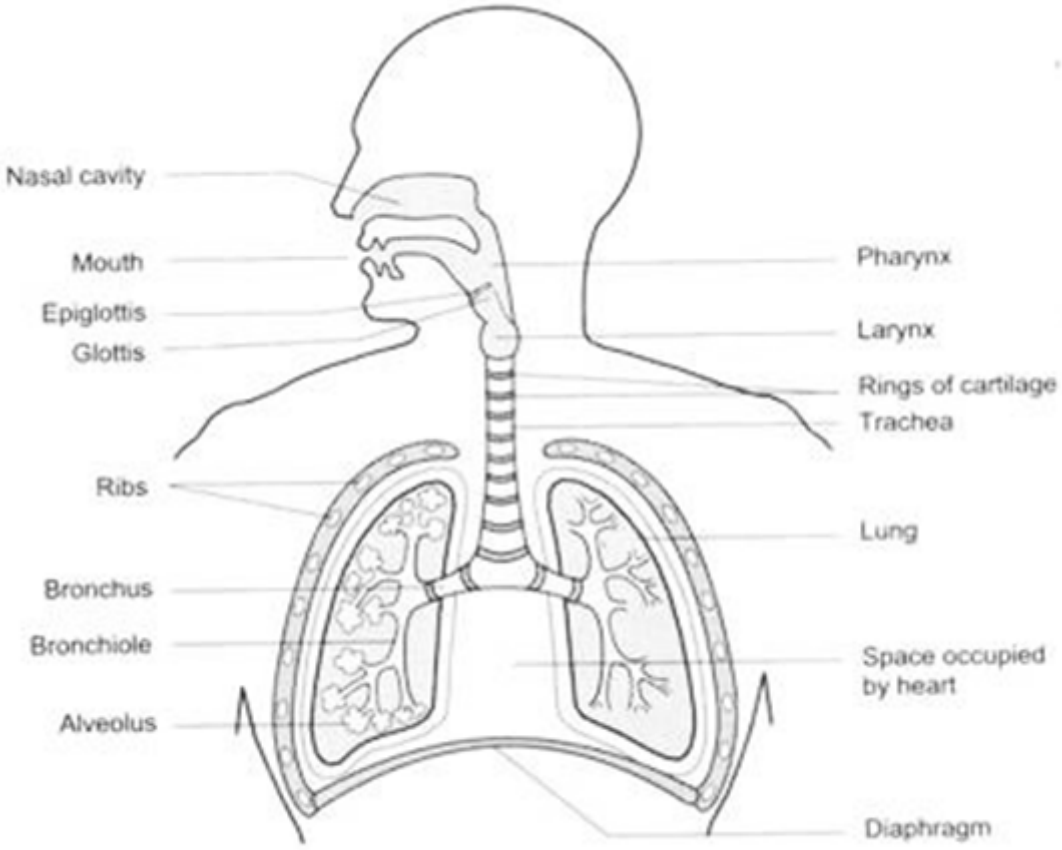
● Gaseous exchange occurs in the alveoli, gives out carbon dioxide and collects oxygen.

● Oxygenated blood distributes oxygen to the cells.

● Oxygen is used to oxidize food to release energy in the process of cellular Respiration.

● Carbon dioxide that is formed as a by-product during respiration is carried by the blood to the alveoli.

● Carbon dioxide is exhaled out through nostrils.



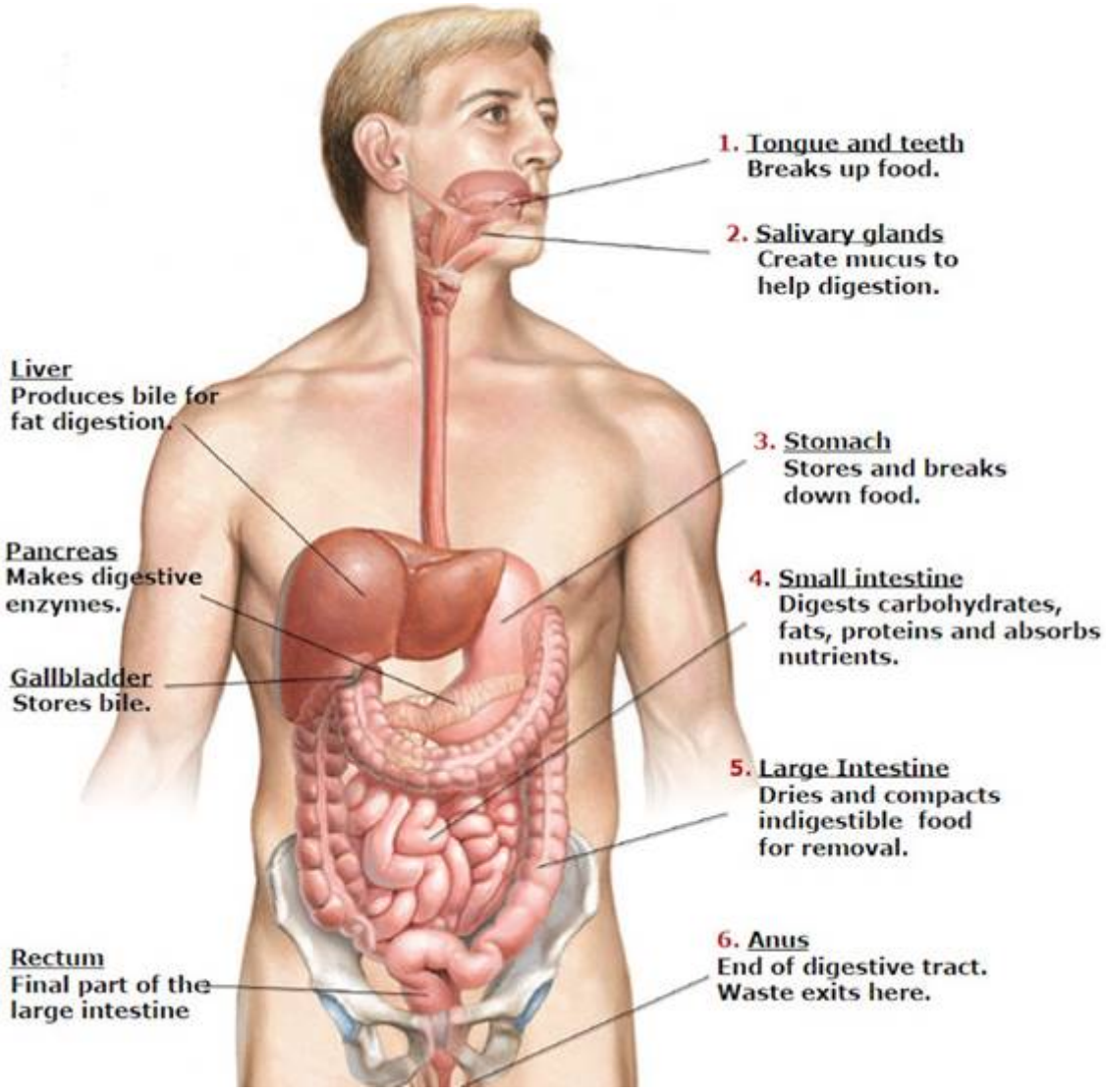
Human respiratory system

2 I. Question

Answer the following:

Draw a diagram of human digestive system and label the parts.

Answer


1. Tongue and teeth
Breaks up food.
2. Salivary glands
Create mucus to help digestion.
Liver
Produces bile for fat digestion.
3. Stomach
Stores and breaks down food.
Pancreas
Makes digestive enzymes.
4. Small intestine
Digests carbohydrates, fats, proteins and absorbs nutrients.
Gallbladder
Stores bile.
5. Large Intestine
Dries and compacts indigestible food for removal.
Rectum
Final part of the large intestine
6. Anus
End of digestive tract.
Waste exits here.