

NCERT Solutions for Class 10 Science Chapter 6: All of the questions in the NCERT textbook that correspond to the CBSE board are included in the NCERT Solutions for Class 10 Science Chapter 6 Life Processes. Students receive comprehensive NCERT Solutions from us, which have been precisely resolved by subject matter specialists. Students can readily understand the terminology used, which is helpful if they want to get the best possible grades on their CBSE Class 10 exams.

Students can swiftly skim the full chapter at once in Life Processes Class 10 NCERT, which is helpful for last-minute study sessions. This chapter's NCERT Solutions for Class 10 Science were created with the concept-based approach in mind, enabling students to provide accurate answers. This is the most crucial thing to keep in mind for the CBSE exams.

NCERT Solutions for Class 10 Science Chapter 6 Overview

NCERT Solutions for Class 10 Science Chapter 6, "Life Processes," provide a thorough understanding of essential biological functions in living organisms. NCERT Solutions for Class 10 Science Chapter 6 covers the key processes that are necessary for life, such as nutrition, respiration, transportation, and excretion. The solutions help students comprehend how plants and animals carry out these functions to maintain their metabolism and growth.

NCERT Solutions for Class 10 Science Chapter 6 begins with the concept of nutrition, explaining autotrophic (plants) and heterotrophic (animals) modes of nutrition. It also covers the respiration process, where the mechanism of breaking down food to release energy in plants and animals is discussed, including aerobic and anaerobic respiration.

The next section focuses on transportation, explaining how nutrients, gases, and waste products are transported through blood in animals and vascular tissues in plants. Finally, the excretion process, which deals with the removal of metabolic waste, is explained for both plants and animals.

NCERT Solutions for Class 10 Science Chapter 6 Life Processes

Here we have provided NCERT Solutions for Class 10 Science Chapter 6 -

Questions Page Number 95

1. Why is diffusion insufficient to meet the oxygen requirements of multicellular organisms like humans?

Solution:

Humans and other multicellular creatures have large bodies and need a lot of oxygen to swiftly diffuse into the body in order to meet their oxygen needs. The sluggish process of diffusion means that it will take a long time for oxygen to reach every cell in the body. Diffusion moves slowly, making it unable to supply the oxygen needs of multicellular organisms such as humans.

2. What criteria do we use to decide whether something is alive?**Solution:**

One can tell if something is alive or dead by observing changes in its behaviour, such as growth, breathing, and walking. A vital requirement to determine whether something is alive is the existence of the life process, since some living objects undergo changes that are not apparent to the naked sight.

3. What are outside raw materials used for by an organism?**Solution:**

Organisms use the external raw material as food and oxygen. The amount of raw resources needed depends on how sophisticated the creature is and how it lives.

4. What processes would you consider essential for maintaining life?**Solution:**

Life processes such as respiration, digestion, excretion, circulation and transportation are essential for maintaining life.

Questions Page Number 101**1. What are the differences between autotrophic nutrition and heterotrophic nutrition?****Solution:****Autotrophic Nutrition**

Organism prepares its own food and is not dependent on any other organism.

Food is prepared from CO₂, water, and sunlight.

Chlorophyll is required for food preparation.

Heterotrophic Nutrition

An organism that does not prepare its own food and is dependent on other organisms for food.

Food cannot be prepared from CO₂, water, or sunlight.

Chlorophyll is not required for food preparation.

Green plants and certain bacteria have autotrophic modes of nutrition.

All animals and fungi, most bacteria, have heterotrophic modes of nutrition.

2. Where do plants get each of the raw materials required for photosynthesis?

Solution:

The following is a raw material that plants need for photosynthesis:

- Through stomata, CO₂ is drawn from the atmosphere.
- Plant roots take up water from the earth.
- Sunlight is a necessary component of photosynthesis.
- Plant roots take up nutrients from the earth.

3. What is the role of the acid in our stomach?

Solution:

Food particles dissolve in the stomach's HCl, which also produces an acidic environment. Pepsinogen, an enzyme that breaks down proteins, is transformed into pepsin in an acidic environment. Additionally, the stomach's HCl serves as a barrier of defence against numerous bacteria that cause sickness.

4. What is the function of digestive enzymes?

Solution:

Simpler food molecules are formed from more complex ones by digestive enzymes. This will facilitate and streamline the process of food absorption. The blood carries food that has been absorbed throughout the body.

5. How is the small intestine designed to absorb digested food?

Solution:

The microvilli, which are tiny projections found in the small intestine, enhance the surface volume of the organ and improve absorption. Many blood arteries found inside the villi take up and transport digested food into the bloodstream. Food is carried to every area of our body by blood.

Questions Page Number 105

1. What advantage over an aquatic organism does a terrestrial organism have with regard to obtaining oxygen for respiration?

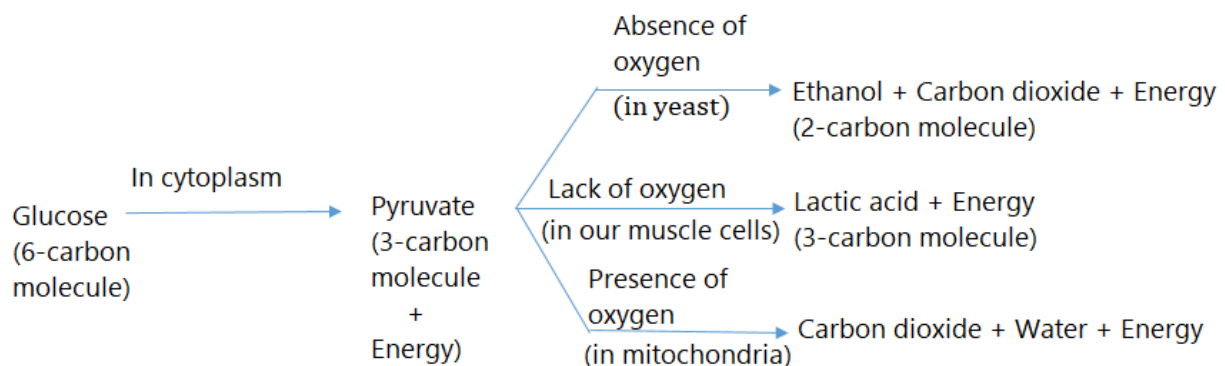
Solution:

While aquatic species take in oxygen that has been dissolved in water, terrestrial organisms breathe by using oxygen found in the atmosphere. Compared to the oxygen in the sea, there is a lot more oxygen in the atmosphere. Therefore, although aquatic organisms must breathe more quickly to receive the necessary oxygen, terrestrial species do not need to breathe quickly to obtain organisms.

2. What are the different ways in which glucose is oxidised to provide energy in various organisms?

Solution:

Glycolysis is the process by which glucose is first broken down in the cytoplasm into two molecules with three carbons each, called pyruvate. distinct species undergo distinct processes that lead to further degradation.



3. How are oxygen and carbon dioxide transported in human beings?

Solution:

Humans' bloodstreams are used to carry carbon dioxide and oxygen. While carbon dioxide is transported out of the cells, oxygen is transported into the cells. In the lungs, gas exchange occurs between the alveoli and the surrounding blood vessels. Diffusion occurs between the lungs' alveoli and the blood capillaries to allow for the absorption of oxygen and carbon dioxide, respectively, by the alveoli.

4. How are the lungs designed in human beings to maximise the area for the exchange of gases?

Solution:

- One vital organ in the body is the lung. The pulmonary route narrows and narrows until it ends in formations known as alveoli, which resemble balloons.

- The alveoli offer a surface on which gas exchange is possible. A vast network of blood arteries often lines the walls of the alveoli. We are aware that inhaling causes our diaphragm to flatten, our ribs to rise, and our chest cavity to expand.
- This causes the air to be drawn into the lungs and fill the enlarged alveoli.
- The blood feeds the alveoli with the necessary carbon dioxide that is carried from the rest of the body; the blood in the alveolar blood vessels absorbs the oxygen present in the alveolar air and delivers it to all other body cells. The lungs always hold back air during the regular breathing cycle when air is inhaled and exhaled, giving oxygen enough time to be absorbed and carbon dioxide enough time to escape.

Questions Page Number 110

1. What are the components of the transport system in human beings? What are the functions of these components?

Solution:

The heart, blood and blood vessels are the main components of the transport system in human beings.

Functions of these components

Heart

The heart pumps oxygenated blood throughout the body. It receives deoxygenated blood from the various body parts and sends impure blood to the lungs for oxygenation.

Blood

Blood transports oxygen, nutrients, CO₂, and nitrogenous wastes.

Blood vessels

Blood vessels, arteries and veins carry blood to all parts of the body.

2. Why is it necessary to separate oxygenated and deoxygenated blood in mammals and birds?

Solution:

Warm-blooded creatures, mammals and birds maintain a steady body temperature regardless of their living conditions. Warm-blooded animals need a lot of oxygen for this process to occur because it increases cellular respiration, which raises energy levels necessary for maintaining body temperature. Therefore, maintaining the separation of oxygenated and deoxygenated blood is crucial for warm-blooded species to maintain the effectiveness of their circulatory system.

3. What are the components of the transport system in highly organised plants?

Solution:

Highly structured plants have two types of conducting tissues that carry out the transport system. 1) Xylem 2) Phloem. Water and minerals are transported from the roots to the other plant components by xylem. Phloem does a similar job of moving food components from the leaf to other areas of the plant.

4. How are water and minerals transported in plants?

Solution:

A continuous network of water-conducting channels that reaches every part of the plant is formed by the connections between the xylem portions of the tracheids and the vessels of the roots, stems, and leaves. A suction pressure produced by transpiration pushes water into the xylem cells of roots. Water will then flow continuously from the root xylem to every area of the plant that is connected by conducting, interconnected water-conducting channels.

5. How is food transported in plants?

Solution:

The phloem, a unique organ found in plants, is responsible for carrying food. Food resources are transported from leaves to various areas of a plant by phloem. The process of food transportation in phloem involves the use of ATP energy. Water moves as a result of the tissue's increased osmotic pressure. Material in the Phloem is moved to the tissues under reduced pressure by this pressure. This facilitates the transfer of food supplies in accordance with needs. Sucrose, for instance

Questions Page Number 112

1. Describe the structure and functioning of nephrons.

Solution:

The filtration units of the kidney, known as nephrons, are many. As the urine passes through the tube, some components of the original filtrate—such as glucose, amino acids, salts, and a significant amount of water—are selectively reabsorbed.

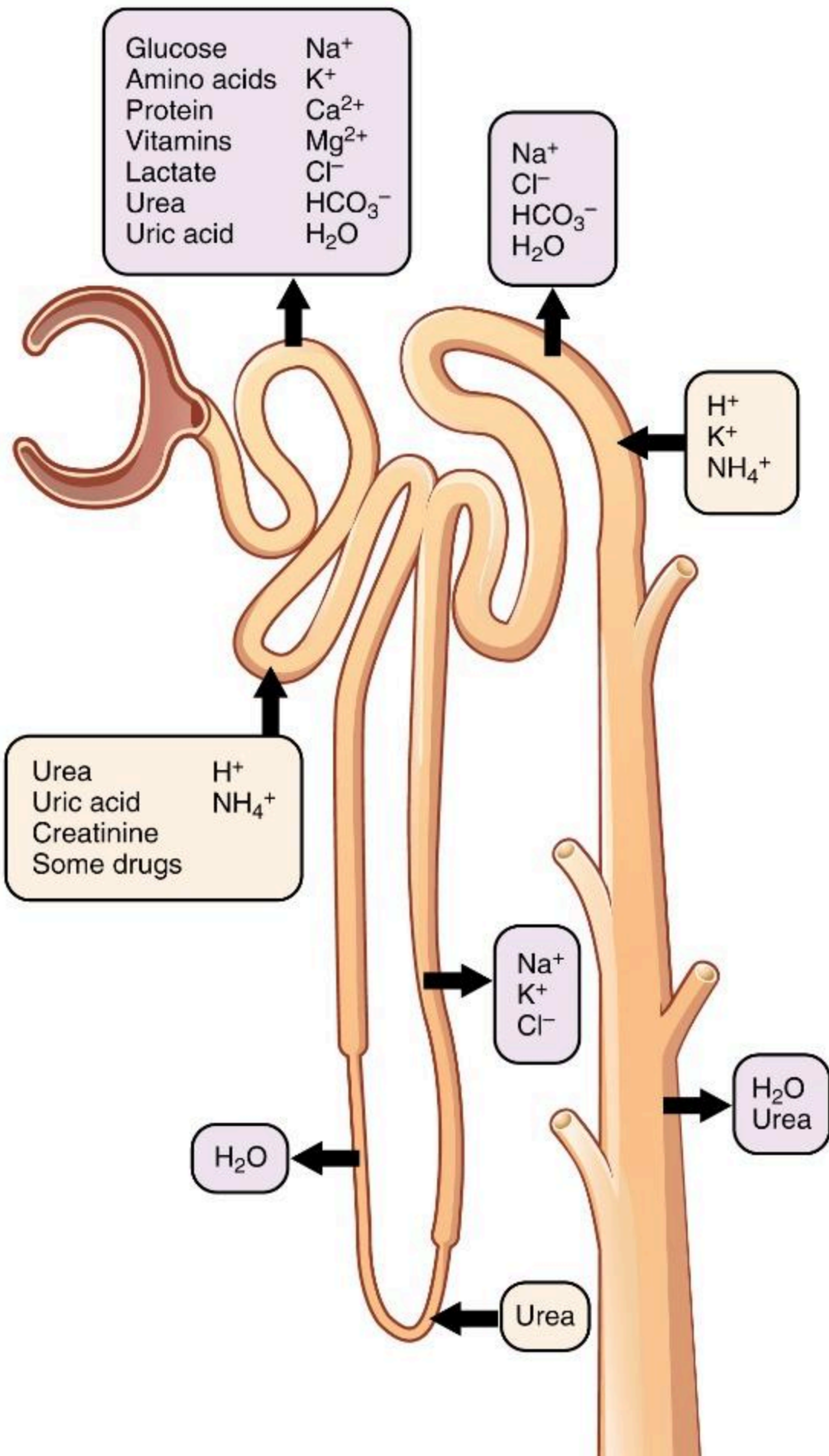
The main components of Nephrons are

Glomerulus

Bowman's Capsule

Long Renal Tube

Structure of Nephron



Functioning of Nephron

The renal artery, which divides into many capillaries connected to the glomerulus, is the pathway via which blood reaches the kidney.

At Bowman's capsule, the solute and water are transported to the nephron.

Unwanted molecules are added to the urine and materials including amino acids, glucose, and salts are selectively reabsorbed in the proximal tubule.

After that, the filtrate descends into the Henle loop, where further water is absorbed. The filtrate then ascends into the distal tubule before arriving at the collecting duct. Urine is collected from several nephrons by the collecting duct.

Each kidney produces urine, which then passes into the ureter, a lengthy tube. It travels from the ureter to the bladder and ultimately the urethra.

2. What are the methods used by plants to get rid of excretory products?

Solution:

Transpiration is a way for plants to expel extra water.

Plants utilise the fact that many of their tissues are made of dead cells and that they occasionally shed pieces of themselves, like leaves, to get rid of other wastes. Cellular vacuoles are where many waste products from plants are kept. Leaves that drop off can be used to store waste materials.

Other waste materials are generally kept in old xylem as resins and gums. Additionally, plants release certain waste materials into the soil surrounding them.

3. How is the amount of urine produced regulated?

Solution:

The quantity of extra water and dissolved trash that the body has determines how much urine is generated. The ADH hormone, which controls urine output, and the surrounding conditions could also be important variables.

Questions **Page Number 113**

1. The kidneys in human beings are a part of the system for

(a) nutrition

(b) respiration

(c) excretion

(d) transportation

Solution:

The answer is (c) excretion

A urine bladder, a urethra, two ureters, and two kidneys make up the human excretory system (Fig. 6.13). There are two kidneys in the abdomen: one on each side of the vertebrae. The ureters transport the urine that the kidneys make into the bladder, where it is held until the urethra opens.

2. The xylem in plants is responsible for

- (a) transport of water**
- (b) transport of food**
- (c) transport of amino acids**
- (d) transport of oxygen**

Solution:

In plants, the Xylem is responsible for the transport of water. Hence, the answer is (a)

3. The autotrophic mode of nutrition requires

- (a) carbon dioxide and water**
- (b) chlorophyll**
- (c) sunlight**
- (d) all of the above**

Solution:

The autotrophic mode of nutrition requires carbon dioxide, water, chlorophyll and sunlight from the preparation of food. Hence, the answer is (d) all of the above.

4. The breakdown of pyruvate to give carbon dioxide, water, and energy takes place in

- (a) cytoplasm.**
- (b) mitochondria**
- (c) chloroplast**
- (d) nucleus**

Solution:

The breakdown of pyruvate to give carbon dioxide, water and energy take place in mitochondria. Hence, the answer is (b) mitochondria

5. How are fats digested in our bodies? Where does this process take place?**Solution:**

- The whole breakdown of proteins, lipids, and carbohydrates takes place in the small intestine. For this reason, it receives the pancreatic and liver secretions.
- In order for pancreatic enzymes to work on acidic food, which exits the stomach, it must first be turned alkaline. This is done by the liver's production of bile juice.
- Larger globules of fat are typically found in the colon, which makes it challenging for enzymes to break down fats. Larger globules are broken down into smaller globules with the assistance of the bile salts.
- Pancreatic juice, which includes enzymes like trypsin for protein digestion and lipase for the breakdown of emulsified lipids, is secreted by the pancreas.
- There are glands in the walls of the small intestine that release intestinal juice. The enzymes in it ultimately break down proteins into amino acids, complex carbs into glucose, and lipids into glycerol and fatty acids.

6. What is the role of saliva in the digestion of food?**Solution:**

Our food is complex by nature, meaning it must be broken down into smaller molecules in order for the alimentary canal to absorb it. The primary biological catalysts used in this process are called enzymes. Salivary amylase is an enzyme found in saliva that converts the complex molecule starch to sugar. The food is extensively combined with saliva and transported throughout the mouth when the tongue's muscles are chewed. Saliva is therefore essential to the breakdown and absorption of meals.

7. What are the necessary conditions for autotrophic nutrition, and what are its byproducts?**Solution:**

- The process of photosynthesis provides the autotrophic creature with the energy and carbon it needs.
- It is the process by which autotrophs absorb materials from their environment and transform them into energy that is stored.
- This material is ingested as carbon dioxide and water, which, when exposed to sunshine and chlorophyll, transform into carbs.
- Carbs are primarily used by plants as an energy source. Instead of being used right away, the carbs are stored as starch, which acts as a kind of internal energy reserve.

- The plant can use the stored energy as and when it needs it.

8. What are the differences between aerobic and anaerobic respiration? Name some organisms that use the anaerobic mode of respiration.

Solution:

Aerobic respiration

- The process takes place in the presence of free oxygen.
- The products of aerobic respiration are CO₂, water and energy.
- The first step of aerobic respiration (glycolysis) takes place in the cytoplasm, while the next step takes place in mitochondria.
- The process of aerobic respiration takes place in all higher organisms.
- In this process, complete oxidation of glucose takes place.

Anaerobic respiration

- The process takes place in the absence of free oxygen.
- The products of anaerobic respiration are ethyl alcohol, CO₂ and a little energy.
- Even in anaerobic respiration, the first step takes place in the cytoplasm, while the next step takes place in mitochondria.
- In this process, the glucose molecules are incompletely broken down.
- The process of anaerobic respiration takes place in lower organisms like yeast, some species of bacteria and parasites like tapeworms.

9. How are the alveoli designed to maximise the exchange of gases?

Solution:

- One vital component of the body is the lung. The pulmonary route narrows and narrows until it ends in formations known as alveoli, which resemble balloons.
- The alveoli offer a surface on which gas exchange is possible. A vast network of blood arteries often lines the walls of the alveoli. We are aware that inhaling causes our diaphragm to flatten, our ribs to rise, and our chest cavity to expand.
- This causes the air to be drawn into the lungs and fill the enlarged alveoli.
- The blood feeds the alveoli with the necessary carbon dioxide that is carried from the rest of the body; the blood in the alveolar blood vessels absorbs the oxygen present in the alveolar air and delivers it to all other body cells. The lungs always hold back air during the regular breathing cycle when air is inhaled and exhaled, giving oxygen enough time to be absorbed and carbon dioxide enough time to escape.

10. What would be the consequences of a deficiency of haemoglobin in our bodies?

Solution:

The protein known as haemoglobin is in charge of delivering oxygen to body cells so they can respire. An inadequate amount of haemoglobin may impact red blood cells' ability to deliver oxygen. Our body's cells began to lack oxygen as a result of this. Anaemia is a condition caused by a lack of haemoglobin.

11. Describe the double circulation of blood in human beings. Why is it necessary?

Solution:

Double circulation means, in a single cycle, blood goes twice in the heart. The process helps in separating oxygenated and deoxygenated blood to maintain a constant body temperature.

The double circulatory system of blood includes

- Pulmonary circulation
- Systemic circulation.

Pulmonary circulation

Blood that has lost oxygen is pumped from the right ventricle into the lungs, where oxygen is added. After being returned to the left atrium, the oxygenated blood is pushed into the left ventricle. The aorta receives blood at this point for systemic circulation.

Systemic circulation

The left ventricle pumps oxygenated blood to different areas of the body. The vena cava is the conduit by which deoxygenated blood from various bodily areas enters the right atrium. Blood is transferred from the right atrium to the right ventricle.

12. What are the differences between the transport of materials in the xylem and phloem?

Solution:

Transport of Materials in Xylem

Xylem tissue helps in the transport of water and minerals.

Water is transported upwards from roots to all other plant parts.

Transport of Materials in Phloem

Phloem tissue helps in the transport of food.

Food is transported in both upward and downward directions.

13. Compare the functioning of alveoli in the lungs and nephrons in the kidneys with respect to their structure and functioning.

Solution:

Alveoli

Structure

(i) Alveoli are tiny balloon-like structures present inside the lungs.

(ii) The walls of the alveoli are one cell thick, and it contains an extensive network of blood capillaries.

Function

(i) The exchange of O_2 and CO_2 takes place between the blood of the capillaries that surround the alveoli and the gases present in the alveoli.

(ii) Alveoli are the site of gaseous exchange.

Nephrons

Structure

(i) Nephrons are tubular structures present inside the kidneys.

(ii) Nephrons are made of glomerulus, Bowman's capsule, and a long renal tube.

Function

(i) The blood enters the kidneys through the renal artery. The blood is entered here, and the nitrogenous waste in the form of urine is collected by the collecting duct.

(ii) Nephrons are the basic filtration unit.

Benefits of NCERT Solutions for Class 10 Science Chapter 6

NCERT Solutions for Class 10 Science Chapter 6 "Life Processes" offer several benefits to students in understanding and mastering the concepts of biology. Here are the key advantages:

1. Comprehensive Understanding of Concepts

The NCERT Solutions for Class 10 Science Chapter 6 provide detailed explanations of various life processes, such as nutrition, respiration, transportation, and excretion, which are fundamental to biology.

Concepts are broken down into simple terms, making it easier for students to grasp complex topics.

2. Adherence to CBSE Syllabus

These NCERT Solutions for Class 10 Science Chapter 6 are strictly based on the NCERT textbook and follow the CBSE guidelines, ensuring that students focus on the relevant topics needed for their exams.

3. Clarity and Precision

NCERT Solutions for Class 10 Science Chapter 6 are written in a clear and precise manner, helping students to understand each step of the biological processes without confusion.

Illustrative diagrams and flowcharts are often used to enhance learning.

4. Helpful for Exam Preparation

NCERT Solutions for Class 10 Science Chapter 6 include solved examples, practice questions, and past exam questions, which are crucial for exam preparation.

They help students in answering questions accurately and in a structured way, improving their performance in board exams.

5. Strengthens Problem-Solving Skills

The NCERT Solutions for Class 10 Science Chapter 6 encourage students to think critically and apply their knowledge to solve complex problems, improving their analytical skills.