NCERT

CLASS 10

SCIENCE

Chapter 6

"Life processes"

Solution

EXERCISE

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

a) Nutrition
b) Respiration
c) Excretion
d) Transportation

ANS: **(c) Excretion**

Q.2 The xylem in plants are responsible for

a) Transport of water
b) Transport of food
c) Transport of amino acid
d) Transport of oxygen

ANS: **(a) Transport of water**

Q.3 The autotrophic mode of nutrition requires

a) Carbon dioxide and water
b) Chlorophyll
c) Sunlight
d) All of the above

ANS: **(d) All of the above**

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

a) Cytoplasm
b) Mitochondria
c) Chloroplast
d) Nucleus

ANS: **(b) Mitochondria**

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

Solution:- Fats are present in the form of large globules. In small intestine liver and the pancreas secretes bile juice and pancreatic juice respectively. The **bile salts** (from the liver) break down the large fat globules into smaller globules so that the pancreatic enzymes (lipases) can easily act on them. This is referred to as emulsification of fats.

Q.6 What is the role of saliva in the digestion of food?

Solution:- Saliva is secreted by the **salivary glands**, located in upper and lower part of the tongue. It moistens the food for easy swallowing and chewing. It contains a digestive enzyme that breaks down the starch into sugar called **salivary amylase**,

Q.7 What are the necessary condition for autotrophic nutrition?

Solution:- Autotrophic nutrition takes place through the process of photosynthesis. Carbon dioxide, water, chlorophyll, and sunlight are the required conditions through which carbohydrates (food) and O2 are the products by photosynthesis.

$$6CO_2 + 12H_2O \xrightarrow[\text{Sunlight}]{\text{Chlorophyll}} \underset{\text{(Glucose)}}{C_6H_{12}O_6} + 6O_2 + 6H_2O$$

Q.8 What is the difference between aerobic and anaerobic respiration? Name some organisms that use anaerobic respiration?

Solution:-

Aerobic respiration	Anaerobic respiration
I. It occurs in the presence of oxygen	I. It occurs in the absence of oxygen
II. It involves the exchange of gases between the organism and outer environment.	II. Exchange of gases is absent.
III. It releases carbon dioxide and water	III. Its end product is vary.
IV. It is takes place in cytoplasm and mitochondria.	IV. It occurs only in cytoplasm.
V. It results complete oxidation of glucose.	V. It involves in incomplete oxidation of glucose.

Anaerobic respiration occurs in parasitic worms, animal muscles, and some micro-organisms such as **yeasts** and **bacteria**.

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

Solution:- The alveoli are the small balloon-like structures present in the lungs. The walls contain network of blood vessels for the exchange of gases. Each lung contains 300−350 million alveoli. The alveolar surface when spread out covers about 80 m^2 area. This large surface area of alveoli makes the gaseous exchange more efficient.

Q.10 **What would be the consequence of a deficiency of haemoglobin in our bodies?**

Solution:- Haemoglobin(Hb) is the respiratory pigment that help in transports oxygen to the body cells for cellular respiration. Therefore, lower in haemoglobin concentration in blood can affect the oxygen supplying capacity of blood. This may be lead to deficiency of oxygen in the body. It can also promotes to a disease called **anaemia**.

Q.11 Describe double circulation in human being? Why it necessary?

Solution:-

i. Double circulation is the mechanism in which blood is passed through the heart twice in a single cycle of circulation.
ii. There are two components working in double circulation- **pulmonary circulation** and **systemic circulation.**
iii. In **pulmonary circulation** the blood is circulated between heart and the lungs.
iv. In **systemic circulation** the blood is circulated between the heart and the rest of the body.
v. The human heart is divided into four chambers − the right atrium, the right ventricle, the left atrium, and the left ventricle.
vi. Oxygen rich blood from the lungs comes to the left atrium, the left atrium relaxes when collecting the blood. Then it contracts to push the blood to the left ventricle. When the left ventricle contracts it pumped out the blood in to the body.
vii. Deoxygenate blood comes from the body to the right atrium as it relax, when right atrium contracts pumps the deoxygenated blood to the right ventricle. Which in turns pump the blood in to lungs for oxygenation.

viii. Ventricles have thicker cell wall then atrium, so it pumps blood into various organ of the body.

ix. Oxygen enters in to blood through lungs. Left side of heart always pump deoxygenated blood and right side of heart always pumps oxygenated blood.

Through this double circulation the concentration of CO2 and O2 is maintained throughout the life process.

Q.12 what are the difference between the transport of materials in xylem and phloem?

Solution:-

Transport of material in

	Xylem		Phloem
I.	Xylem tissue helps in the transport of water and minerals.	I.	Phloem tissue helps in the transport of food.
II.	Transport in xylem is occurs with the help of physiological process like transpiration pull.	II.	Transport of food in phloem requires energy in the form of ATP.
III.	Water is transported only in the upward direction from root to shoot.	III.	Food is transported in both upward and downward direction.

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

Solution:-

	Alveoli		Nephron
I.	Alveoli are a tiny balloon-like structure present inside the lungs.	I.	Nephrons are tubular structure present inside the kidney.
II.	It contains the extensive network of blood capillaries and the walls are one cell thick.	II.	Nephrons are made of glomerulus, Bowman's capsule and a large number of renal tubes. It also contains a cluster of thin wall capillaries.

III.	The exchange of CO_2 and O_2takes place between the blood of the capillaries that surround the alveoli and the gases present in the alveoli.	III.	Nephron is filtering the blood to remove the waste. In initial filtration lots of water and essential solutes are filtered out.
IV.	There is no selective reabsorption in alveoli.	IV.	The essential molecules like amino acid, sodium salts, glucose and waters are selectively reabsorbed.