

LIFE PROCESSES

→ Case based questions -

Q1) (i) How does Lymph function as a middle man?

Ans * Lymph acts as middle man which transports food materials, oxygen, hormones etc to the body cells from blood

* It also brings waste products like CO_2 and other metabolic wastes from the body cells into the blood

* Thus lymph functions as a middleman between body cells and blood

(ii) What are lymphocytes and why do we need them?

Ans * Lymphocytes are white blood cells which are present in lymph and help in fighting infection and disease.

* They help in eating germs and dead cells, and also make antibodies for protecting the body from disease.

(iii) With respect to composition, how is blood different from lymph?

Ans. * Unlike blood, lymph doesn't contain RBCs. So, lymph is not red in colour but is light yellow due to absence of Hb (Haemoglobin)

* Lymph contains WBC, platelets, salts, ions, etc.

(iv) How does lymph help in fat absorption?

Ans. * Lymph helps in ~~the~~ absorption of fat which cannot be directly absorbed otherwise.

* In the body, lymph capillaries pick up the excess interstitial fluid and proteins and return them in the venous blood. After the fluid enters the lymph ~~the~~ capillaries = it is Lymph.

* The blood capillaries absorb most nutrients, but fat and fat soluble vitamins are absorbed by lacteals. These are blood capillaries in the villus of intestine.

27 Q) Why is excretion necessary in an organism?

Ans: * Living organisms accumulate waste materials like urea, CO_2 , salts and ions inside them due to processes like digestion.

* In animals, the major wastes produced are CO_2 & Urea. CO_2 is produced as a waste by the oxidation of food during the process of respiration.

* In animals, urea is produced as a waste by the decomposition of unused proteins in the liver. So, our body must get rid of these wastes because their accumulation in body is harmful for us.

(Q) Name the two latex which is used for human welfare.

Ans. alkaloids, tannins

Q) How does transpiration occur?
Ans * Transpiration occurs in the stomata of the plants.

* The plant loses water through the stomata of the leaves and this process is called as transpiration.

Q) What are secondary metabolites?

Ans → Secondary metabolites are the compounds that do not aid in the growth and development of plants directly.

→ They can be specialised toxins, secondary products, organic products produced by bacteria or fungus can be secondary metabolites.

1) Explain the importance of peristalsis in the process of digestion. Which organ is involved in it?

Ans * Peristalsis is the rhythmic contraction and relaxation of the walls of oesophagus in order to push the

bolus from the buccal cavity to the stomach for further digestion of nutrients.

* Since, oesophagus (organ ^{helping} ~~connecti~~ in peristalsis) connects mouth and stomach; it helps in pushing the bolus into the stomach.

2) How does translocation take place in plants?

Ans * Translocation of food is the process of transport of food from leaves to the different parts of plant.

- It takes place in phloem part of the plants bidirectionally (in both upward and downward direction as well)

* Translocation of food occurs by utilising energy. In this process, sucrose is loaded into sieve tubes by using energy from ATP.

* Water enters into sieve tubes

containing sucrose by endosmosis causing pressure in phloem to rise.

* The high pressure produced in phloem tissues moves the food to all parts of plant having less pressure in their tissues. This allows phloem to transport food according to the needs of the plant.

3. "Breathing cycle is rhythmic while gaseous exchange is a continuous process." Explain.

Ans * The breathing cycle involves inhalation & exhalation of air due to alternate expansion and contraction of thoracic cavity. Thus it is a rhythmic process.

* But exchange of gases is a continuous process as it occurs between blood and body cells.

5) Leakage of blood from the vessels which reduce pumping efficiency? How?

Ans Leakage of blood vessels may be because of high blood pressure & the walls of blood vessels being incapable does not able to handle the pressure exerted by ^{fast} flowing blood and this leads to the rupture of blood vessels. This prevents the efficiency of heart pumping blood to diff organs.

1. How does blood -

(a) Transport gases -

Ans. * The gases like O_2 bind with haemoglobin in red blood cells and get transported to diff parts of the body from lungs

* Blood carries CO_2 from body cells to lungs for breathing out.

(b) Regulate body temperature -

Ans. The blood helps in regulating body temperature because blood capillaries in our skin help to keep our body temperature constant about $37^\circ C$.

(c) Helps in body defence -

Ans. Blood contains white blood cells (WBC) which protect the body against diseases by killing the bacteria and other germs which cause diseases.

2. Differentiate between photosynthesis and respiration.

Photosynthesis

- The process of making food by the help of inorganic substances $(CO_2 \text{ \& } H_2O)$ in the presence of sunlight & chlorophyll.
- It occurs in only autotrophs (green plants)
- Occurs in presence of sunlight & chlorophyll
- Eg: In photosynthesis, green plants make their own food in form of starch

Respiration

- The biochemical process involving oxidation of food to release energy as ATP.
- Occurs in both plants & animals & also living beings
- Can occur with or without requirement of oxygen in aerobes & anaerobes respectively
- Eg: In respiration, human beings inhale O_2 for break down of glucose to release ATP.

3. Explain nutrition in Amoeba.

Ans * Amoeba is an unicellular eukaryote. It has a holozoic form

of nutrition which includes ingestion, digestion, absorption, assimilation & egestion.

(i) Ingestion -

* The process of ingesting food particles is called as ingestion.

* In this process, amoeba extends a false foot like structure called as pseudopodia which engulfs the food particle inside the body of Amoeba.

(ii) Digestion -

* In this process, a food vacuole is formed around the food particles engulfed.

* This food vacuole contains digestive enzymes and helps in digestion of the food particle engulfed.

(iii) Absorption -

- In this process the digested food gets absorbed as the food vacuole starts moving around the amoeba as a result of which absorption of digested food occurs.

(iv) Assimilation -

- The process of utilization of energy from the absorbed food is called as assimilation. It occurs in amoeba to get energy for its various activities.

(v) Egestion -

- The removal of undigested waste matter out of amoeba by ~~extending~~ elongating the pseudopodia is called as egestion.

4) What is dark reaction? Where does it occur? Write its chemical reaction.

Ans * The process of photosynthesis which occurs without the ^{need of} presence of light is called as dark reaction.

* Dark reaction occurs in the stroma of the chloroplast.

(Q) Which is the functional unit of kidney?

(Q) Explain the formation of urine -

Ans. * Urine is produced by nephrons of kidneys by 3 steps -

- (i) Glomerular filtration of blood
- (ii) Selective reabsorption of water & dissolved useful substances
- (iii) Tubular secretion

* The unfiltered dirty blood containing wastes (like urea) is brought by renal artery enters the glomerulus, ~~where~~

(i) Glomerular filtration -

* Urine formation begins by filtration of ^{blood in} glomerulus and then blood enters into the Bowman's capsule where the glomerular filtrate is formed.

* The Afferent arteriole being wider than the efferent arteriole entering the glomerulus helps in increasing the blood pressure thereby helping in filtration of blood.

(ii) Tubular reabsorption -

★ The filtrate containing useful as well as waste passes through the tubule and essential nutrients like glucose, amino acids, most salts, some water & ions are reabsorbed into the blood through blood capillaries surrounding the tubule.

★ The ADH, finally acts in reabsorbing excess water and decreasing ~~water~~ volume of ^{urine} to be formed.

i) Tubular secretion -

★ On entering tubule, creatinine, uric acid are secreted into it. Through active transport or diffusion across ~~the surface~~ ^{membrane}, H^+ ions, K^+ ions, NH_3 & certain drugs are secreted into the filtrate.

★ Now, this liquid consists of waste substances (urea), some unwanted salts and excessive water remaining = Urine.

★ The nephron carries this urine into the collecting duct of kidney from where it is carried to ureter.

★ From ureter, urine passes to the urinary bladder where it is stored for some time & later disposed off through urethra.