SCIENCE

(Biology)

Important Questions

➢ Multiple Choice Questions:

1. The autotrophic mode of nutrition requires:

(a) carbon dioxide and water

(b) chlorophyll

(c) sunlight

(d) all of the above

2. The largest gland in human body is:

(a) liver

(b) gastric glands

(c) pancreas

(d) salivary glands.

3. Number of salivary glands found in man are:

(a) one pair

(b) two pairs

(c) three pairs

(d) five pairs

4. Pancreatic juice helps in the digestion of:

(a) proteins

(b) proteins and fats

(c) proteins and carbohydrates

(d) proteins, carbohydrates, and fats

5. ATP and NADP 2H are produced in:

(a) Mitochondria

(b) Chloroplast

(c) Peroxisomes

(d) Lysosomes

6. Oxygen evolved during photosynthesis comes from:

(a) water

(b) CO_2

(c) soil

(d) atmosphere.

7. Rate of photosynthesis is high in:

(a) orange light

(b) green light

(c) red light

(d) yellow light

8. The ultimate source of all metabolic energy on our earth is:

(a) green plants

(b) the sun

(c) O_2

(d) O_2 and H_2O.

9. Light reaction takes place in:

(a) grana

(b) stroma

(c) mitochondria

(d) leucoplast.

10. Plants purify air by:

(a) transpiration

(b) photosynthesis

(c) respiration

(d) absorption of water

➢ Very Short Question:

1. Name the term for transport of food from leaves to other parts of plants.

2. What process in plants is known as transpiration?

3. Name the tissue which transports soluble products of photosynthesis in a plant.

4. Name the tissue which transports water and minerals in a plant.

5. How do autotrophs obtain CO_2 and N_2 to make their food?

6. Which pancreatic enzyme is effective in digesting protein?

7. Which enzyme present in saliva breaks down starch?

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

9. What is the role of saliva in the digestion of food?

10. State the function of digestive enzymes.

➢ Short Questions:

1. (a) Name two different ways in which glucose is oxidized to provide energy in various organisms.

(b) Write any two differences between the two ways of oxidation of glucose in organisms.

2. What is the function of trachea? Why do the walls not collapse even when there is less air in it?

3. Name any two digestive enzymes secreted in the human digestive system and write their function.

4. How do they take up carbon dioxide and perform photosynthesis?

5. (a) What will happen to guard cells and the stomatal pore when water flows into guard cells.

(b) How do plants transmit information from cell to cell?

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

7. What is excretion? How do unicellular organisms remove their wastes?

8. What is internal energy reserve in plants? Do the animals have the same energy reserve? Justify your answer.

➢ Long Questions:

1. (a) List two differences between 'holozoic nutrition' and 'saprophytic nutrition. Give two examples each of these two types of nutrition.

(b) State the roles of liver and pancreas.

(c) Name the organ which performs the following functions in humans:

- Absorption of digested food
- Absorption of water.

(d) Explain the statement, "Bile does not contain any enzyme but it is essential for digestion."

2. (a) Draw a diagram to show the human alimentary canal and label on it the following: Gall bladder,

Stomach. Name the longest part of the alimentary canal.

(b) Why is it necessary to separate oxygenated and deoxygenated blood in mammals and birds?

3. (a) List three events that occur during the process of photosynthesis. State in brief the role of stomata in this process.

(b) Describe an experiment to show that sunlight is essential for photosynthesis.

➢ Assertion Reason Questions:

1. For two statements are given- one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below:
   a. Both A and R are true, and R is correct explanation of the assertion.
   b. Both A and R are true, but R is not the correct explanation of the assertion.
   c. A is true but R is false.
   d. A is false but R is true.

Assertion: Ventricles have thicker walls than auricles.

Reason: Ventricles have to pump blood into various organs with great pressure.

2. For two statements are given- one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below:
   a. Both A and R are true, and R is correct explanation of the assertion.
   b. Both A and R are true, but R is not the correct explanation of the assertion.
   c. A is true but R is false.
   d. A is false but R is true.

Assertion: Ureters are the tubes which carry urine from kidneys to the bladder.

Reason: Urine is stored in the urethra.

➢ Case Study Questions:

1. Read the following and answer any four questions from (i) to (v).

   Heterotrophic nutrition is a mode of nutrition in which organisms obtain readymade organic food from outside sources. The organisms that depend upon outside sources for obtaining organic nutrients are called heterotrophs. Heterotrophic nutrition is of three types: saprophytic, parasitic, and holozoic nutrition.

   i. In which of the following groups of organisms' food material is broken outside the body and absorbed?
      a. Mushroom, green plants, Amoeba.
      b. Yeast, mushroom, bread mould.
      c. Paramecium, Amoeba, Cuscuta.

d. Cuscuta, lice, tapeworm.

ii. Which of the following is a parasite?

a. Yeast
b. Taenia
c. Amoeba
d. Earthworm

iii. Which of the following is an example of saprotroph?

a. Grass
b. Mushroom
c. Amoeba
d. Paramecium

iv. Heterotrophic nutrition involves:

a. Production of simple sugar from inorganic compounds.
b. Utilisation of chemical energy to prepare food.
c. Utilisation of energy obtained by plants.
d. All of these.

v. ln Paramecium, food enters the body through:

a. Mouth
b. Pseudopodia
c. Cilia
d. Cytostome.

2. Read the following and answer any four questions from (i) to (v).

All living cells need nutrients, O_2 and other essential substances. Also, the waste and harmful substances need to be removed continuously for healthy functioning of cells. So, a well-developed transport system is mandatory for living organisms. Complex organisms have special fluids within their bodies to transport such materials. Blood is the most commonly used body fluid by most of the higher organisms. Lymph also helps in the transport of certain substances.

i. Which of the following does not exhibit phagocytic activity?

a. Monocytes.
b. Neutrophils.
c. Basophil.

d. Macrophage.

ii. Amount of blood corpusles in changed in dengue fever. One of the common symptoms observed in people infected with dengue fever is:

a. Significant decrease in RBC count.

b. Significant decrease in WBC count.

c. Significant decrease in platelets count.

d. Significant increase in platelets count.

iii. Why are WBCs called soldiers of the body?

a. They are capable of squeezing out of blood capillaries.

b. They are manufactured in bone marrow.

c. They fight against disease causing germs.

d. They have granular cytoplasm with lobed nucleus.

iv. Name the blood cells, whose reduction in number can cause clotting disorder, leading to excessive loss of blood from the body.

a. Erythrocytes.

b. Neutrophils.

c. Leucocytes.

d. Thrombocytes.

v. Which of the following is the correct feature of lymph?

a. It is similar to the plasma of blood but is colourless and contains less proteins.

b. It is similar to the WBCs of blood but is colourless and contain more proteins.

c. It is similar to the RB Cs of blood and red in colour.

d. It contains more fats.

✓ Answer Key-

➢ Multiple Choice Answers:

1. (d) all of the above
2. (a) liver
3. (c) three pairs
4. (d) proteins, carbohydrates and fats
5. (a) Mitochondria
6. (a) water

7. (c) red light
8. (b) the sun
9. (a) grana
10. (b) photosynthesis

➢ Very Short Answers:

1. Answer: Translocation of food.
2. Answer: It is loss of water in the vapour form from the exposed parts of a plant.
3. Answer: Phloem.
4. Answer: Xylem.
5. Answer: Autotrophs obtain CO_2 from air and N_2 as nitrate or ammonium ion from soil.
6. Answer: Trypsin.
7. Answer: Ptyalin or salivary amylase.
8. Answer: HCl of gastric juice disinfects the food and acidifies it for proper functioning of proteolytic enzyme pepsin.
9. Answer: Saliva moistens the ingested food with mucus, sterilizes it with lysozyme and partially digests starch part of food into sugar with the help of salivary amylase or ptyalin.
10. Answer: Digestive enzymes are hydrolytic enzymes which cause breakdown of complex and insoluble components of food into simple, soluble, and absorbable substances.

➢ Short Answer:

1. Answer:

   (a) Aerobic and anaerobic.

   (b) Differences

2. Answer: Trachea is a tube that connects pharynx with lungs for carrying air to and from lungs. Trachea is lined by ciliated mucus secreting pseudostratified epithelium for trapping dust particles and microbes.

   Trachea does not collapse in reduced air pressure due to support of C-shaped cartilaginous rings.

3. Answer:

   (*i*) Salivary Amylase or Ptyalin. Starch $\xrightarrow{\text{ptyalin}}$ Maltose + Dextrins

   (*ii*) Pepsin (of Gastric Juice). Protein $\xrightarrow{\text{Pepsin}}$ Peptones + Proteoses.

4. Answer: Carbon dioxide is absorbed during night when stomata are open. It is fixed in malic

acid from which the same is released during day time for performing Calvin cycle in light.

5. Answer:

   (a) Guard cells swell up and a stomatal pore is created in between them.

   (b) Information is transmitted from one plant cell to another through plasmodesmata and hormones.

6. Answer:

   (i) Aerobic. $C_6H_{12}O_6 + 6O_2 \rightarrow 6\ CO_2 + 6\ H_2O$ + Energy

   (ii) Anaerobic,

   (a) $C_6H_{12}O_6 \rightarrow$ 2 Ethanol + 2 CO_2 + Energy.

   (b) $C_6H_{12}O_6 \rightarrow$ 2 Lactic acid + Energy

7. Answer: Excretion is the biological process of removal of harmful metabolic waste products from the body.

   In unicellular organisms, excretion occurs through simple diffusion from the surface.

8. Answer: The major internal energy reserve in plants is starch (a complex carbohydrate). Animals do not have the same energy reserve. Instead, they possess glycogen (and fat).

➢ Long Answer:

1. Answer:

   (a) Differences between Holozoic Nutrition and Saprophytic Nutrition

Holozoic Nutrition	Saprophytic Nutrition
1. Type. It is ingestive type where solid food is taken in.	It is absorptive type of nutrition where simple soluble substances are taken in.
2. Digestion. It is internal.	Digestion is external.
Examples. Tiger, Cattle.	Examples. Rhizopus, Mushroom.

   (b) Role of Liver: Decomposition of haemoglobin, formation and secretion of bile for emulsification of fat. Formation of urea, heparin fibrinogen and prothrombin. Detoxification of chemicals and elimination of pathogens.

   Role of Pancreas: Secretion of pancreatic juice having lipase, trypsin and amylase; secretion of hormones, insulin and glucagon.

   (c) Absorption of Digested Food. Ileum part of small intestine.

Absorption of Water. Large intestine.

(d) Role of Bile in Digestion.

Breaking of fat into fine globules or emulsification,

Neutralisation of acidity and making food alkaline for action of pancreatic and other enzymes.

2. Answer:

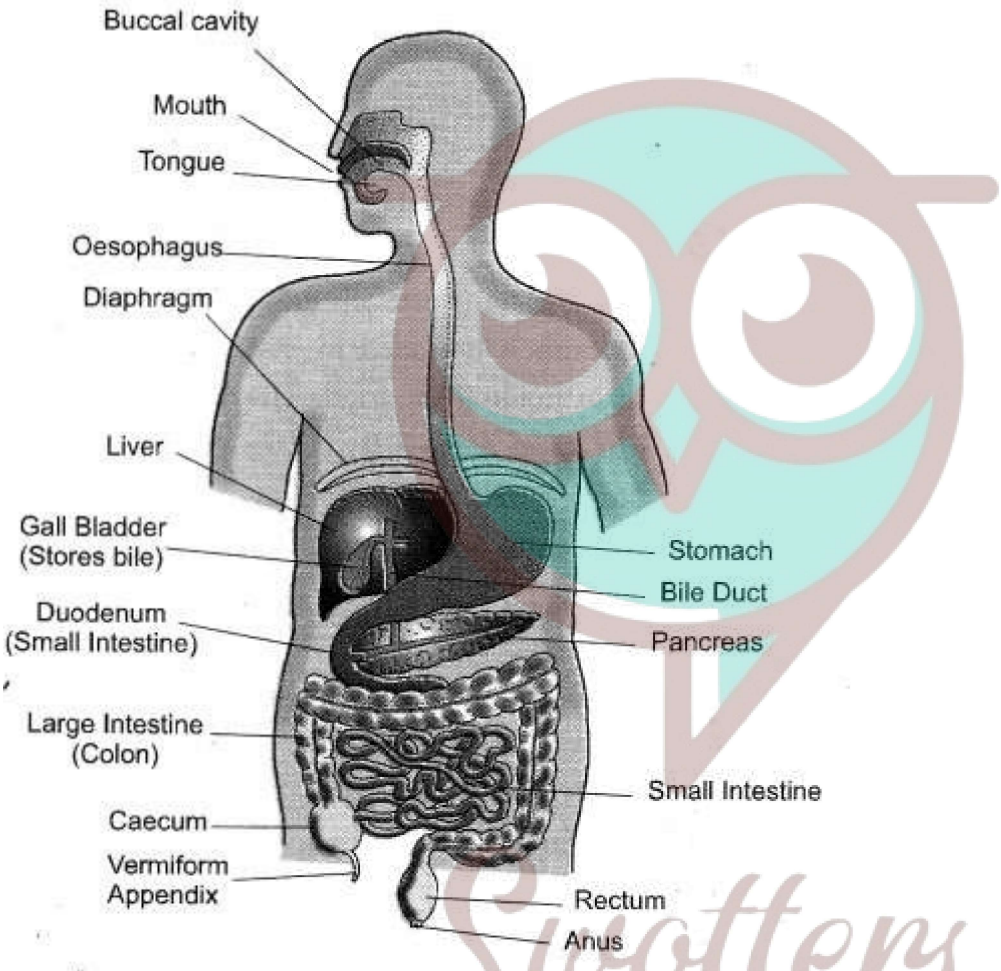

Fig. 1.13. *Human Alimentary Canal.*

Longest Part. Small intestine (about 6 meters).

(b) Separation of Oxygenated and Deoxygenated Bloods in Birds and Mammals.

Energy needs of birds and mammals are higher due to thermoregulation of body and increased activity. They require regular and quicker supply of oxygenated blood for all body parts. This is possible only when there is complete separation of oxygenated blood and quicker oxygenation of deoxygenated blood.

3. Answer:

(a) Three Events of Photosynthesis: Information is transmitted from one plant cell to another through plasmodesmata and hormones.

Role of Stomata in Photosynthesis. Inward diffusion of carbon dioxide and outward diffusion of oxygen.

(b) Sunlight is Essential for Photosynthesis: It is the source of energy for photosynthesis. Light is visible part of the electromagnetic radiations. It has a wavelength of 390-760 nm. Photosynthetically active radiations or PAR are 400-700 nm. Natural source of light is sun but artificial light can also provide energy to plants for their photosynthesis. Plants absorb light mostly in violet-blue and red parts of visible light. Violet-blue light carries more energy as compared to red light. Plants growing under shade of others receive mostly green and some violet light. They have lower rates of photosynthesis.

Light has two functions, photolysis of water and excitation of chlorophyll to emit electrons. Photolysis of water produces oxygen, protons, and electrons. Electrons and protons (Hydrogen ions) help in producing ATP and NADPH2, popularly called assimilatory power.

➢ Assertion Reason Answer:

1. (a) Both A and R are true, and R is correct explanation of the assertion.

Explanation:

Ventricles are larger and thick-walled chambers of the heart. These act as distribution chambers as they supply blood to all parts of our body with high pressure.

2. A is true but R is false.

Explanation:

The bladder is a bag which stores urine till the time we go to toilet. The urine collected in the bladder is passed out from the body through the urethra.

➢ Case Study Answer:

1. i (b) Yeast, mushroom, bread mould.

Explanation:

Yeast, mushroom, and bread mould have a saprophytic mode of nutrition which is chemoheterotrophic in nature. They breakdown complex organic substances by secreting digestive enzyme outside their body and absorb simple molecules as nutrients.

ii. (b) Taenia

iii. (b) Mushroom

iv. (c) Utilisation of energy obtained by plants.

Explanation:

Heterotrophic nutrition is mode of nutrition in which an organism depends on other living organisms for food.

v. (d) Cytostome.

Explanation:

Feeding apparatus in Paramecium consists of peristome, vestibule, buccal cavity, cytostome (cell mouth) and cytopharynx.

2. i (c) Basophil.

Explanation:

Basophiles release heparin, serotonin, and histamine. They are like mast cells of connective tissue and are not phagocytic in nature.

ii. (c) Significant decrease in platelets count.

iii. (c) They fight against disease causing germs.

Explanation:

WBCs manufacture antibodies, which fight against disease causing germs and are responsibl for immunity, thus called soldiers of the body.

iv. (d) Thrombocytes.

v. (a) It is similar to the plasma of blood but is colourless and contains less proteins.

Explanation:

Lymph is a colourless fluid, which contains blood plasma along with leucocytes and have few proteins.