

When the iodine solution is dropped into both test tubes, the colour of the water in test tube A changed to blue-black, but the colour in test tube B remained unchanged. Which of the statement describes the correct reason for this observation?

- a) Chewing adds saliva to the food, which converts the starch into sugars.
- b) Chewing adds starch to the food, which converts the amino acids into proteins.
- c) Chewing adds saliva to the food, which converts the sugar into starch.
- d) Chewing adds starch to the food, which converts the proteins into amino acids.

For the questions that follow, two statements are given- one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (i), (ii), (iii) and (iv) as given below:

- i) Both A and R are true and R is the correct explanation of the assertion.
 - ii) Both A and R are true but R is not the correct explanation of the assertion.
 - iii) A is true but R is false.
 - iv) A is false but R is true.
5. **Assertion (A)** - Villi are present on the inner lining of the stomach.
Reason (R) - The villi increase the surface area for absorption of the digested food.
iv) A is false but R is true.
 6. **Assertion (A)** - Animal nutrition includes nutrient requirement, mode of intake of food and its utilisation in the body.
Reason (R) – Ruminants have a large sac-like structure called a rumen between the oesophagus and the large intestine.
iii) A is true but R is false.
 7. **Assertion (A)** - The process of digestion begins in the mouth.

Reason (R) - The tongue mixes the food with saliva during chewing and helps in swallowing the food.

ii) Both A and R are true but R is not the correct explanation of the assertion.

8. **Assertion (A)** - Ruminants can digest cellulose.

Reason (R) - Ruminants have cellulose-digesting bacteria in their stomach.

i) Both A and R are true and R is the correct explanation of the assertion.

II. VERY SHORT ANSWER TYPE QUESTIONS (2M):

1. What is animal nutrition?

[Hint: Animal nutrition includes the nutrient requirement, mode of intake of food and its utilization in the body.]

2. What constitutes the digestive system in an organism?

[Hint: The digestive tract and the associated glands together constitute the digestive system.]

3. Name the largest gland in the body. What is its secretion?

[Hint: The liver; It secretes bile juice which is stored in a sac called the Gall bladder.]

4. How is the energy released from the digested food?

[Hint: In the cells, glucose breaks down into carbon dioxide and water with the help of oxygen and energy is released.]

5. State the functions of the tongue. **[Hint: Tongue is used for talking. Besides, it mixes saliva with the food during chewing and helps in swallowing food. It has taste buds that detect different tastes of food.]**

6. What is the role of pseudopodium in the nutrition of amoeba?

[Hint: Pseudopodia are used by amoeba to capture their prey and also for movement.]

7. What is the function of caecum in animals like horses and rabbits?

[Hint: Animals like horses and rabbits have a large sac-like structure called caecum where cellulose is digested with the help of cellulose-digesting bacteria.]

8. Mandar and Farzin were eating their food hurriedly so that they could go out and play during recess. Suddenly, Mandar started coughing violently. Think of the reasons why was he coughing.

[Hint: Sometimes when we eat hurriedly, talk or laugh while eating, we may cough, get hiccups or choking sensation. During the act of swallowing, a flap-like valve closes the passage of the windpipe and guides food into the food pipe. If, by chance, the food enters the windpipe, coughing helps to clear it.]

9. Mention the parts of the human digestive tract or alimentary canal.

[Hint: The alimentary canal can be divided into various compartments such as a buccal cavity, oesophagus, stomach, small intestine, large intestine, rectum and anus.]

10. What are the simple forms of carbohydrates, fats and proteins obtained after digestion?

[Hint: When digestion is completed, carbohydrates get broken into glucose, fats into fatty acids and glycerol and proteins into amino acids.]

III. SHORT ANSWER TYPE QUESTIONS (3M) -

1. What is ingestion? Mention the various modes of feeding in different animals. What is the mode of ingestion in humans?

[Hint: The process of taking food into the body is called ingestion. The various modes of feeding found in different animals are scraping, chewing, siphoning, capturing and swallowing, sponging and sucking. Humans chew the food with teeth and break it down mechanically into small pieces.]

2. What happens if we do not clean our teeth after eating the food?

[Hint: If we do not clean our teeth and mouth after eating, many harmful bacteria also begin to live and grow in them. These bacteria break down the sugars present in the leftover food and release acids. The acids gradually damage the teeth. This is called tooth decay. If it is not treated in time, it causes severe toothache and in extreme cases results in tooth loss.]

3. How can we prevent tooth decay?

[Hint: One should clean the teeth with a brush or datun (neem twigs) and dental floss (a special strong thread which is moved between two teeth to take out trapped food particles) at least twice a day and rinse the mouth after every meal. Also, one should not put dirty fingers or any unwashed object in the mouth.]

4. What are villi? Where are they found? Mention its function in the process of digestion.
[Hint: The villi are finger-like outgrowths which are present on the inner walls of the small intestine. The villi increase the surface area for absorption of the digested food. Each villus has a network of thin and small blood vessels close to its surface. The surface of the villi absorbs the digested food materials.]
5. What is diarrhoea? Why do we give ORS to patients suffering from diarrhoea?
[Hint: Diarrhoea is a condition in which a person passes watery stool frequently. It may be caused by an infection, food poisoning or indigestion. Under severe conditions, it can be fatal. This is because of the excessive loss of water and salts from the body. Diarrhoea should not be neglected. Even before a doctor is consulted the patient should be given plenty of boiled and cooled water with a pinch of salt and sugar dissolved in it. This is called Oral Rehydration Solution (ORS).]
6. Describe the terms rumen, rumination and ruminants.
[Hint: The grass-eating animals like cows quickly swallow the grass and store it in a part of the stomach called the rumen. Here food is partially digested and is called cud. But later the cud returns to the mouth in small lumps and the animal chews it. This process is called rumination and these animals are called ruminants].
7. Explain the role of the stomach in the process of digestion.
[Hint: The stomach stores food and serves as the mixer and grinder of food. The inner lining of the stomach secretes digestive juice which consists of mucous, hydrochloric acid and enzymes. The mucous protects the lining of the stomach. Hydrochloric acid kills the bacteria that enter along with the food and make the medium inside the stomach acidic. The enzymes break down proteins into simpler substances.]

IV. LONG ANSWER TYPE QUESTIONS (5M) -

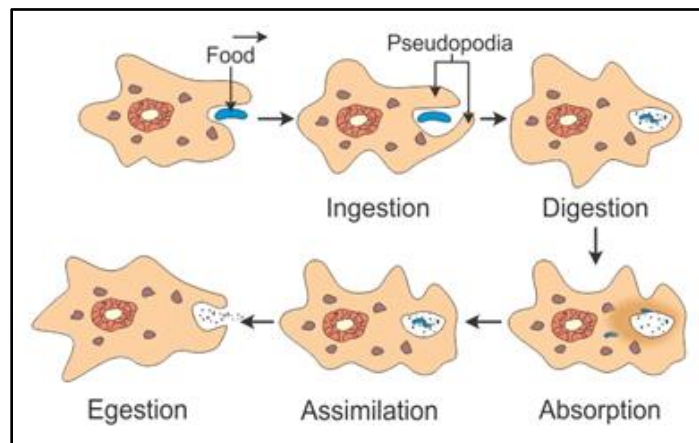
1. Explain the importance of various glands associated with digestion.
[Hint: **a) Salivary glands** - Salivary glands secrete saliva. Saliva helps in moistening the food for easy swallowing. It has enzymes which break down starch into simple sugars (Maltose).
b) Liver - The liver is a reddish-brown gland situated in the upper part of the abdomen on the right side. It is the largest gland in the body. It secretes bile

juice that is stored in a sac called the gall bladder. The bile plays an important role in the digestion of fats.

c) **Pancreas** - The pancreas is a large cream-coloured gland located just below the stomach. The pancreas secretes pancreatic juice. The pancreatic juice acts on carbohydrates and proteins and changes them into simpler forms.]

2. Explain the process of nutrition in amoeba with a neat labelled diagram.

[Hint: Amoeba feeds on some microscopic organisms. When it senses food, it pushes out pseudopodia around the food particle and engulfs it. The food becomes trapped in a food vacuole. Digestive juices are secreted into the food vacuole. They act on the food and break it down into simpler substances. Gradually, digested food is absorbed and used for growth, maintenance and multiplication.]



3. Describe different steps in the process of animal nutrition.

[Hint: Nutrition is a complex process involving -

- a) **Ingestion** - It is the process of taking food into the body.
- b) **Digestion** - The breakdown of complex components of food into simpler substances.
- c) **Absorption** - The process by which nutrients from the digested food are absorbed by the body.
- d) **Assimilation** - The process by which the absorbed nutrients are utilised by the body for providing energy.
- e) **Egestion** - The process of removal of undigested food from the body of an organism.

4. Describe different types of teeth and state their functions.

[Hint: a) **Incisors:** There are eight incisors. Four in the upper jaw and four in the lower jaw. The incisors are well adapted for cutting and biting of food items.

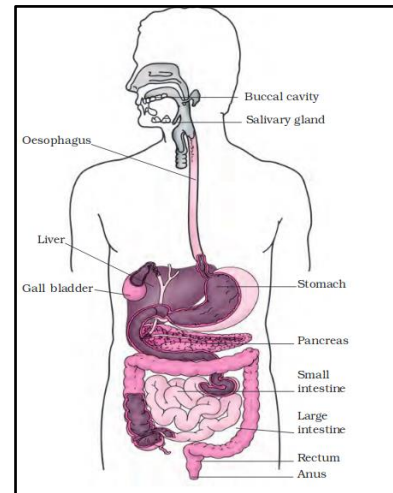
b) **Canines:** These are sharp and pointed teeth. Canines are well adapted to hold and tear food. There are four canines found in humans.

c) **Premolars:** There are two premolars on each side of each jaw. Premolars help in crushing and grinding the food. There are 8 premolar teeth in an adult human.

d) **Molars:** There are three molars on each side in both jaws. These teeth are meant for fine grinding of food. There are 12 molars in an adult human.]

5. Mention the parts of the human digestive system with the help of a neat labelled diagram.

[Hint: The human digestive system consists of the alimentary canal and secretory glands. It consists of the (i) buccal cavity, (ii) oesophagus, (iii) stomach, (iv) small intestine, (v) large intestine ending in the rectum and (vi) anus. The main digestive glands which secrete digestive juices are (i) the salivary glands, (ii) the liver and (iii) the pancreas. The stomach wall and the wall of the intestine also secrete digestive juices.]



V. SOURCE-BASED/ CASE STUDY-BASED QUESTIONS -

1. As Rishav is fond of eating chocolates, his mother always discusses the importance of teeth in our life and taking care of them. Rishav is reluctant to follow the instructions given by his mother. He never washes his teeth after having meals. One day while biting a guava he saw a blood patch on it. His mother took him to a dentist immediately. The doctor observed a tiny hole in one of his molar teeth. The doctor filled the hole with some chemicals and advised him to take a few medicines.

a) What could be the problem in Rishav's teeth which caused toothache?

[Hint: He is suffering from tooth decay]

b) How can we take care of teeth? [Hint: By brushing our teeth twice a day, by using dental floss, by using a mouthwash]

c) Which type of food items should be consumed in limited quantities for healthy teeth?

[Hint: Chocolates, sweets, cold drinks and other sugar products are the major culprits of tooth decay.]

2. Bile juice is stored in a sac called, the gall bladder, located near its organ of secretion, the liver. The gall bladder releases the bile juice into the small intestine whenever food reaches there. Though bile juice is devoid of any digestive enzymes, it is required for the digestion of fats. The fats cannot be digested easily because they are insoluble in water and are present as large globules. Bile juice breaks down big fat droplets into smaller droplets. These are then easily digested by the enzymes released from the pancreas.

a) Which organ secretes the bile juice?

[Hint: Bile juice is a digestive juice secreted by the liver.]

b) What is the function of bile?

[Hint: The bile plays an important role in the digestion of fats.]

c) Why is the digestion of fats difficult as compared to that of other nutrients?

[Hint: The fats cannot be digested easily because they are insoluble in water and are present as large globules.]

d) How does bile juice help in the digestion of fat? **[Hint: Bile juice transforms the larger fat molecules into smaller droplets, making it easier to digest.]**

e) Where is the digestion of fat completed? **[Hint: The digestion of fat is completed in the small intestine where fat gets converted into fatty acids and glycerol.]**

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