

# 6

## LIFE PROCESSES – INGESTION, DIGESTION, ABSORPTION AND ASSIMILATION

### I. Multiple choice questions: Tick (✓) the correct choice.

1. Which of the following help in the digestion of food?  
(a) Nutrients (b) Hormones (c) Enzymes (d) Saliva

Ans. (c)

2. The teeth adapted for flash eating are  
(a) incisors (b) premolars (c) canines (d) molars

Ans. (c)

3. Finger-like projections called villi are present in  
(a) stomach (b) large intestine  
(c) small intestine (d) liver

Ans. (c)

4. Most of digestion takes place in  
(a) stomach (b) small intestine  
(c) large intestine (d) rectum

Ans. (b)

5. A tooth consists of following parts:  
(a) gum and crown (b) root, crown and neck  
(c) enamel and dentine (d) only crown

Ans. (b)

6. Absorption of water takes place in  
(a) small intestine (b) large intestine  
(c) rectum (d) large intestine and rectum

Ans. (b)

7. The upper part of the small intestine is the  
(a) rectum (b) oesophagus (c) ileum (d) duodenum

Ans. (d)

8. Pepsin, a protein-digesting enzyme, is present in the  
(a) oesophagus (b) mouth (c) stomach (d) duodenum

Ans. (c)

9. Omnivorous animals eat

- (a) only plants (b) only animals  
(c) both plants and animals (d) dead, decaying matter

Ans. (c)

10. Digestion begins in the

- (a) large intestine (b) oesophagus  
(c) stomach (d) mouth

Ans. (d)

11. Food in the stomach is changed

- (a) physically only (b) chemically only  
(c) physically and chemically (d) none of the above

Ans. (c)

12. Which of the following is a part of the large intestine?

- (a) Rectum (b) Oesophagus (c) Ileum (d) Duodenum

Ans. (a)

13. A toothless gap between incisor and premolars are found in

- (a) herbivore (b) carnivore (c) omnivore (d) all of them

Ans. (a)

14. Which of the following is the correct dental formula for a human being?

- (a)  $\frac{2,1,2,3}{2,1,2,3}$  (b)  $\frac{2,0,2,3}{2,2,2,3}$   
(c)  $\frac{2,0,2,3}{2,1,2,3}$  (d)  $\frac{2,1,2,3}{2,0,2,3}$

Ans. (a)

15. Tick (✓) mark the *correct* statement.

- (a) Wisdom tooth appears at the age of 5-6 years.  
(b) The temporary set of teeth includes incisors, canines and premolars only.  
(c) Salivary glands open into the duodenum.  
(d) Saliva changes starch into maltose.

Ans. (d)

**II. Fill in the blanks.**

1. Saliva is secreted by the .....in the mouth cavity.
2. The teeth which help in biting the food in humans are the .....
3. The liver and .....are found near the stomach.
4. The white part of the tooth is called the .....
5. The part of the tooth embedded in the jaw is called the .....
6. Saliva contains ..... which changes starch to .....
7. Pancreatic juice has ..... and ..... enzymes.
8. Peristalsis is caused by .....
9. Finger-like projections on the inner surface of small intestine are called .....
10. Removal of undigested food is called .....
11. Bile is secreted by .....
12. Salivary glands secrete .....
13. The largest gland in the body of human is the .....
14. .... is secreted by the pancreas.
15. Molars are meant for ..... the food.
16. .... are used for tearing the food.

**Ans.** 1. Salivary glands 2. Incisors 3. Pancrease 4. Enamel 5. Root  
6. Ptyalin, Maltose 7. Trypsin, Lipase 8. Alimentary canal 9. Villi  
10. Egestion 11. Liver 12. Saliva 13. Liver 14. Pancreatic juice  
15. Grinding 16. Canines.

**III. Choose the correct word from within the brackets and complete the following statements:**

1. Mammalian teeth are ..... (heterodont/homodont)
2. .... help in holding and tearing food (premolars/canine)
3. The enzyme found in saliva is known as ..... (pepsin/ptyalin)
4. Water from undigested food is absorbed by the ..... (colon/rectum)
5. .... increase the surface area for absorption (anus/villi)

6. Digested food reaches the small intestine in a form called ..... (bolus/chyme)

**Ans. 1. Heterodont 2. Canines 3. Ptyalin 4. Colon 5. Villi 6. Chyme.**

**IV. Which of the following statements are true (T) and which ones are false (F)? Mark T or F.**

1. Canines are meant for tearing flesh.
2. Mouth cavity is also known as the food pipe.
3. Food is mostly digested in stomach.
4. The process of taking in of food is called assimilation.
5. Saliva contains lipase which digests carbohydrates.
6. Pancreatic juice does not contain any enzyme.
7. The removal of faeces through anus is called excretion.
8. Pulp cavity lodges blood capillaries and nerves.
9. Man has 8 incisors, 4 canines, 8 premolars and 12 molars.
10. Homodont teeth are found in mammals.

**Ans. 1. T 2. F 3. F 4. F 5. F 6. F 7. F 8. T 9. T 10. F.**

**V. Match the items of Column I with the items of Column II:**

<i>Column I</i>	<i>Column II</i>
1. Amylase	(a) Sucrose
2. Pepsin	(b) Lipid
3. Lipase	(c) Protein
4. Sucrase	(d) Starch
5. Mouth	(e) Gastric juice
6. Stomach	(f) Villi
7. Intestine	(g) Ingestion
8. Anus	(h) Egestion

**Ans. 1. (d) 2. (c) 3. (b) 4. (a) 5. (g) 6. (e) 7. (f) 8. (h)**

**VI. Name the following:**

1. Different organs of the digestive system.

**Ans. Different organs of digestive system:**

- (1) Mouth                      (2) Oesophagus                      (3) Stomach

(4) Small intestine (Duodenum, Jejunum, Ileum)

(5) Large intestine (6) Anus

We also have some glands associated with alimentary canal.

(1) Salivary glands (in mouth)

(2) Liver and pancreas

2. Different types of teeth in an adult human being.

**Ans.** Incisors, Canines, Premolars, and molars are four types of teeth present in an human being.

3. End product of starch after digestion.

**Ans.** After digestion, starch is changed into a simpler form — the maltose.

4. The organ where protein digestion begins.

**Ans.** Protein digestion starts from stomach.

5. The organ into which pancreatic juice and bile juice are poured.

**Ans.** Pancreatic juice and bile juice are poured into small intestine.

6. Enzyme which digests fat.

**Ans.** Lipase acts on fat to change them into fatty acid and glycerol

Fats  $\xrightarrow{\text{Lipase}}$  Fatty acid + Glycerol

7. Simplest form of carbohydrates.

**Ans.** Monosaccharides, like glucose and fructose, are the simplest forms of carbohydrate.

8. The part of alimentary canal where water from undigested food is absorbed.

**Ans.** In large intestine, water is absorbed.

9. Name the juice secreted by the liver.

**Ans.** Bile is produced in liver.

10. Name the organ where bile juice is temporarily stored.

**Ans.** Bile is stored in gall-bladder.

11. What is the main function of the bile juice?

**Ans.** Bile breaks the fats and oils into tiny droplets for their easier digestion.

12. Name the *three* enzymes found in the pancreatic juice.

**Ans.** (i) Amylase, (ii) trypsin (iii) steapsin are the enzymes found in the pancreatic juice.

13. Name the *three* regions of the large intestine.

**Ans.** The caecum, the colon, and the rectum are the parts of the large intestine.

14. Name the digestive gland found in our mouth.

**Ans.** The salivary glands present in the mouth.

15. Where digestion begins initially?

**Ans.** The process of digestion starts from mouth.

**VII. Give reasons for the following.**

1. Flesh-eating animals have strong canines.

**Ans.** Flesh-eating animals have well-developed canines because they are used for tearing the food.

2. All teeth in the mouth are not alike.

**Ans.** Different sets of teeth are used for different functions. For example, incisors are used for biting and cutting, canines for tearing, premolars and molars for crushing and grinding. Thus, all teeth in the mouth are not alike.

3. When you chew a chappati for some time it tastes sweet.

**Ans.** When we chew chappati it becomes sweet after some time because by the action of saliva tasteless starch changes into sweet maltose.

4. Bile is a yellowish green fluid.

**Ans.** Bile is yellowish-green fluid due to presence of pigments called *bilirubin* and *bilivirdin*.

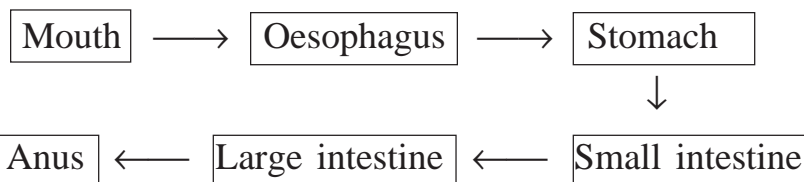
5. The small intestine has a large number of villi.

**Ans.** There are a number of villi on the inner wall of small intestine. These villi increase the inner surface area of small intestine thereby increasing the absorption of digested food.

**VIII. Put the organs in the correct order to show the path of food:**

Anus, large intestine, mouth, small intestine, oesophagus, stomach.

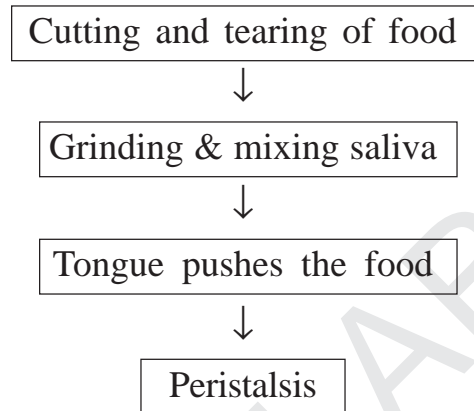
**Ans.** Correct order + show the path of food



**IX. Put the following processes in their correct sequence of occurrence during digestion:**

Peristalsis; tongue pushes the food; grinding and mixing saliva; cutting and tearing of food.

**Ans.** Correct sequence is



**X. 1.** Oesophagus, gizzard, small intestine, liver

**Ans. Liver Reason:** Oesophagus, gizzard, small intestine are the parts of alimentary canal while liver is digestive gland.

**2.** Canines, incisors, saliva, premolars

**Ans. Saliva Reason:** Incisors, canines and premolars are the types of teeth while saliva is the secretion of salivary glands.

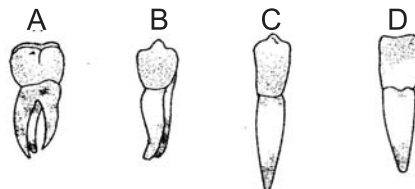
**3.** Salivary amylase, lipase, trypsin, erepsin

**Ans. Salivary Reason:** Lipase, trypsin, erepsin are present in pancreatic juice while salivary amylase is present in saliva.

**4.** Lactase, maltase, lipase, sucrase

**Ans. Lipase Reason:** Maltase, sucrase, lactase are carbohydrate-digesting enzymes while lipase is fat-digesting enzyme.

**XI. The diagrams below show the kinds of teeth in humans:**



(i) Identify the teeth A, B, C and D.

**Ans.** A. Molar B. Premolar C. Canines D. Incisors

(ii) Write the dental formula for man.

**Ans.**  $\frac{2123}{2123}$

(iii) State the functions of each tooth (A, B, C and D).

**Ans.** Premolars and molars help in crushing and grinding.  
Canines help in the tearing of food.  
Incisors help in biting and cutting.

## XII. Answer the following:

1. How is digestive system different from an alimentary canal?

**Ans.** Alimentary canal is long tubular canal. It starts from mouth and ends at anus. The alimentary canal alongwith the associated glands is called the digestive system.

2. Give the functions of different types of teeth in an adult human.

**Ans.** In an adult man, four types of teeth are present – Incisors, Canines, Premolars and Molars.

**Incisors** help in biting the food

**Canines** are sharp teeth and function for tearing the food.

**Premolars** and **molars** are for grinding and crushing the food.

3. Describe the functions of the following:

(a) Saliva

(b) Oesophagus

(c) Tongue

(d) Liver

**Ans.** **Function of saliva.** Saliva is secreted by the salivary glands. It softens the food. Saliva contains amylase (ptyalin) enzyme which act on starch to convert it into maltose.

**Function of oesophagus.** Oesophagus connects the mouth cavity with the stomach. The only function of oesophagus is to pass food from mouth to stomach.

**Function of tongue.** It is muscular organ in mouth cavity. It helps in mixing the saliva with chewed food and swallowing the food. Tongue also acts as a sense organ to taste the food particles.



**Function of Liver.** Liver is the largest gland in the body. It produces bile which is stored in the gall bladder. Bile makes the media alkaline and neutralises the acidity of gastric juice and helps in emulsification of fats.

4. Describe the structure of a tooth.

**Ans.** Each tooth has the following three parts:

- (i) **Root.** It is the part embedded in the jaw.
- (ii) **Neck.** It is the part between the root and crown. It is also embedded in the gum.
- (iii) **Crown.** It is the upper most part and covered by the enamel, the hardest part of the body. The enamel is a non-living substance made of calcium salts.

In the centre of tooth, pulp connective tissue is present. It contains sensory nerve endings and blood capillaries.

5. How are teeth different in herbivores and carnivores?

**Ans.** Herbivores eat only plant and plant products. So, there is no use of canines. They have only sharp incisors which are used for cutting. There is a gap in place of canines which is called diastema. The premolars and molars are used for chewing. Carnivores depend on the flesh of other animals. So they have well-developed canines to tear the flesh of animals. The incisors grip the food and strip off small pieces of flesh. The premolars and molars are used for grinding and crushing the bones.

6. Write briefly about 'care of the teeth'.

**Ans.** The main cause of tooth decay is plaque. It is a rough, sticky coating on the teeth consisting of saliva, bacteria and food debris. These bacteria break down sugar creating an acid that erodes tooth enamel. We can avoid plaque formation by the following points:

- (i) We must not eat sugar-containing items like ice cream, chocolate.
- (ii) We should consume food rich in calcium, phosphorus and vitamin D such as milk, fish, raw vegetables, radish, cabbage and fresh fruits.

(iii) We should clean our teeth everyday by using fluoride toothpaste.

7. What is meant by digestion?

**Ans.** The breakdown of ingested food material into chemically simpler forms that can be readily absorbed and assimilated by the body is called digestion.

8. How do teeth aid in digestion?

**Ans.** In the mouth, teeth play a part of mechanical digestion. Food is chewed and broken down into smaller pieces and prepares the food for digestion by the action of enzymes called chemical digestion.

9. Name the four types of teeth and mention their functions.

**Ans.** There are four types of teeth in the mouth.

**Incisors.** There are four incisors in each jaw which cut the food.

**Canines.** There is one canine in each side of incisors. Canines help in tearing the food and well developed in carnivores.

**Premolars and molars.** There are 4 premolars and six molars in each jaw which help in grinding the food.

10. How are the teeth of a carnivore different from that of a herbivore?

**Ans.** In carnivores, canines are well developed and used to tear flesh. The incisors are chisel-shaped and are used for cutting. In herbivores, the incisors and canines are neither pointed nor sharp. The premolars and molars are flat and used for grinding the food.

11. What changes occur in food in the mouth?

**Ans.** In mouth, food is chewed and broken into smaller pieces with the help of teeth. During chewing the food, saliva is secreted by salivary gland which softens the food. Saliva contains an enzyme called salivary amylase which acts on starch and convert it into maltose.

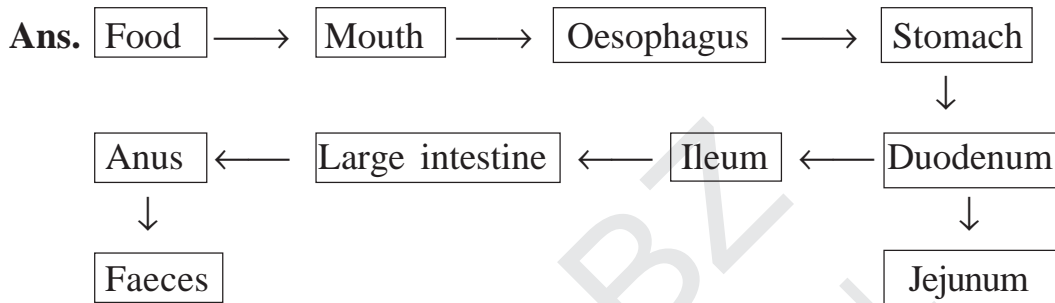
12. What is peristalsis?

**Ans.** Wave-like motion of the muscles of alimentary canal that pushes the food along the alimentary canal is called peristalsis.

**13.** How does the presence of villi help in absorption?

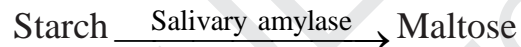
**Ans.** Villi (singular-villus) are the finger-like projections on the inner surface of small intestine. Villi increases the inner surface area of intestine for absorption of digested food.

**14.** Write the path of food in alimentary canal.



**15.** Name one function of saliva.

**Ans.** Saliva contains an enzyme called ptyalin which acts on starch to convert it into maltose.



**16.** State two functions of pancreas.

**Ans.** Pancreas secrete pancreatic juice. The pancreatic juice contains trypsin, amylopsin, steapsin, carbonates and bicarbonates of sodium. The pancreas also produce insulin by a group of special cells, the islets of langerhans.

**17.** What is formed after digestion of carbohydrate?

**Ans.** In mouth, saliva contains salivary amylase which acts on carbohydrate (starch) and converts it into maltose.

**18.** Which part of your digestive system absorbs water?

**Ans.** The large intestine absorbs water and salts from the fluid residue.

**19.** What do you understand by milk teeth and permanent teeth?

**Ans.** Human beings have two sets of teeth during their lives. The first set of teeth is called milk teeth and the second and final set of teeth is called permanent teeth.

**20.** What is dentition? Write the dental formula for man.

**Ans.** Dentition is the tabular representation of the number of deciduous and permanent teeth in the jaw.

$$\begin{aligned}\text{Dental formula for man} &= \frac{2123}{2123} \times 2 \\ &= 32\end{aligned}$$

**21.** Name the digestive juice secreted by stomach and give its function.

**Ans.** Stomach secretes a liquid called gastric juice. It contains two enzymes, called **pepsin** and **renin**. Pepsin changes proteins into peptones and renin changes casein (milk protein) into insoluble curd.

Proteins

Peptones

Casein

Insoluble curd

Gastric juice also contains hydrochloric acid which kills many harmful bacteria along with food.

**22.** What are heterodont teeth?

**Ans.** An animal with more than one type of teeth is said to be heterodont. For example, mammals have four types of tooth. Incisors, Canines, Premolars and Molars.

**23.** What is the fate of excess glucose in our body?

**Ans.** In the body, glucose is transported to the liver where excess of glucose is converted into insoluble glycogen and stored in the liver. When glucose is needed, it can be converted by liver from glycogen into glucose.

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