

QB365

Important Questions - Digestion and Absorption

11th Standard CBSE

**Biology**

Reg.No. :

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Time : 01:00:00 Hrs

Total Marks : 50

**Section-A**

- 1) What do we call the type of teeth attachment in which each tooth is embedded in a socket of jaw bones? **1**
- 2) Out of the three types of dentition, which type provides separate socket for tooth in the jaw bone. **1**
- 3) What two major roles are performed by the buccal cavity? **1**
- 4) Mention the name of different types of teeth and their number in an adult human. **1**
- 5) Which type of monosaccharide are absorbed by the mechanism of simple diffusion? **1**
- 6) Which type of absorption takes place in large intestine? **1**
- 7) Trypsinogen is an inactive enzyme of pancreatic juice. An enzyme, enterokinase activates it. Which tissue/cells secrete this enzyme? How is it activated? **1**
- 8) Give the name of the enzymes involved in the breakdown of nucleotides into sugars and bases? **1**
- 9) If a person is suffering from reflux oesophagitis, which part of his alimentary canal is not functioning properly. **1**
- 10) Give the composition of faecal matter **1**

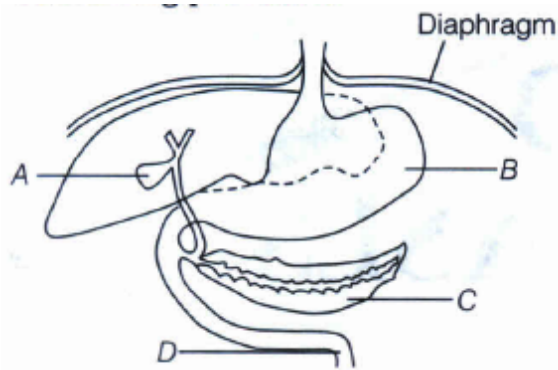
**Section-B**

- 11) If a person is fasting for a prolonged period, what will be the sequence of organic food to be digested by the body **2**
- 12) State the conditions on which the transport of water depends **2**
- 13) Give the characteristic features of mammalian teeth **2**
- 14) Why does a piece of bread start tasting sweeter after it is chewed for some time? **2**
- 15) Mention the modification or structural features of ileum, which make it suitable for absorption of nutrients. **2**
- 16) How would it affect the digestion of fats and carbohydrates, if there is a blockage in the pancreatic duct? **2**  
Explain.
- 17) What would be the reason if a person vomits out milk every time he drinks it? **2**
- 18) What is the action of salivary amylase? **2**
- 19) HCl is a strong acid. Yet it does not corrode the walls of the stomach. Why? **2**
- 20) Describe the digestive role of chymotrypsin. Which two other digestive enzymes of the same category are secreted by its source gland? **2**

**Section-C**

- 21) Explain the action of different enzymes in succus entericus. **5**

- 22) (i) The diagram below shows part of the human digestive system. Label the parts marked as A, B, C and D. 5
- (ii) Which part secretes the acidic digestive juice containing protease?



- 23) Name of the largest gland present in human body. Describe its role in digestion of food. 5
- 24) Discuss the main steps in the digestion of proteins as the food passes through different parts of the alimentary canal. 5

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### Section-A

- 1) Thecodont dentition. 1
- 2) In the thecodont type of dentition, separate sockets are provided for tooth in the jaw bone. 1
- 3) Buccal cavity performs the following functions (i) Mastication of food (ii) mixing of saliva 1
- 4) 1  
An adult human has 32 permanent teeth, which are of four different types (heterodont dentition), i.e., incisors (I), Canine (C), Premolars (pm) and molars (M) and their numbers are 4, 2, 4, 6, respectively.
- 5) Glucose, a monosaccharide is absorbed by a simple diffusion 1
- 6) Absorption of water, some minerals and drugs takes place in the large intestine 1
- 7) The cells of duodenum secrete enzyme enterokinase. It is activated by food in the duodenum. 1
- 8) Nucleosidases break nucleotides into sugar and bases. 1
- 9) In a reflux oesophagitis, the esophagus does not function properly. 1
- 10) 70% of faeces is water, while other 30% are solid in nature 1

### Section-B

- 11) 2  
The sequence of organic food to be digested by the body after a prolonged fasting will be Carbohydrates → Fats → Proteins
- 12) The transport of water depends on the osmotic gradient across the intestinal (large) wall. 2
- 13) Human teeth are heterodont 2
- 14) 2  
As bread is full of starch, the enzyme secreted in our mouth for digesting starch starts breaking down carbohydrates present in starch converting into simple sugars. Hence, it tastes sweeter after some time.

- 15) 2  
 The mucosa is folded into finger-like projections called villi. The cells lining the villi bear microvilli giving it a brush-bordered appearance. These two features increase the surface area of intestine for absorption. The villi are richly supplied with a network of blood capillaries and a large lymph vessel, lacteal, for easy absorption of nutrients.
- 16) 2  
 As the pancreatic juice contains amylase, for the digestion of starch and lipases for digestion of fats. Thus, if there is any blockage in the pancreatic duct, these enzymes would not be able to reach the duodenum of small intestine which will ultimately impair the digestion of these nutrients.
- 17) 2  
 This means that the digestion of proteins is not taking place in the person's stomach due to the absence of enzyme rennin and pepsin in gastric juice.
- 18) 2  
 (i) Salivary amylase splits starch and glycogen first to dextrins and then into disaccharides like maltose, isomaltose and small dextrins called 'limit' dextrins.  

$$\text{starch} \xrightarrow[\text{amylase}]{\text{salivary}} \text{Maltose} + \text{Isomaltose} + \alpha\text{-dextrins}$$
  
 (ii) Bicarbonate ions in saliva neutralise the acids present in food. The thiocyanate ions of saliva act as anti-microbial agent. These prevent infection by the microbes.
- 19) 2  
 The HCl produced in the stomach is not as strong as used for industrial purposes. However, acidic behavior of HCl does not corrode the stomach walls, because the gastric epithelium of stomach is secretory in nature, i.e., it produces mucus, which covers the stomach wall preventing it from corrosive action of gastric juice.
- 20) 2  
 Chymotrypsin is the active form of chymotrypsinogen, it is activated by trypsin. It curdles milk. Nucleases like DNAases and RNAase and pancreatic lipase are other enzymes secreted by the pancreas

### Section-C

- 21) 5  

$$\text{Dipeptides} \xrightarrow{\text{Dipeptidases}} \text{Amino Acids}$$

$$\text{Maltose} \xrightarrow{\text{Maltase}} \text{Glucose} + \text{Glucose}$$

$$\text{Lactose} \xrightarrow{\text{Lactase}} \text{Glucose} + \text{Galactose}$$

$$\text{Sucrose} \xrightarrow{\text{Sucrase}} \text{Glucose} + \text{Fructose}$$

$$\text{Nucleotides} \xrightarrow{\text{Nucleotidase}} \text{Nucleosides} \xrightarrow{\text{Nucleosidase}} \text{Sugars} + \text{Bases}$$

$$\text{Di and monoglycerides} \xrightarrow{\text{Lipase}} \text{Fatty acids} + \text{Glycerol}$$
- 22) (i) A-Gall bladder B- Liver C-Pancreas D-Duodenum 5  
 (ii) C-Pancreas

23) Liver of the largest gland present in human body which is mainly responsible for the digestion of food

5

Role of liver in digestion of food

(i) Its hepatic cells secrete bile juice which passes through the hepatic duct into the gall bladder.

(ii) It has its major role in processing of proteins i.e., formation of urea.

(iii) Bile secreted by it is mainly responsible for digestion of fats for easy absorption in the body.

(iv) Also responsible for the removal of toxins from blood.

24)

5

Digestion of proteins in stomach

The proenzyme pepsinogen on exposure to HCl, gets converted into active enzyme pepsin.

Protein -----> Proteoses + Peptones

Pepsin always acts in acidic medium (pH 1.8). In infants, milk proteins are digested by rennin.

Digestion of protein in small intestine Pancreatic juice contains proenzyme, i.e., trypsinogen that gets activated by an enterokinase, which is secreted by intestinal mucosa, into active trypsin. Trypsin acts in alkaline medium.

$$\text{Protein} \xrightarrow{\text{Trypsin / Chymotrypsin}} \text{Dipeptides}$$

The dipeptides are changed into amino acids by the enzyme succus entericus (intestinal juice).

$$\text{Dipeptides} \xrightarrow{\text{Dipeptidases}} \text{Amino acids}$$