CBSE Class 11 Biology

Important Questions

Chapter 16

Digestion and Absorption

1 Marks Questions

1.Name the secretions of Goblet cell & parietal cells.

Ans. Goblet cells secrete mucus. Parietal cells secrete hydrochloric acid (HCl) and intrinsic factor.

2.Name the three parts of small intestine of man.

Ans. Duodenum, Jejunum and ileum.

3.Which is the largest gland in our body?

Ans. Liver.

4.What is the main function of bile salt?

Ans. It reduces the surface tension of fat droplets causing their break down into many small ones.

5.Name the watery fluid secreted from Bruner's gland in duodenum.

Ans. Mucoid fluid is secreted from Bruner's gland in duodenum.

6.What is atheroma?

Ans. Deposition of cholesterol on the walls of arteries.

7.What is egestion?

Ans. Passing out of undigested food from the body.

8.What are micelles?

Ans. Monoglycerids, long chain fatty acids and digested fats unite with bile salts and form small spherical droplets known as micelles.

9.What are crypts of lieberkuhn?

Ans. Pits into the sub mucosa of gastrointestinal tract wall.

10.What do you mean by the term malnutrition?

Ans. The stale of health due to improper intake of food or nutrients. It covers both under nutrition as well as over nutrition.

11.Name the hardest substance in the body.

Ans. Enamel

12.What is a lacteal?

Ans. Lymph vessel found in villi.

13.Name the small projections, found on the upper surface of tongue.

Ans. Papillac

14.Mention the function of epiglottis.

Ans. Prevention the entry of food in to the glottis.

15.Write the name of major parts of siornach.

Ans. Cardiac, fundic, pyloric.

16.Nane the enzyme that digest fast. Mention the end products of fat digestion.

Ans. Lipase, fatty acids and glycerol.

17.In which part of alimentariy canal does absorption of water, simple sugars and alcohol lakes place?

Ans. Stomach

18.Why are proteases generally released in inactive form?

Ans. If released in active form, they will start digesting the membranes and muscular of the alimentary canal.

19.Trypsinogen is an inactive enzyme of pancreatic juice. An enzyme, enterokinase, activates it. Which tissue/cell secrete the enzyme 7 How is it activatc4i ?

Ans. Intestinal mucosa.

$$\text{Trypsinogen} \xrightarrow{\text{enterokinase}} \text{Trypsin} \rightarrow \text{Proteins} \rightarrow \text{Peptides}$$

20.What is the role of insulin?

Ans. Metabolis of sugar

CBSE Class 12 Biology
Important Questions
Chapter 16
Digestion and Absorption

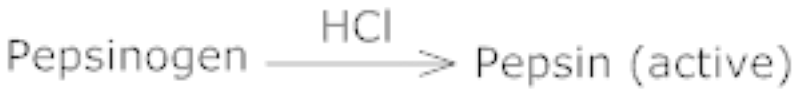
2 Marks Questions

1.What is the role of micelles in the fat absorption?

Ans. During digestion, the fat in the intestine is converted to monoglycerides diglycerides and fatty acids which are insoluble in water. They cannot be directly absorbed from the intestinal contents. They are first incorporated into small, spherical and water soluble droplets called micelles by bile salts. It is from these micelles that fatty acids, glycosides, sterols and fat soluble vitamins are absorbed into the intestinal cells.

2.Give two functions of trypsin?

Ans. 1) Trypsin converts chymotrypsinogen into chymotrypsin.



2) Trypsin acts on proteoses and peptones and convert them into peptides.

Trypsin + Peptones + Proteoses → Peptides.

3.What are the specific functions of food?

Ans. Specific functions of food are –

(i) Food on oxidation inside the body supplies energy to perform various functions.

(ii) It serves to supply the material for growth and development of the body.

(iii) It also serves as a reserve material mainly as fat and glycogen. These can be utilized at the time of emergency.

(iv) It protects the body from diseases.

4.How does fat absorption takes place?

Ans. Fat absorption – It occurs as monoglycerides and fatty acids. These are resynthesized into triglycerides which in turn, combine with cholesterol. They form chylonicrons chylomicrons pass into the lymphatic system for circulation.

5.How is food absorbed?

Ans. The food eaten up by individuals is in complex form. The digestive glands secrete enzymes in different parts of alimentary canal and digest it into simpler form, mainly soluble form. The digested food consist of fatty acid and glycerol are absorbed through intestinal wall through lacteals. The sugars, amino acids, salts and water passed into blood circulation, water absorption takes place in colon (large intestine).

6.What are enzymes?

Ans. Enzymes are defined as “an organic catalyst found in a living organism, which alters the fate unchanged at the end of the reaction; but itself remain unchanged at the end of the reaction; and is produced by the living organism but is not itself alive.

7.If a major part of the small intestine of a mammal be removed, will this affect absorption of food?

Ans. The major part of the food is absorbed only in the small intestine, only some part of water is absorbed in the stomach. So, if the major part of the small intestine is removed it would seriously affect the absorption of digested food.

8.What is the role of micelles in the fat absorption?

Ans. Fats are digested into monoglycerides, diglycerides and fatty acids, which are insoluble in water. These are first incorporated into small, spherical and water soluble droplets called micelles. Micelles help in the absorption of fatty acids, glycerols, sterols and fat soluble

vitamins into the intestinal cells.

9.Differentiate chylomicron & micelles on the basis of their structural components.

Ans.

	Chylomicrons	**Micelles**
1.	Protein coated water soluble fat droplets of about 150 mm released into the lymph.	It is formed by combination of fatty acids, mono acylglycerols and the bile salts.
2.	In this form fats / lipids are put into circulation.	In this form, digested fats are absorbed in intestinal cells in alimentary canal.

10. What is emulsification? Where and how does it occur?

Ans. The process of breakdown of large fat droplets into smaller ones. It occurs in small intestine. It is brought about by bile salts through reduction of surface tension of large fat droplets.

11. Name three part of large intestine. Which vestigial organ arises from the first part of it ?

Ans. Cancun, colon and rectum, Vermiform appendix.

12. Name the stand which perform/acts as exocrine and endocrine. Also name the products which am secreted by it.

Ans. Pancreas. Exocrine secretion is pancreatic juice containing enzymes and exocrine secretions are hormones : insulin and glucagon.

13. The wall of alimentary canal is made up of four layers. Give the names of these four layers.

Ans. Serosa, muscularis, submucosa and mucosa.

14. In which part of the digestive system the absorption of following substances takes place?

(a) Certain drugs

(b) Glucose, fructose and fatty acids

(c) Water, some minerals and drugs

(d) Simple sugar and alcohol

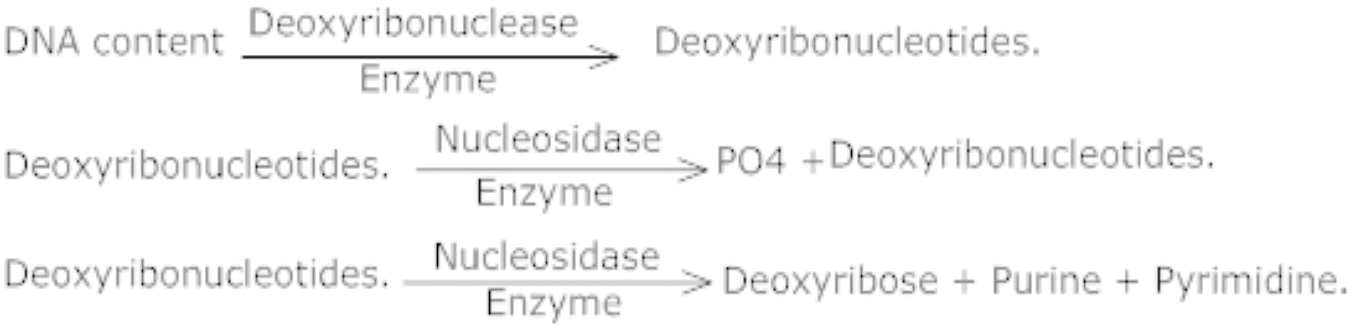
Ans. (a) Mouth**(b)** Small intestine **(c)** Large intestine **(d)** Stomach

CBSE Class 12 Biology
Important Questions
Chapter 16
Digestion and Absorption

3 Marks Questions

1.How is DNA content in our food digested in the body?

Ans. DNA content is digested in the intestinal part of our alimentary canal by the enzymes present in pancreatic juice & sucous entericus.



2.How would it affect the digestion of proteins if there is blockade in the pancreatic duct?

Ans. Pancreatic duct in addition to pancreatic juice brings bile juice also. The pancreatic juice contains many enzymes which are as fallows-

a) Trypsin – It acts on protein, proteases and peptones and converts them into amino acids.

b) Amylopsin – It acts on starch and converts it into soluble sugars.

c) steapsin or lipase – It emulsify the fats and convert them into fatty acids and glycerol.

Hence, if there is a blockade in the pancreatic duct then there will be no digestion of proteins, fats and starch because the digestive enzymes will be absent.

3.What is the action of salivary amylase? Differentiate between lipases and peptidases?

Ans. Salivary amylase digest starch into sugars.

Difference between lipases and Peptidases.

	Lipases	**Peptidases**
1.	They are insoluble in water.	They are soluble in water.
2.	These hydrolyse fats & oils.	These hydrolyse proteins,

4.It is absolutely not necessary to produce amylase in an active form in our body. But it is not in the case of trypsin. Given reasons.

Ans. Salivary amylase is secreted in buccal cavity and it digests starch and sugar (carbohydrates). Since amylase does not act on protein of which animal tissues (buccal cavity) is made from, it is secreted in its original form.

Trypis – It acts on proteins. The wall of the alimentary canal is also made of protein. Hence it is very essential that it is secreted in an inactive form and it should become active when food protein is available in the alimentary canal. Thus to prevent damage (digestion of body) it is secreted in an inactive form.

5.Describe coagulation of milk in alimentary canal.

Ans. When the food or milk reaches the stomach, the protein digestion starts. Pepsin stimulates the digestion of proteins in milk (casein) HCl activates pepsinogn into pepsin. It hydrolyses soluble casein into paracasein which precipitated as calcium paracaseinate to make solid curd i.e., coagulation of milk. There is a milk – coagulating enzyme called rennin which is found in calf gastric juice. Rennin is secreted as pro-rennin (inactive form) but in the presence of HCl, it is hydrolyses casein into paracasein leading to milk coagulation.

6.Name three enzymes secreted by pancreas specify the substance and the product of each.

Ans. Pancreas is a composite gland. It has exocrine and endocrine parts. The exocrine parts

secretes pancreatic juice. It contain trypsin, amylopsin and steapsin.

a) Trypin – It converts proteins, peptones and proteoses into amino acids.

b) Amylopsin – It acts upon starch and converts them into soluble sugars.

c) Steapsin or lipase – It emulsifies fats and converts them into fatty acid & glycerol.

CBSE Class 12 Biology
Important Questions
Chapter 16
Digestion and Absorption

5 Marks Questions

1.Draw a labeled diagram of human alimentary canal & Describe its different parts.

Ans. The alimentary canal of man is a long coiled tube of varying diameter. It measures from 8 to 10 meters in length. It is divisible into the following parts –

a)Oral cavity – It is the initial enlarged part of the alimentary canal. It opens by mouth and consists of lips, cheeks, gums, teeth and the palate and its muscles. The salivary glands open into the oral cavity.

b)Pharynx – The oral cavity passes into pharynx.

c)Oesophagus – It is a muscular tube about 10 inches long through which food passes into the stomach where it joins the cardiac stomach.

d)The stomach is a sac – like structure and situated below the diaphragm. The wall of the stomach contains many small gastric pits into which ducts of gastric glands open.

e)Small intestine – It is a long tube – like structure measuring about 5-7 meters. It is divisible into 3 parts – duodenum, the jejunum and the ileum. The duodenum is the first part and u – shaped. In this open the opening of pancreatic duct and bile duct.

f)Large intestine – The large intestine is about 1.5m long. It consists of caecum with vermiform appendix, colon and rectum. The rectum opens to the exterior by anus.

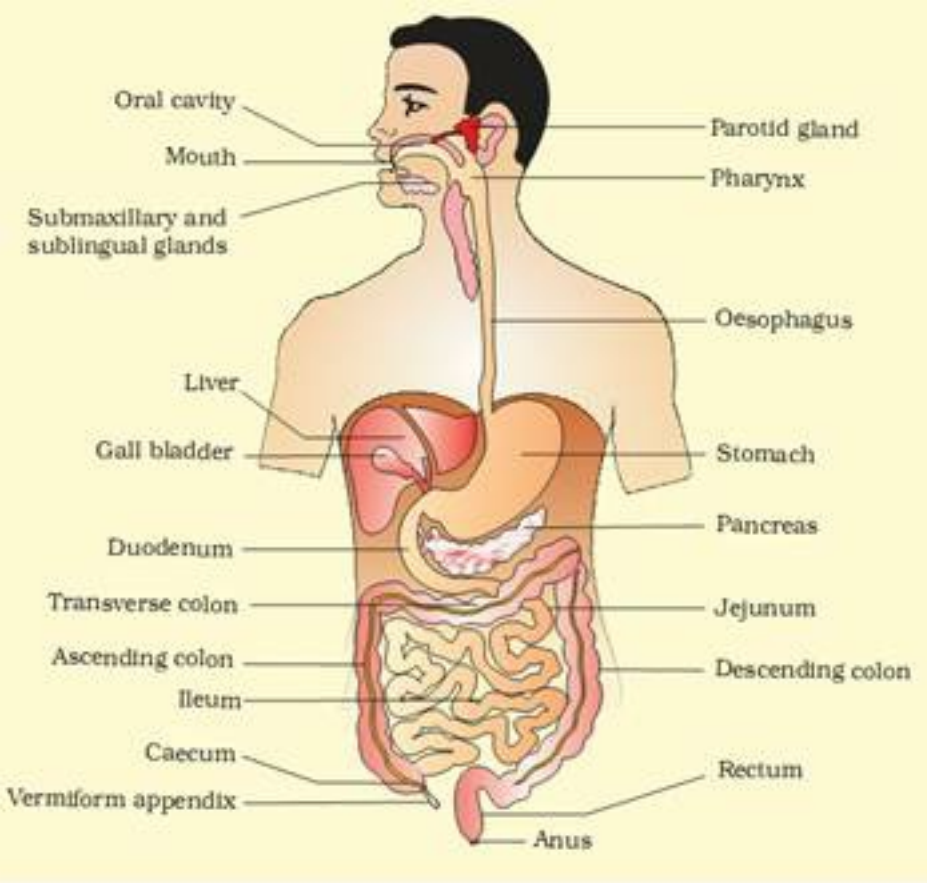


Figure 16.1 The human digestive system

2. Name the enzymes for protein digestion in the gastric, pancreatic and intestinal, the substrate they digest and products of their action.

Ans.

	Juices	**Enzymes**	**Substrates**	**Products**
1	Gastric Juice	Pepsin Renin	Proteins, casein (milk) casein	Peptones, Paracasein (curd) Para casein
2	Pancreatic Juice	Trypsin Chymotrypsin	i) Protein ii) Chymotrypsinogen (inactive) iii)Procarboxypeptidases (inactive) iv)Protelactase (inactive) v) Fibrinogen (blood)	Peptides Chymotrypsin (active) Carboxy peptidases (active) Elactase (active) Fibrin (clot) Paracasein

		Carboxypeptidase	casein Peptides	Small peptides, amino acids
3	Intestinal Juice	Enterokinase Amino peptidases Dipeptidases	Trypsinogen (inactive) Peptides Dipeptides	Trysin (active) small peptides, amino acid Amino acids.

3. Explain the absorption of digested products.

Ans. Absorption of Digested products – The absorption is defined "as the process by which end products of digestion pass through the intestinal mucosa onto the blood or lymph" . The process of absorption is carried out by 3 mechanisms: by passive, active or transport mechanisms. The monosaceharides such as glucose, amino acids and certain electrolytes e.g. chloride are mostly absorbed by the process of simple diffusion against the concentration gradient some substances e.g., fructose and some amino acids are absorbed the help of carries ions like Na^+. It is known as facilitated transport.

The transport of water – It depends upon osmotic gradient. Active transport takes place against the concentration gradient and it needs energy. The amino acids, monosaccharides like Glucose, electrolytes like Na+ are absorbed into the blood by active transport.

The fatty acids and glycerol – These are insoluble and so cannot be absorbed into blood. They are incorporated into small droplets termed as micelles. They move into the intestinal mucosa. They again form very small protein – coated fat globules or the chylomicrons. The chylomicrons are transported into lymph vessel or lacteals found in the villi. They ultimately release absorbed substances into the blood.

The absorption of various substances occurs in various parts of alimentary canal, mouth, stomach, small intestine and large intestine. Maximum absorption takes place in small intestine. The small intestine contains villi for it.