Chapter – 5

Digestion and Absorption

Multiple Choice Questions

Question 1.
Choose the incorrect sentence from the following:
(a) Bile juice emulsifies the fat.
(b) Chyme is a digestive acidic food in the stomach.
(c) Pancreatic juice converts lipid into fatty acid and glycerol.
(d) Enterokinase stimulates the secretion of pancreatic juice.

Answer:
(d) Enterokinase stimulates the secretion of pancreatic juice.

Question 2.
What is chyme?
(a) The process of conversion of fat into small droplets.
(b) The process of conversion of micelles substances of glycerol into fatty droplet.
(c) The process of preparation of incompletely digested acidic food through gastric juice.
(d) The process of preparation of completely digested liquid food in midgut.

Answer:
(c) The process of preparation of incompletely digested acidic food through gastric juice.

Question 3.
Which of the following hormones stimulate the production of pancreatic juice and bicarbonate?
(a) Angiotensin and epinephrine
(b) Gastrin and insulin
(c) Cholecysokinin and secretin
(d) Insulin and glucagon

Answer:
(c) Cholecysokinin and secretin.

Question 4.
The sphincter of Oddi guards ……
(a) Hepatopancreatic duct
(b) Common bile duct
(c) Pancreatic duct
(d) Cystic duct

Answer:
(a) Hepatopancreatic duct

Question 5.
In small intestine, active absorption occurs in case of ……
(a) Glucose
(b) Amino acids
(c) Na
(d) All the above

Answer:
(d) All the above

Question 6.
Which one is incorrectly matched?
(a) Pepsin – stomach
(b) Renin – liver
(c) Trypsin – intestine
(d) Ptyalin – mouth

Answer:
(b) Renin – liver

Question 7.
Absorption of glycerol, fatty acids and monoglycerides takes place by ……..
(a) Lymph vessels within villi
(b) Walls of stomach
(c) Colon

(d) Capillaries within villi

Answer:
(a) Lymph vessels within villi

Question 8.
First step in digestion of fat is ……..
(a) Emulsification
(b) Enzyme action
(c) Absorption by lacteals
(d) Storage in adipose tissue

Answer:
(a) Emulsification

Question 9.
Enterokinase takes part in the conversion of ……..
(a) Pepsinogen into pepsin
(b) Trypsinogen into trypsin
(c) Protein into polypetide
(d) Caseinogen into casein

Answer:
(b) Trypsinogen into trypsin

Question 10.
Which of the following combinations are not matched?

Column I	Column II
(a) Bilirubin and biliverdin	(i) intestinal juice
(b) Hydrolysis of starch	(ii) Amylases
(c) Digestion of fat	(iii) Lipases
(d) Salivary gland	(iv) Parotid

Answer:
(a) Bilirubin and biliverdin – (i) intestinal juice

Question 11.
Match column I with column II and choose the correct option

Column – I	Column – II
(P) Small intestine	(i) Largest factory
(Q) Pancreas	(ii) Absorption of Water
(R) Liver	(iii) Carrying electrolytic solution
(S) Colon	(iv) Digestion and absorption

(a) (P – iv) (Q – iii) (R – i) (S – ii)
(b) (P – iii) (Q – ii) (R – i) (S – iv)
(c)(P – iv) (Q – iii) (R – i) (S – ii)
(d) (P – ii) (Q – iv) (R – iii) (S – i)

Answer:
(a) (P-iv) (Q – iii) (R- i) (S – ii)

Question 12.
Match column I with column II and choose the correct option

Column I	Column II
(p) Small intestine	(i) 23 cm
(q) Large intestine	(ii) 4 meter
(r) Oesophagus	(iii) 12.5 cm
(s) Pharynx	(iv) 1.5 meter

(a) (P – iv) (Q – ii) (R – i) (S – iii)
(b) (P – ii) (Q – iv) (R – i) (S – iii)
(c) (P – i) (Q – iii) (R – ii) (S – iv)
(d) (P – iii) (Q – i) (R – ii)(S – iv)

Answer:
(b) (P – ii) (Q – iv) (R – i) (S – iii)

Question 13.
Match column I with column II and choose the correct option.

Column I	Column II
(p) Lipase	(i) Starch
(q) Pepsin	(ii) Cassein
(r) Renin	(iii) Protein
(s) Ptyalin	(iv) Lipid

(a) (P – iv) (Q – ii)(R – i)(S – iii)
(b) (P – iii) (Q – iv) (R – ii) (S – i)
(c) (P – iv) (Q – iii) (R – ii) (S – i)
(d) (P – iii) (Q – ii) (R – iv) (S – i)

Answer:
(c) (P – iv) (Q – iii) (R – ii) (S – i)

Question 14.
Which of the following is not the function of liver?
(a) Production of insulin
(b) Detoxification
(c) Storage of glycogen
(d) Production of bile

Answer:
(a) Production of insulin

Question 15.
Assertion : (A) Large intestine also shows the presence of villi like small intestine.
Reason : (B) Absorption of water takes place in large intestine.
(a) Both A and B are true and B is the correct explanation of A
(b) Both A and B are true but B is not the correct explanation of A
(c) A is true but B is false
(d) A is false but B is true

Answer:
(d) A is false but B is true

Question 16.
Which of the following is not true regarding intestinal villi?
(a) They possess microvilli.
(b) They increase the surface area.
(c) They are supplied with capillaries and the lacteal vessels.
(d) They only participate in digestion of fats.

Answer:
(d) They only participate ¡n digestion of fats.

Short Answer Questions

Question 17.
Why are villi present in the intestine and not in the stomach?

Answer:

- The ileal mucosa has numerous vascular projections called villi.
- It is involved in the process of absorption and the cells lining the villi produce numerous microscopic projections called microvilli.
- A brush border appearance increases the surface area enormously.
- Villi are not present in the stomach, because absorption does not occur and digestion happens with the help of gastric juices.

Question 18.
Bile juice contains no digestive enzymes, yet It is important for digestion. Why?

Answer:
Liver does not secrete digestive enzymes. It contains bile pigments hilirubin and hiliverdin which are the break down products of haemoglobin of dead RBCs. bile salts, cholesterol and phospholipids. Bile helps in emulsification of fats. Bile salts reduce the surface tension of fat droplets and break them into small globules. Bile also activates lipase to digest lipids.

Question 19.
List the chemical changes that starch molecule undergoes from the time it reaches the small intestine.

Answer:
In the small intestine, starch digestion gets completed. The pancreatic juice contains pancreatic amylases which acts on polysaccharide and convert into disaccharides (maltose). These cretions of the Brunner's gland along with the secretions of the intestinal glands constitute the intestinal juice or succus entericus. It contains maltose, lactose and sucrose. These convert maltose, lactose and sucrose into monosaccharides, glucose and fructose.

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

Sucrose $\xrightarrow{\text{sucrase}}$ glucose + fructose

Lactose $\xrightarrow{\text{Lactase}}$ glucose + galactose

In the small intestine, complex carbohydrates are converted into simple ghicose. fructose and galactose. These are absorbed by active transport.

Question 20.
How do proteins differ from fats in their energy value and their role in the body?

Answer:
The calorific value and physiological fiel value of one gram of protein are 5.65 Kcal and 4 Kcal respectively. Fat has a calorific value of 9.45 Kcal and the

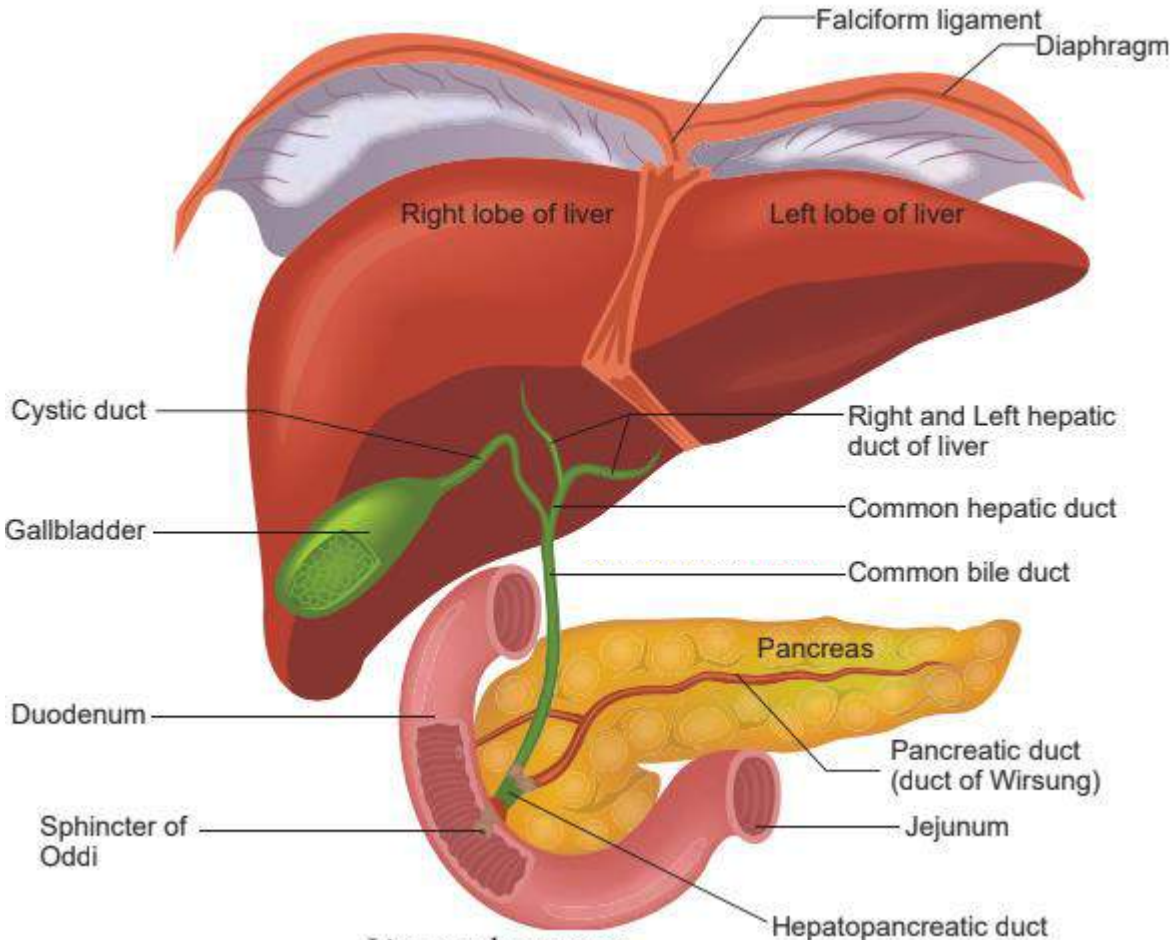
physiological fuel value of 9 Kcal per gram. Proteins are the source of amino acids required for growth and repair of body cells. They are stored in the body only to a certain extent. They replace the worn out protoplasm. They are important for the production of many enzymes. hormones and plasma. The catabolism of amino acids releases toxic nitrogenous wastes which are removed by the kidneys.

Question 21.
Digestive secretions are secreted only when needed. Discuss.

Answer:
Digestive glands are exocrine glands which secrete biological catalysts called enzymes. These enzymes convert the complex. insoluble food materials like carbohydrates, proteins and lipids into simplex, soluble food materials like glucose and fructose, amino acids and fatty acids and glycerol. These digestive creations act only when food materials are available in the alimental)' canal.

Question 22.
Label the given diagram.

Answer:
A – Right and left hepatic duct of liver.
B – Common bile duct.
C – Pancreatic duct (duct of Wirsung)
D – Sphincter of oddi
E – Gall bladder.



Liver and pancreas