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Biology Grade 12 — Chapter 1

Digestive System of Man

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Independent practice MCQs from the supplied Class 12 Biology notes pack. Total: 50 questions.

A. Important / Main Topics

1. The oral cavity is also known as the:

(A) Buccal cavity
(B) Pharyngeal cavity
(C) Thoracic cavity
(D) Abdominal cavity

Correct Answer: A

Explanation: The oral cavity is more commonly known as the buccal cavity and is surrounded by the lips, cheeks, a tongue and a palate.

2. The rough projections on the surface of the tongue are called:

(A) Villi
(B) Papillae
(C) Microvilli
(D) Cilia

Correct Answer: B

Explanation: The tongue has rough projections called papillae on its surface which cause friction useful in handling the food and also contain taste buds.

3. How many pairs of salivary glands are there in the oral cavity?

(A) One
(B) Two
(C) Three
(D) Four

Correct Answer: C

Explanation: There are three pairs of salivary glands: parotid glands, submandibular glands, and sublingual glands.

4. The enzyme salivary amylase digests starch into:

(A) Glucose only
(B) Amino acids
(C) Fatty acids and glycerol
(D) Maltose, maltotriose, and isomaltose

Correct Answer: D

Explanation: The enzyme salivary amylase digests starch into Maltose, maltotriose, and isomaltose.

5. The wave-like muscular contraction that propels food through the digestive tract is called:

(A) Peristalsis
(B) Segmentation
(C) Mastication
(D) Emulsification

Correct Answer: A

Explanation: Peristalsis is a wave-like muscular contraction that propels food and fluids through the digestive tract and other tubular organs.

6. Which sphincter is located at the opening of the upper esophagus?

(A) Lower esophageal sphincter
(B) Upper esophageal sphincter

(C) Pyloric sphincter
(D) Ileocecal sphincter

Correct Answer: B

Explanation: At the opening of the upper esophagus, there is a ring-shaped muscle called the upper esophageal sphincter (UES).

7. The stomach is composed of how many layers of smooth muscles?

(A) One
(B) Two
(C) Three
(D) Four

Correct Answer: C

Explanation: Three — this correctly answers the question.

8. Which cells of the gastric glands secrete hydrochloric acid?

(A) Chief cells
(B) Endocrine cells
(C) Surface mucous cells
(D) Parietal cells

Correct Answer: D

Explanation: Parietal cells — this correctly answers the question.

9. The hormone that stimulates gastric juice secretion is:

(A) Gastrin
(B) Secretin
(C) Cholecystokinin
(D) Insulin

Correct Answer: A

Explanation: Gastrin is released by endocrine cells in the gastric glands of the pyloric region and stimulates additional gastric juice secretion.

10. The first part of the small intestine is the:

(A) Jejunum
(B) Duodenum
(C) Ileum
(D) Cecum

Correct Answer: B

Explanation: The duodenum is the first part of the small intestine, ranging from 20–25 cm in length.

11. Trypsinogen is activated to trypsin by:

(A) Hydrochloric acid
(B) Gastrin
(C) Enterokinase
(D) Pepsin

Correct Answer: C

Explanation: The intestinal glands secrete an activator enzyme called enterokinase which converts trypsinogen into trypsin.

12. The major site of nutrient absorption is the:

(A) Duodenum
(B) Jejunum
(C) Stomach
(D) Ileum

Correct Answer: D

Explanation: The ileum is the major site of nutrient absorption.

13. Which vitamin is produced by bacteria in the large intestine?

(A) Vitamin K
(B) Vitamin A
(C) Vitamin C
(D) Vitamin D

Correct Answer: A

Explanation: The most important vitamins produced by bacteria in the large intestine are Vitamin K and Biotin.

14. The process of expelling feces from the digestive tract through the anus is called:

(A) Deglutition
(B) Defecation
(C) Mastication
(D) Emulsification

Correct Answer: B

Explanation: Defecation is the term for the act of expelling feces from the digestive tract via the anus.

15. Bile is produced by the:

(A) Gall bladder
(B) Pancreas
(C) Liver
(D) Stomach

Correct Answer: C

Explanation: Bile is manufactured in the liver but stored in the gall bladder.

16. Which enzyme in saliva begins the digestion of fats?

(A) Salivary amylase
(B) Pepsin
(C) Trypsin
(D) Lingual lipase

Correct Answer: D

Explanation: Lingual lipase — this correctly answers the question.

17. During the pharyngeal phase of swallowing, which structure covers the larynx to prevent food from entering the trachea?

(A) Epiglottis
(B) Soft palate
(C) Uvula
(D) Tongue

Correct Answer: A

Explanation: The epiglottis is pushed backward over the larynx, protecting the airways and preventing food from entering the trachea.

18. What is the primary function of intrinsic factor secreted by parietal cells?

(A) Digestion of proteins
(B) Absorption of vitamin B12
(C) Emulsification of fats
(D) Activation of pepsinogen

Correct Answer: B

Explanation: Intrinsic factor is a glycoprotein that binds with vitamin B12 and makes the vitamin readily absorbable in the ileum.

19. Why is pepsinogen secreted in an inactive form?

(A) To digest carbohydrates
(B) To activate parietal cells
(C) To protect the chief cells from self-digestion

(D) To neutralize stomach acid

Correct Answer: C

Explanation: To protect the chief cells from self-digestion — this correctly answers the question.

20. Which hormone stimulates the pancreas to secrete bicarbonate?

(A) Gastrin
(B) Cholecystokinin
(C) Insulin
(D) Secretin

Correct Answer: D

Explanation: The predominant effect of secretin on the pancreas is to stimulate duct cells to secrete water and bicarbonate.

21. Where does the absorption of most carbohydrates and proteins occur?

(A) Small intestine
(B) Stomach
(C) Duodenum
(D) Large intestine

Correct Answer: A

Explanation: The small intestine, particularly the ileum, is the major site of nutrient absorption.

22. Which of the following is absorbed into lacteals rather than blood capillaries?

(A) Glucose
(B) Fatty acids and glycerol
(C) Amino acids
(D) Vitamins

Correct Answer: B

Explanation: Lipids are absorbed as fatty acids and glycerol into the lacteals (lymph vessels) of the villi.

23. What is the function of bile salts in digestion?

(A) Digest proteins
(B) Digest carbohydrates
(C) Emulsify fats
(D) Absorb vitamins

Correct Answer: C

Explanation: Bile salts reduce the surface tension of fat globules and emulsify them into droplets, increasing surface area for lipase action.

24. What is the pH of pancreatic juice?

(A) About 2
(B) About 5
(C) About 10
(D) About 8

Correct Answer: D

Explanation: Pancreatic juice is slightly alkaline with a pH of about 8, which neutralizes the acidic chyme from the stomach.

25. The reflex that allows defecation in infants is:

(A) Involuntary
(B) Voluntary
(C) Conditioned
(D) Learned

Correct Answer: A

Explanation: In infants, the defecation reflex is involuntary; the anal sphincter relaxes automatically to allow stool to pass.

B. Less Important / Secondary Topics

26. Which of the following is a function of the liver related to protein metabolism?

(A) Conversion of ammonia to urea
(B) Production of bile
(C) Storage of glycogen
(D) Production of insulin

Correct Answer: A

Explanation: The liver converts poisonous ammonia to urea, which is an end product of protein metabolism and is excreted in the urine.

27. What is the function of the hormone cholecystokinin (CCK)?

(A) Stimulates bicarbonate secretion
(B) Stimulates bile release from the gallbladder
(C) Inhibits gastric secretion
(D) Stimulates insulin release

Correct Answer: B

Explanation: Stimulates bile release from the gallbladder — this correctly answers the question.

28. The appendix is attached to the:

(A) Transverse colon
(B) Descending colon
(C) Cecum
(D) Ascending colon

Correct Answer: C

Explanation: The appendix is a small blind tube about 9 cm long attached to the caecum.

29. What is the primary function of the large intestine?

(A) Digestion of proteins
(B) Production of bile
(C) Secretion of insulin
(D) Absorption of water and electrolytes

Correct Answer: D

Explanation: Absorption of water and electrolytes — this correctly answers the question.

30. Which part of the small intestine receives both bile and pancreatic juice?

(A) Duodenum
(B) Jejunum
(C) Ileum
(D) Cecum

Correct Answer: A

Explanation: The duodenum receives pancreatic juice through the pancreatic duct and bile from the liver/gallbladder.

31. What is the function of the lower esophageal sphincter (LES)?

(A) Allows food into the esophagus
(B) Prevents stomach acid from entering the esophagus
(C) Regulates passage of chyme into the duodenum
(D) Prevents backflow into the ileum

Correct Answer: B

Explanation: The LES usually stays shut to prevent stomach acid and digestive juices from getting into the esophagus.

32. Which of the following is NOT a component of pancreatic juice?

(A) Pancreatic amylase
(B) Pancreatic lipase

(C) Pepsinogen
(D) Trypsinogen

Correct Answer: C

Explanation: Pepsinogen is secreted by chief cells of the stomach, not by the pancreas.

33. The submucosal plexus is located:

(A) Between the outer longitudinal and inner circular smooth muscle layers
(B) Outside the serosa
(C) In the mucosa
(D) In the submucosa

Correct Answer: D

Explanation: The submucosal plexus (Meissner's plexus) is located in the submucosa of the digestive tract.

34. What is the function of the pyloric sphincter?

(A) Regulates passage of chyme into the duodenum
(B) Prevents backflow of food into the esophagus
(C) Allows food to enter the stomach
(D) Prevents backflow into the ileum

Correct Answer: A

Explanation: Regulates passage of chyme into the duodenum — this correctly answers the question.

35. Which of the following correctly describes the myenteric plexus?

(A) It secretes digestive enzymes
(B) It controls motility along the gastrointestinal tract
(C) It produces bile
(D) It absorbs nutrients

Correct Answer: B

Explanation: It controls motility along the gastrointestinal tract — this correctly answers the question.

36. A patient has a condition where the lower esophageal sphincter (LES) fails to close properly. Which of the following is the most likely consequence?

(A) Inability to swallow food
(B) Rapid gastric emptying
(C) Stomach acid reflux into the esophagus
(D) Increased bile production

Correct Answer: C

Explanation: The LES normally stays shut to prevent stomach acid from entering the esophagus; if it fails to close, acid reflux occurs.

37. If the parietal cells of the stomach were destroyed, which of the following would be the most direct consequence?

(A) Loss of pepsinogen secretion
(B) Increased carbohydrate digestion
(C) Increased fat absorption
(D) Impaired protein digestion due to lack of pepsin activation

Correct Answer: D

Explanation: Parietal cells secrete HCl, which is required to convert inactive pepsinogen to active pepsin; without HCl, protein digestion would be impaired.

38. A patient with a duodenal ulcer has excess gastric acid entering the duodenum. Which hormone would be released in response to this acidic chyme?

(A) Secretin
(B) Gastrin
(C) Insulin
(D) Glucagon

Correct Answer: A

Explanation: Acidic chyme in the duodenum stimulates endocrine cells to release secretin, which stimulates bicarbonate secretion to neutralize the acid.

39. A person is unable to absorb fat-soluble vitamins despite normal bile production. Which of the following is the most likely explanation?

(A) Impaired emulsification of fats
(B) Impaired pancreatic lipase activity
(C) Impaired glucose absorption
(D) Impaired amino acid absorption

Correct Answer: B

Explanation: Bile emulsifies fats, but pancreatic lipase is required to digest triglycerides into fatty acids and glycerol; without lipase, fat digestion and subsequent absorption of fat-soluble vitamins would be impaired.

40. Which of the following would occur if the ileum were surgically removed?

(A) Increased absorption of vitamin B12
(B) Increased protein digestion
(C) Decreased absorption of bile salts and vitamin B12
(D) Increased carbohydrate digestion

Correct Answer: C

Explanation: The ileum is the major site of nutrient absorption, including bile salts and vitamin B12 (with intrinsic factor).

41. A patient has a tumor in the pyloric region of the stomach, causing excessive gastrin secretion. Which of the following is the most likely result?

(A) Decreased gastric acid secretion
(B) Increased bile production
(C) Decreased pancreatic enzyme secretion
(D) Increased gastric acid secretion

Correct Answer: D

Explanation: Increased gastric acid secretion — this correctly answers the question.

42. Which of the following best explains why the stomach does not digest itself?

(A) A thick layer of alkaline mucus protects the epithelial cells
(B) The stomach lining is made of keratin
(C) Gastric juice is not acidic
(D) Pepsin is inactive at body temperature

Correct Answer: A

Explanation: The mucus cells secrete viscous and alkaline mucus which lubricates and protects the epithelial cells from the damaging effect of acidic chyme and pepsin.

43. A patient with a blockage in the common bile duct would have impaired digestion of:

(A) Proteins
(B) Fats
(C) Carbohydrates
(D) Nucleic acids

Correct Answer: B

Explanation: Bile is required for emulsification of fats; a blocked bile duct would impair fat digestion.

44. Which of the following correctly describes the relationship between CCK and secretin?

(A) Both are released in response to acidic chyme
(B) Both stimulate gastric acid secretion
(C) CCK stimulates bile release; secretin stimulates bicarbonate secretion
(D) Secretin stimulates bile release; CCK stimulates bicarbonate secretion

Correct Answer: C

Explanation: CCK stimulates bile release; secretin stimulates bicarbonate secretion — this correctly answers the question.

45. A patient with chronic pancreatitis has reduced pancreatic enzyme secretion. Which of the following would be most affected?

(A) Absorption of water
(B) Absorption of vitamin K
(C) Production of bile
(D) Digestion of proteins, fats, and carbohydrates

Correct Answer: D

Explanation: Pancreatic juice contains enzymes for all major classes of food; reduced secretion would impair digestion of proteins, fats, and carbohydrates.

46. Which of the following is the correct sequence of structures through which food passes?

(A) Oral cavity → esophagus → stomach → small intestine → large intestine
(B) Oral cavity → stomach → esophagus → small intestine → large intestine
(C) Oral cavity → esophagus → small intestine → stomach → large intestine
(D) Oral cavity → stomach → small intestine → esophagus → large intestine

Correct Answer: A

Explanation: Food passes from the oral cavity to the esophagus, then to the stomach, small intestine, and large intestine.

47. A patient has a deficiency of enterokinase. Which of the following would be the most direct consequence?

(A) Impaired bile production
(B) Impaired activation of trypsinogen
(C) Impaired gastric acid secretion
(D) Impaired absorption of glucose

Correct Answer: B

Explanation: Impaired activation of trypsinogen — this correctly answers the question.

48. Which of the following statements about the liver is INCORRECT?

(A) It produces bile
(B) It stores glycogen
(C) It produces insulin
(D) It detoxifies harmful substances

Correct Answer: C

Explanation: Insulin is produced by the beta cells of the pancreas, not by the liver.

49. A patient with a vitamin K deficiency may have impaired blood clotting. Which of the following best explains this?

(A) Vitamin K is required for bile production
(B) Vitamin K is required for platelet production
(C) Vitamin K is required for hemoglobin synthesis
(D) Vitamin K is required for synthesis of clotting factors

Correct Answer: D

Explanation: Vitamin K is essential for blood clotting; deficiency can lead to bleeding problems.

50. Which of the following correctly describes the role of the hepatic portal system?

(A) Carries nutrient-rich blood from the digestive organs to the liver
(B) Carries oxygenated blood to the liver
(C) Carries blood from the liver to the heart
(D) Carries blood from the heart to the digestive organs

Correct Answer: A

Explanation: The hepatic portal vein carries blood from the digestive organs to the liver for processing and detoxification.