

Chapter 02: Digestion, Absorption, and Metabolism
Schlenker & Gilbert: Williams' Essentials of Nutrition and Diet Therapy, 11th Edition

MULTIPLE CHOICE

1. The actions involved in the process of digestion are:
 - a. thermal and chemical.
 - b. chemical and segmental.
 - c. muscular and chemical.
 - d. mechanical and thermal.

ANS: C DIF: Easy REF: p. 28
MSC: Type of Question: Knowledge

2. The muscle layer on the outside of the intestinal wall is called the:
 - a. serosa.
 - b. mucosa.
 - c. submucosa.
 - d. muscularis mucosae.

ANS: A DIF: Medium REF: p. 28
MSC: Type of Question: Knowledge

3. Types of muscular movement that occur in the intestine are:
 - a. longitudinal and circular.
 - b. expulsion and traction.
 - c. tonus and clonus.
 - d. intermittent and continuous.

ANS: A DIF: Medium REF: p. 28
MSC: Type of Question: Knowledge

4. The rhythmic contractions that propel food through the intestinal tract are called:
 - a. segmentation.
 - b. peristalsis.
 - c. cardiospasm.
 - d. pendular movements.

ANS: B DIF: Medium REF: p. 28
MSC: Type of Question: Knowledge

5. After ingested food is mixed and churned with gastric secretions, the resulting semifluid mass is called:
 - a. a bolus.
 - b. chyme.
 - c. rennin.
 - d. glycogen.

ANS: B DIF: Medium REF: p. 28
MSC: Type of Question: Knowledge

6. The interrelated network of nerves within the gastrointestinal wall that regulates its muscular action is known as the:
- gastric nerve plexus.
 - biliary nerve plexus.
 - intramural nerve plexus.
 - intestinal nerve plexus.

ANS: C DIF: Hard REF: p. 29
MSC: Type of Question: Knowledge

7. The release of gastric secretions is stimulated by nerve and hormonal stimuli and the:
- ingestion of water.
 - swallowing reflex.
 - presence of food in the stomach.
 - closing of the pyloric sphincter.

ANS: C DIF: Medium REF: p. 33
MSC: Type of Question: Knowledge

8. The lining of the stomach and intestine is protected from self-digestion by:
- pepsinogen.
 - bile.
 - mucus.
 - fat.

ANS: C DIF: Easy REF: p. 33
MSC: Type of Question: Knowledge

9. The action of biting, chewing, and breaking up ingested food into smaller particles is called:
- peristalsis.
 - segmentation.
 - metabolism.
 - mastication.

ANS: D DIF: Easy REF: p. 30
MSC: Type of Question: Knowledge

10. The factor most likely to stimulate digestive secretions is:
- smelling or seeing food.
 - grocery shopping.
 - fasting.
 - exercise.

ANS: A DIF: Medium REF: p. 31
MSC: Type of Question: Knowledge

11. An enzyme secreted by the salivary glands is:
- pepsin.
 - trypsin.
 - sucrase.
 - amylase.

ANS: D DIF: Medium REF: p. 31

MSC: Type of Question: Knowledge

12. The parotid, submandibular, and sublingual glands are found in the:
- mouth.
 - stomach.
 - pancreas.
 - duodenum.

ANS: A DIF: Easy REF: p. 31

MSC: Type of Question: Knowledge

13. Regurgitation or reflux of acidic stomach contents back into the esophagus is known as:
- hiatal hernia.
 - diverticulitis.
 - gastroenteritis.
 - gastroesophageal reflux disease.

ANS: D DIF: Medium REF: p. 32

MSC: Type of Question: Knowledge

14. The rate of gastric emptying depends on the:
- time of day food is consumed.
 - composition of food consumed.
 - rate of food consumption.
 - frequency of eating.

ANS: B DIF: Medium REF: p. 32

MSC: Type of Question: Knowledge

15. Digestion of protein by pepsin in the stomach requires a pH between:
- 1.8 and 3.5.
 - 4.8 and 7.0.
 - 6.8 and 8.5.
 - 7.8 and 10.0.

ANS: A DIF: Hard REF: p. 32

MSC: Type of Question: Knowledge

16. The hormone that prevents excessive gastric activity is:
- gastrin.
 - enterogastrone.
 - secretin.
 - cholecystokinin.

ANS: B DIF: Hard REF: p. 33

MSC: Type of Question: Knowledge

17. The substance that activates pepsinogen to pepsin is:
- bile.
 - gastrin.
 - secretin.
 - hydrochloric acid.

ANS: D DIF: Medium REF: p. 33
MSC: Type of Question: Knowledge

18. Mucus is produced by the salivary glands and the:
- intestinal glands.
 - esophageal glands.
 - pineal gland.
 - islets of Langerhans.

ANS: A DIF: Medium REF: p. 34
MSC: Type of Question: Knowledge

19. The hormone secretin stimulates production of a buffering solution for the duodenum by the:
- stomach.
 - liver.
 - pancreas.
 - oxyntic cells.

ANS: C DIF: Medium REF: p. 34
MSC: Type of Question: Knowledge

20. The substance that acts as an emulsifier and helps absorb digested fat is:
- bile.
 - trypsin.
 - lipase.
 - cholecystinin (CCK).

ANS: A DIF: Easy REF: p. 35
MSC: Type of Question: Knowledge

21. The hormone that stimulates the gallbladder to contract is:
- secretin.
 - cholecystinin (CCK).
 - gastrin.
 - gastric inhibitory polypeptide (GIP).

ANS: B DIF: Medium REF: p. 35
MSC: Type of Question: Knowledge

22. The stimulus for the release of cholecystinin (CCK) is the:
- presence of food in the stomach.
 - presence of fat in the duodenum.
 - entry of acid chyme into the ileum.
 - entry of bile into the gallbladder.

ANS: B DIF: Hard REF: p. 35
MSC: Type of Question: Knowledge

23. Cholecystinin (CCK) is produced in the:
- duodenum.
 - stomach.
 - pancreas.
 - liver.

ANS: A DIF: Medium REF: p. 35
MSC: Type of Question: Knowledge

24. The small, fingerlike projections into the intestinal lumen are called:
- villi.
 - goblets.
 - lacteals.
 - polyps.

ANS: A DIF: Easy REF: p. 35
MSC: Type of Question: Knowledge

25. Absorption of most nutrients occurs in the:
- large intestine.
 - small intestine.
 - stomach.
 - mouth.

ANS: B DIF: Medium REF: p. 37
MSC: Type of Question: Knowledge

26. Probiotics are:
- indigestible carbohydrates that promote growth of health-promoting bacteria.
 - antibiotics that prevent growth of harmful bacteria.
 - nutritional supplements of health-promoting bacteria.
 - commercial fiber supplements that have a laxative effect.

ANS: C DIF: Medium REF: pp. 41-42
MSC: Type of Question: Knowledge

27. The end products of digestion of macronutrients include fatty acids, amino acids, and:
- monosaccharides.
 - polysaccharides.
 - enzymes.
 - cholesterol.

ANS: A DIF: Easy REF: p. 35
MSC: Type of Question: Knowledge

28. The pathogenic bacterium associated with peptic ulcer disease and gastric cancer is:
- Lactobacillus*.
 - Bifidobacterium*.
 - H. pylori*.
 - E. coli*.

ANS: C DIF: Medium REF: p. 42
MSC: Type of Question: Knowledge

29. In addition to active transport, a process involved in absorbing food in the small intestine is:
- pinocytosis.
 - excretion.
 - phagocytosis.

d. electrochemical diffusion.

ANS: A DIF: Hard REF: p. 37
MSC: Type of Question: Knowledge

30. After absorption, the end products of carbohydrate and protein digestion enter the:
- enterohepatic circulation.
 - gastrointestinal circulation.
 - common bile duct.
 - portal blood system.

ANS: D DIF: Medium REF: p. 37
MSC: Type of Question: Knowledge

31. Chylomicrons are:
- formed in the hepatic system.
 - composed of triglycerides and cholesterol only.
 - absorbed in the large intestine.
 - cleared from the blood by lipoprotein lipase.

ANS: D DIF: Hard REF: p. 37
MSC: Type of Question: Knowledge

32. The primary nutritional function of the large intestine is:
- absorption of fats.
 - excretion of waste products.
 - excretion of bacteria.
 - absorption of water.

ANS: D DIF: Easy REF: p. 38
MSC: Type of Question: Knowledge

33. The valve that controls the passage of chyme from the small intestine into the cecum is called the:
- ileocecal valve.
 - pyloric valve.
 - cardiac valve.
 - hepatic valve.

ANS: A DIF: Easy REF: p. 38
MSC: Type of Question: Knowledge

34. Bacteria found in the colon are important because they:
- synthesize important vitamins.
 - complete the process of absorption.
 - synthesize some minerals.
 - finish the process of digestion.

ANS: A DIF: Medium REF: p. 38
MSC: Type of Question: Knowledge

35. Gas formation in the colon is the result of:
- ingesting refined foods.

- b. ingesting too much water.
- c. swallowing air while eating.
- d. bacterial action on organic compounds.

ANS: D DIF: Medium REF: pp. 38-39
MSC: Type of Question: Knowledge

36. Feces are composed mainly of bacteria, mucosal cells, mucus, and:
- a. bile.
 - b. enzymes.
 - c. fiber.
 - d. chyme.

ANS: C DIF: Medium REF: p. 39
MSC: Type of Question: Knowledge

37. The process of converting glycogen to glucose is called:
- a. gluconeogenesis.
 - b. glycogenolysis.
 - c. glyconeogenesis.
 - d. gluconeogenesis.

ANS: B DIF: Hard REF: p. 43
MSC: Type of Question: Knowledge

38. The production of glucose from protein, lactate, or glycerol is called:
- a. glycolysis.
 - b. gluconeogenesis.
 - c. glycogenolysis.
 - d. gluconeogenesis.

ANS: B DIF: Hard REF: p. 44
MSC: Type of Question: Knowledge

39. Gluconeogenesis occurs in the:
- a. muscles.
 - b. pancreas.
 - c. liver.
 - d. spleen.

ANS: C DIF: Hard REF: p. 43
MSC: Type of Question: Knowledge

40. The component of fat that can be used to make glucose (by gluconeogenesis) is:
- a. glycogen.
 - b. fatty acids.
 - c. glycerol.
 - d. monoglyceride.

ANS: C DIF: Medium REF: p. 43
MSC: Type of Question: Knowledge

41. A major function of glucose is to:

- a. produce energy.
- b. transport oxygen to cells.
- c. convert fat to glycogen.
- d. maintain body weight.

ANS: A DIF: Easy REF: p. 43
MSC: Type of Question: Knowledge

42. Metabolic and hormonal responses are triggered to restore blood glucose to normal when blood glucose level decreases to:
- a. 70 mg/dL.
 - b. 85 mg/dL.
 - c. 90 mg/dL.
 - d. 100 mg/dL.

ANS: A
The normal range for blood glucose level is 70 to 140 mg/dL. A decrease in blood glucose level below 70 mg/dL will trigger an increase in hormones that increase blood glucose level (glucagon, somatostatin, steroid hormones, epinephrine, growth hormone, adrenocorticotrophic hormone, and/or thyroxine) and a decrease in insulin levels to increase blood glucose levels to within this range.

DIF: Hard REF: p. 43 MSC: Type of Question: Application

43. The substance that serves as a vehicle for fat transport in the bloodstream is:
- a. fatty acids.
 - b. glycerol.
 - c. lipoproteins.
 - d. amino acids.

ANS: C DIF: Medium REF: p. 44
MSC: Type of Question: Knowledge

44. The hormone that acts to lower blood sugar levels is:
- a. insulin.
 - b. glucagon.
 - c. thyroxine.
 - d. epinephrine.

ANS: A DIF: Easy REF: p. 43
MSC: Type of Question: Knowledge

45. The hormone that breaks down liver glycogen to glucose during fasting or sleep is:
- a. thyroxine.
 - b. glucagon.
 - c. cortisone.
 - d. insulin.

ANS: B DIF: Hard REF: p. 43
MSC: Type of Question: Knowledge

46. Hormones that increase the release of free fatty acids include:

- a. insulin and glucagon.
- b. cortisol and thyroxine.
- c. somatostatin and gastrin.
- d. lipoprotein lipase and secretin.

ANS: B DIF: Hard REF: p. 44
MSC: Type of Question: Knowledge

47. The hormone that conserves fat is:
- a. cortisone.
 - b. glucagon.
 - c. insulin.
 - d. epinephrine.

ANS: C DIF: Medium REF: p. 44
MSC: Type of Question: Knowledge

48. Synthesis of protein is governed by:
- a. deoxyribonucleic acid (DNA) in the cell nucleus.
 - b. daily variations in protein intake.
 - c. blood glucose levels.
 - d. metabolism in the liver.

ANS: A DIF: Medium REF: p. 44
MSC: Type of Question: Knowledge

49. A hormone that has an anabolic effect is:
- a. parathyroid hormone.
 - b. cortisone.
 - c. gonadotropins.
 - d. epinephrine.

ANS: C DIF: Medium REF: p. 44
MSC: Type of Question: Knowledge

50. During the process of deamination, the nitrogen portion of amino acids is converted to:
- a. ammonia.
 - b. protein.
 - c. purines.
 - d. glycogen.

ANS: A DIF: Medium REF: p. 44
MSC: Type of Question: Knowledge