Chapter 2: Digestion, Absorption, and Metabolism
Schlenker & Long: Williams' Essentials of Nutrition & Diet Therapy: 10th Edition

MULTIPLE CHOICE

1. The actions involved in the process of digestion are:
   1. thermal and chemical.
   2. chemical and segmental.
   3. muscular and chemical.
   4. mechanical and thermal.

   ANS: 3 PTS: 1 DIF: Easy REF: p. 26
   MSC: Type of Question: Knowledge

2. The muscle layer on the outside of the intestinal wall is called the:
   1. serosa.
   2. mucosa.
   3. submucosa.
   4. muscularis mucosae.

   ANS: 1 PTS: 1 DIF: Medium REF: p. 26
   MSC: Type of Question: Knowledge

3. Types of muscular movement that occur in the intestine are:
   1. longitudinal and circular.
   2. expulsion and traction.
   3. tonus and clonus.
   4. intermittent and continuous.

   ANS: 1 PTS: 1 DIF: Medium REF: p. 26
   MSC: Type of Question: Knowledge

4. The rhythmic contractions that propel food through the intestinal tract are called:
   1. segmentation.
   2. peristalsis.
   3. cardiospasm.
   4. pendular movements.

   ANS: 2 PTS: 1 DIF: Medium REF: p. 26
   MSC: Type of Question: Knowledge

5. After ingested food is mixed and churned with gastric secretions, the resulting semifluid mass is called:
   1. chyle.
   2. chyme.
   3. rennin.
   4. glycogen.

   ANS: 2 PTS: 1 DIF: Medium REF: p. 26
   MSC: Type of Question: Knowledge

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

   ANS: 3 PTS: 1 DIF: Hard REF: p. 27
   MSC: Type of Question: Knowledge

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

   ANS: 3 PTS: 1 DIF: Medium REF: p. 31
   MSC: Type of Question: Knowledge

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

   ANS: 3 PTS: 1 DIF: Easy REF: p. 31
   MSC: Type of Question: Knowledge

9. The action of biting, chewing, and breaking up ingested food into smaller particles is called:
   1. peristalsis.
   2. segmentation.
   3. cardiospasm.
   4. mastication.

   ANS: 4 PTS: 1 DIF: Easy REF: p. 28
   MSC: Type of Question: Knowledge

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

    ANS: 1 PTS: 1 DIF: Medium REF: p. 26
    MSC: Type of Question: Knowledge

11. The enzyme secreted by the salivary glands is:
    1. pepsin.
    2. lipase.
    3. sucrase.
    4. amylase.

ANS: 4 PTS: 1 DIF: Medium REF: p. 29
MSC: Type of Question: Knowledge

12. The parotid, submandibular, and sublingual glands are found in the:
    1. mouth.
    2. stomach.
    3. pancreas.
    4. duodenum.

    ANS: 1 PTS: 1 DIF: Easy REF: p. 25
    MSC: Type of Question: Knowledge

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

    ANS: 4 PTS: 1 DIF: Medium REF: p. 29
    MSC: Type of Question: Knowledge

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

    ANS: 2 PTS: 1 DIF: Medium REF: p. 30
    MSC: Type of Question: Knowledge

15. Digestion of protein by pepsin in the stomach requires a pH between:
    1. 1.8 and 3.5.
    2. 4.8 and 7.0.
    3. 6.8 and 8.5.
    4. 7.8 and 10.0.

    ANS: 1 PTS: 1 DIF: Hard REF: p. 31
    MSC: Type of Question: Knowledge

16. The hormone that prevents excessive gastric activity is:
    1. gastrin.
    2. enterogastrone.
    3. secretin.
    4. cholecystokinin.

    ANS: 2 PTS: 1 DIF: Hard REF: p. 31
    MSC: Type of Question: Knowledge

17. The substance that activates pepsinogen to pepsin is:
    1. bile.
    2. gastrin.
    3. secretin.
    4. hydrochloric acid.

ANS: 4 PTS: 1 DIF: Easy REF: p. 31
MSC: Type of Question: Knowledge

18. Mucus is produced by the salivary glands and the:
    1. intestinal glands.
    2. esophageal glands.
    3. pineal gland.
    4. islets of Langerhans.

    ANS: 1 PTS: 1 DIF: Medium REF: p. 32
    MSC: Type of Question: Knowledge

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

    ANS: 3 PTS: 1 DIF: Medium REF: p. 32
    MSC: Type of Question: Knowledge

20. The substance that acts as an emulsifier and helps absorb digested fat is:
    1. bile.
    2. trypsin.
    3. lipase.
    4. cholecystokinin (CCK).

    ANS: 1 PTS: 1 DIF: Easy REF: p. 33
    MSC: Type of Question: Knowledge

21. The hormone that stimulates the gallbladder to contract is:
    1. secretin.
    2. CCK.
    3. gastrin.
    4. gastric inhibitory peptide (GIP).

    ANS: 2 PTS: 1 DIF: Medium REF: p. 33
    MSC: Type of Question: Knowledge

22. The stimulus for the release of CCK is the:
    1. presence of food in the stomach.
    2. presence of fat in the duodenum.
    3. entry of acid chyme into the ileum.
    4. entry of bile into the gallbladder.

    ANS: 2 PTS: 1 DIF: Medium REF: p. 33
    MSC: Type of Question: Knowledge

23. CCK is produced in the:
    1. duodenum.
    2. stomach.
    3. pancreas.

4. liver.

ANS: 1 PTS: 1 DIF: Medium REF: p. 33
MSC: Type of Question: Knowledge

24. The small, fingerlike projections into the intestinal lumen are called:
    1. villi.
    2. goblets.
    3. lacteals.
    4. polyps.

ANS: 1 PTS: 1 DIF: Easy REF: p. 33
MSC: Type of Question: Knowledge

25. Absorption of most nutrients occurs in the:
    1. large intestine.
    2. small intestine.
    3. stomach.
    4. mouth.

ANS: 2 PTS: 1 DIF: Medium REF: p. 39
MSC: Type of Question: Knowledge

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

ANS: 3 PTS: 1 DIF: Medium REF: p. 39
MSC: Type of Question: Knowledge

27. The end products of digestion of macronutrients include fatty acids, amino acids, and:
    1. monosaccharides.
    2. polysaccharides.
    3. enzymes.
    4. cholesterol.

ANS: 1 PTS: 1 DIF: Easy REF: p. 33
MSC: Type of Question: Knowledge

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

ANS: 3 PTS: 1 DIF: Medium REF: p. 39
MSC: Type of Question: Knowledge

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

3. phagocytosis.
4. electrochemical diffusion.

ANS: 1 PTS: 1 DIF: Hard REF: p. 34
MSC: Type of Question: Knowledge

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

ANS: 4 PTS: 1 DIF: Medium REF: p. 35
MSC: Type of Question: Knowledge

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

ANS: 4 PTS: 1 DIF: Hard REF: p. 35
MSC: Type of Question: Knowledge

32. The primary nutritional function of the large intestine is:
1. absorption of fats.
2. excretion of waste products.
3. excretion of bacteria.
4. absorption of water.

ANS: 4 PTS: 1 DIF: Easy REF: p. 35
MSC: Type of Question: Knowledge

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

ANS: 1 PTS: 1 DIF: Easy REF: p. 35
MSC: Type of Question: Knowledge

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

ANS: 1 PTS: 1 DIF: Medium REF: p. 36
MSC: Type of Question: Knowledge

35. Gas formation in the colon is the result of:

1. ingesting refined foods.
2. ingesting too much water.
3. swallowing air while eating.
4. bacterial action on organic compounds.

ANS: 4 PTS: 1 DIF: Medium REF: p. 36
MSC: Type of Question: Knowledge

36. Feces are composed mainly of bacteria, mucus, and:
1. bile.
2. enzymes.
3. fiber.
4. chyme.

ANS: 3 PTS: 1 DIF: Medium REF: p. 37
MSC: Type of Question: Knowledge

37. The process of converting glycogen to glucose is called:
1. glucogenesis.
2. glycogenolysis.
3. glyconeogenesis.
4. gluconeogenesis.

ANS: 2 PTS: 1 DIF: Hard REF: p. 41
MSC: Type of Question: Knowledge

38. The production of glucose from protein, lactate, or glycerol is called:
1. glycolysis.
2. gluconeogenesis.
3. glycogenolysis.
4. glucogenesis.

ANS: 2 PTS: 1 DIF: Medium REF: p. 40
MSC: Type of Question: Knowledge

39. Gluconeogenesis occurs in the:
1. muscles.
2. pancreas.
3. liver.
4. spleen.

ANS: 3 PTS: 1 DIF: Hard REF: p. 40
MSC: Type of Question: Knowledge

40. The component of fat that can be used to make glucose (by gluconeogenesis) is:
1. glycogen.
2. fatty acids.
3. glycerol.
4. monoglyceride.

ANS: 3 PTS: 1 DIF: Medium REF: p. 40
MSC: Type of Question: Knowledge

41. A major function of glucose is to:
    1. produce energy.
    2. transport oxygen to cells.
    3. convert fat to glycogen.
    4. maintain body weight.

    ANS: 1 PTS: 1 DIF: Easy REF: p. 40
    MSC: Type of Question: Knowledge

42. Metabolic and hormonal responses are triggered to restore blood glucose to normal when blood glucose level decreases to:
    1. 70 mg/dL.
    2. 85 mg/dL.
    3. 90 mg/dL.
    4. 100 mg/dL.

    ANS: 1
    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, adrenocorticotropic hormone, and/or thyroxine) and a decrease in insulin levels to increase blood glucose levels to within this range.

    PTS: 1 DIF: Hard REF: p. 40
    MSC: Type of Question: Application

43. The substance that serves as a vehicle for fat transport in the bloodstream is:
    1. fatty acids.
    2. glycerol.
    3. lipoproteins.
    4. amino acids.

    ANS: 3 PTS: 1 DIF: Medium REF: p. 41
    MSC: Type of Question: Knowledge

44. The hormone that acts to lower blood sugar levels is:
    1. insulin.
    2. glucagon.
    3. thyroxine.
    4. epinephrine.

    ANS: 1 PTS: 1 DIF: Easy REF: p. 40
    MSC: Type of Question: Knowledge

45. The hormone that breaks down liver glycogen to glucose during fasting or sleep is:
    1. thyroxine.
    2. glucagon.
    3. cortisone.
    4. insulin.

    ANS: 2 PTS: 1 DIF: Hard REF: p. 40
    MSC: Type of Question: Knowledge

46. Hormones that increase the release of free fatty acids include:
    1. insulin and glucagon.
    2. cortisol and thyroxine.
    3. somatostatin and gastrin.
    4. lipoprotein lipase and secretin.

    ANS: 2 PTS: 1 DIF: Medium REF: p. 41
    MSC: Type of Question: Knowledge

47. The hormone that conserves fat is:
    1. cortisone.
    2. glucagon.
    3. insulin.
    4. epinephrine.

    ANS: 3 PTS: 1 DIF: Medium REF: p. 41
    MSC: Type of Question: Knowledge

48. Synthesis of protein is governed by:
    1. deoxyribonucleic acid (DNA) in the cell nucleus.
    2. daily variations in protein intake.
    3. blood glucose levels.
    4. metabolism in the liver.

    ANS: 1 PTS: 1 DIF: Medium REF: p. 41
    MSC: Type of Question: Knowledge

49. A hormone that has an anabolic effect is:
    1. parathyroid hormone.
    2. cortisone.
    3. gonadotropins.
    4. epinephrine.

    ANS: 3 PTS: 1 DIF: Medium REF: p. 41
    MSC: Type of Question: Knowledge

50. During the process of deamination, the nitrogen portion of amino acids is converted to:
    1. ammonia.
    2. protein.
    3. purines.
    4. glycogen.

    ANS: 1 PTS: 1 DIF: Medium REF: p. 41
    MSC: Type of Question: Knowledge