Using Figure 14.1, identify the following:

1) The mouth (oral cavity) is indicated by _______.
   A) Label C  
   B) Label D  
   C) Label E  
   D) Label B  
   E) Label A  
   Answer: E  
   Page Ref: 464  
   Bloom's: 1) Knowledge
2) The large intestine is indicated by ________.
A) Label J  
B) Label L  
C) Label K  
D) Label M  
E) Label N  
Answer:  A  
Page Ref: 464  
Bloom's:  1) Knowledge

3) The salivary glands are indicated by ________.
A) Label J  
B) Label L  
C) Label M  
D) Label N  
E) Label O  
Answer:  E  
Page Ref: 464  
Bloom's:  1) Knowledge

4) The small intestine is indicated by ________.
A) Label H  
B) Label J  
C) Label D  
D) Label F  
E) Label G  
Answer:  D  
Page Ref: 464  
Bloom's:  1) Knowledge

5) The liver is indicated by ________.
A) Label F  
B) Label D  
C) Label E  
D) Label G  
E) Label L  
Answer:  B  
Page Ref: 464  
Bloom's:  1) Knowledge
6) The tongue is indicated by ________.
A) Label F
B) Label D
C) Label B
D) Label A
E) Label C
Answer: C
Page Ref: 464
Bloom's: 1) Knowledge

7) The stomach is indicated by ________.
A) Label K
B) Label M
C) Label L
D) Label O
E) Label N
Answer: B
Page Ref: 464
Bloom's: 1) Knowledge

8) The esophagus is indicated by ________.
A) Label C
B) Label D
C) Label E
D) Label A
E) Label G
Answer: A
Page Ref: 464
Bloom's: 1) Knowledge

9) The rectum is indicated by ________.
A) Label O
B) Label N
C) Label K
D) Label I
E) Label J
Answer: D
Page Ref: 464
Bloom's: 1) Knowledge
10) The spleen is indicated by ________.
A) Label D
B) Label E
C) Label K
D) Label G
E) Label F
Answer: C
Page Ref: 464
Bloom's: 1) Knowledge

11) The pharynx is indicated by ________.
A) Label N
B) Label F
C) Label K
D) Label M
E) Label L
Answer: A
Page Ref: 464
Bloom's: 1) Knowledge

12) The anus is indicated by ________.
A) Label K
B) Label L
C) Label M
D) Label O
E) Label G
Answer: E
Page Ref: 464
Bloom's: 1) Knowledge

13) The appendix is indicated by ________.
A) Label I
B) Label F
C) Label D
D) Label G
E) Label H
Answer: E
Page Ref: 464
Bloom's: 1) Knowledge
14) The pancreas is indicated by ________.
A) Label I  
B) Label E  
C) Label G  
D) Label M  
E) Label L  
Answer:  E  
Page Ref: 464  
Bloom's:  1) Knowledge

15) The gallbladder is indicated by ________.
A) Label C  
B) Label E  
C) Label D  
D) Label F  
E) Label I  
Answer:  B  
Page Ref: 464  
Bloom's:  1) Knowledge

16) The process of physically and chemically breaking food particles down is referred to as ________.
A) digestion  
B) defecation  
C) ingestion  
D) absorption  
Answer:  A  
Page Ref: 463  
Bloom's:  1) Knowledge

17) The ________ runs from the pharynx through the diaphragm to the stomach.
A) trachea  
B) esophagus  
C) larynx  
D) small intestine  
Answer:  B  
Page Ref: 466  
Bloom's:  1) Knowledge

18) The innermost layer of the alimentary canal is referred to as the ________.
A) serosa  
B) submucosa  
C) mucosa  
D) muscularis externa  
Answer:  C  
Page Ref: 466  
Bloom's:  1) Knowledge
19) The two intrinsic nerve plexuses serving the alimentary canal are the ________.
A) solar; sympathetic
B) submucosa; myenteric
C) autonomic; somatic
D) mucosa; submucosa
Answer:  B
Page Ref: 466
Bloom's:  1) Knowledge

20) The ________ sphincter, or valve, controls food movement from the stomach into the small intestine.
A) ileocecal
B) cardioesophageal
C) pyloric
D) anal
Answer:  C
Page Ref: 467
Bloom's:  1) Knowledge

21) Large wrinkle-like folds in the stomach lining, present when the stomach is empty, that allow for expansion when the stomach is filling are called ________.
A) villi
B) haustra
C) microvilli
D) rugae
Answer:  D
Page Ref: 467
Bloom's:  1) Knowledge

22) Intrinsic factor, produced by cells in the stomach, is necessary for the absorption of vitamin ________ in the small intestine.
A) B9
B) B3
C) B6
D) B12
Answer:  D
Page Ref: 469
Bloom's:  1) Knowledge
23) The three subdivisions of the small intestine are ________.
   A) cecum, colon, rectum
   B) duodenum, jejunum, ileum
   C) cardiac, body, pylorus
   D) ileum, cecum, rectum
   Answer:  B
   Page Ref: 469
   Bloom's:  1) Knowledge

24) The fingerlike projections of the small intestine increase the surface area and are known as ________.
   A) haustra
   B) cilia
   C) villi
   D) rugae
   Answer:  C
   Page Ref: 470
   Bloom's:  1) Knowledge

25) Bile is formed by the ________.
   A) spleen
   B) liver
   C) gallbladder
   D) pancreas
   Answer:  B
   Page Ref: 469-470
   Bloom's:  1) Knowledge

26) Deep folds of both the mucosa and submucosa in the small intestine that increase surface are known as ________.
   A) circular folds (plicae circulares)
   B) microvilli
   C) haustra
   D) villi
   Answer:  A
   Page Ref: 470
   Bloom's:  1) Knowledge

27) Cells abundant within the large intestine that produce large amounts of lubricating mucus to aid in the passage of feces to the end of the digestive tract are called ________.
   A) parietal cells
   B) chief cells
   C) goblet cells
   D) enteroendocrine cells
   Answer:  C
   Page Ref: 471
   Bloom's:  1) Knowledge
28) The process of chewing is known as ________.
   A) deglutition
   B) segmentation
   C) peristalsis
   D) mastication
   Answer: D
   Page Ref: 473
   Bloom's: 1) Knowledge

29) The number of baby teeth a child has is ________.
   A) 12
   B) 20
   C) 28
   D) 32
   Answer: B
   Page Ref: 473
   Bloom's: 1) Knowledge

30) The portion of the tooth embedded in the jawbone is the ________.
   A) neck
   B) enamel
   C) crown
   D) root
   Answer: D
   Page Ref: 474
   Bloom's: 1) Knowledge

31) The enzyme produced by the salivary glands used in the breakdown of starches is salivary ________.
   A) chymotrypsin
   B) nuclease
   C) amylase
   D) lipase
   Answer: C
   Page Ref: 475
   Bloom's: 1) Knowledge

32) The active, voluntary process of placing food in one's mouth is ________.
   A) defecation
   B) ingestion
   C) mastication
   D) deglutition
   Answer: B
   Page Ref: 477
   Bloom's: 1) Knowledge
33) When digestion is not occurring in the small intestine, bile is stored in the ________.
A) liver  
B) gallbladder  
C) pancreas  
D) spleen  
Answer: B  
Page Ref: 475  
Bloom's: 1) Knowledge

34) The process of eliminating indigestible residues from the GI tract is called ________.
A) deglutition  
B) segmentation  
C) mastication  
D) defecation  
Answer: D  
Page Ref: 478  
Bloom's: 1) Knowledge

35) Two hormones that promote the release of bile and pancreatic juice into the small intestine are ________.
A) secretin; cholecystokinin (CCK)  
B) gastric inhibitory peptide (GIP); histamine  
C) somatostatin; secretin  
D) gastrin; histamine  
Answer: A  
Page Ref: 483-484  
Bloom's: 1) Knowledge

36) The hormone responsible for promoting the release of pepsinogens, mucus, and hydrochloric acid in the stomach is called ________.
A) insulin  
B) cholecystokinin (CCK)  
C) gastrin  
D) secretin  
Answer: C  
Page Ref: 469, 485  
Bloom's: 1) Knowledge

37) The ________ reflex inhibits the stomach's activities and slows the emptying of the stomach.
A) rooting  
B) enterogastric  
C) sucking  
D) defecation  
Answer: B  
Page Ref: 482  
Bloom's: 1) Knowledge
38) Hydrochloric acid is necessary in the stomach for the conversion of pepsinogen into its active protein-digesting form called ________.
   A) pepsin
   B) rennin
   C) amylase
   D) peptidase
   Answer: A
   Page Ref: 469, 481
   Bloom's: 1) Knowledge

39) The hormones secretin and cholecystokinin target the pancreas, ________, and ________ to release pancreatic juice and bile into the small intestine for digestion.
   A) gallbladder, stomach
   B) liver, spleen
   C) stomach, spleen
   D) gallbladder, liver
   Answer: D
   Page Ref: 483
   Bloom's: 1) Knowledge

40) When feces are forced into the rectum by mass movements and the wall of the rectum becomes stretched, the ________ reflex is initiated.
   A) defecation
   B) sucking
   C) enterogastric
   D) rooting
   Answer: A
   Page Ref: 485
   Bloom's: 1) Knowledge

41) The energy value of foods is measured in units called ________.
   A) BMI
   B) Hertz
   C) kilocalories (kcal) or Calories
   D) Joules
   Answer: C
   Page Ref: 487
   Bloom's: 1) Knowledge

42) Sugars and starches are types of organic compounds known as ________.
   A) nucleic acids
   B) lipids
   C) proteins
   D) carbohydrates
   Answer: D
   Page Ref: 490
   Bloom's: 1) Knowledge
43) ________ refers to all chemical reactions necessary to maintain life.
A) Digestion
B) Metabolism
C) Homeostasis
D) Nutrition
Answer: B
Page Ref: 490
Bloom's: 1) Knowledge

44) The major fuel for making ATP in most cells of the body is a type of carbohydrate known as ________.
A) cellulose
B) glucose
C) starch
D) saturated fat
Answer: B
Page Ref: 490
Bloom's: 1) Knowledge

45) The three main metabolic pathways involved in cellular respiration are ________.
A) gluconeogenesis, glycolysis, glycogenolysis
B) anaerobic, aerobic, and fermentation
C) glycolysis, Krebs cycle, and electron transport chain
D) lactic acid fermentation, alcohol fermentation, glycolysis
Answer: C
Page Ref: 490
Bloom's: 1) Knowledge

46) Fat oxidation products can acidify the blood, a condition known as ________.
A) cirrhosis
B) alkalosis
C) acidosis or ketoacidosis
D) hepatitis
Answer: C
Page Ref: 494
Bloom's: 1) Knowledge

47) The process of making glucose from non-carbohydrate sources, such as fats and proteins, is known as ________.
A) glycogenolysis
B) gluconeogenesis
C) glycolysis
D) glycogenesis
Answer: B
Page Ref: 495
Bloom's: 1) Knowledge
48) The lipoprotein that transports cholesterol and other lipids to body cells is called _______.
A) high-density lipoprotein or HDL
B) low-density lipoprotein or LDL
C) vitamin D
D) cortisol
Answer: B
Page Ref: 496
Bloom's: 1) Knowledge

49) The total amount of kilocalories the body must consume to fuel all ongoing activities, which increases dramatically during physical exertion, is called the _______.
A) total metabolic rate (TMR)
B) homeostasis
C) basal metabolic rate (BMR)
D) body mass index (BMI)
Answer: A
Page Ref: 498
Bloom's: 1) Knowledge

50) The reflex that helps babies hold onto a breast (or bottle) and swallow is the _______ reflex.
A) flexor
B) rooting
C) enterogastric
D) sucking
Answer: D
Page Ref: 502
Bloom's: 1) Knowledge
14.2 Multiple Choice Part II Questions

1) The area in the mouth contained by the teeth is known as ________.
   A) vestibule
   B) uvula
   C) labia
   D) oral cavity proper
   E) lingual frenulum
   Answer:  D
   Page Ref: 465
   Bloom's:  1) Knowledge

2) Which one of the following represents the correct order through which food passes in the alimentary canal?
   A) mouth, pharynx, esophagus, stomach, large intestine, small intestine
   B) mouth, esophagus, pharynx, stomach, small intestine, large intestine
   C) pharynx, mouth, esophagus, stomach, large intestine, small intestine
   D) mouth, pharynx, esophagus, stomach, small intestine, large intestine
   E) mouth, pharynx, esophagus, small intestine, stomach, large intestine
   Answer:  D
   Page Ref: 465
   Bloom's:  4) Analysis

3) What protects the anterior opening of the mouth?
   A) uvula
   B) nares
   C) labia
   D) teeth
   E) salivary glands
   Answer:  C
   Page Ref: 465
   Bloom's:  1) Knowledge

4) The fold of mucous membrane that secures the tongue to the floor of the mouth and limits its posterior movements is called the ________.
   A) lingual frenulum
   B) uvula
   C) submandibular salivary gland
   D) periodontal membrane
   E) vestibule
   Answer:  A
   Page Ref: 465
   Bloom's:  1) Knowledge
5) Which one of the following is continuous with the esophagus?
   A) nasopharynx
   B) oropharynx
   C) linguopharynx
   D) laryngopharynx
   E) esophagopharynx
   Answer: D
   Page Ref: 466
   Bloom's: 1) Knowledge

6) Which of the following is the outermost layer of the GI tract that lines the abdominopelvic cavity?
   A) mucosa
   B) submucosa
   C) visceral peritoneum
   D) muscularis externa
   E) parietal peritoneum
   Answer: E
   Page Ref: 466
   Bloom's: 1) Knowledge

7) The submucosal and myenteric nerve plexuses that help regulate the mobility and secretory activity of the GI tract organs are both part of the ________.
   A) somatic nervous system
   B) autonomic nervous system
   C) sympathetic nervous system
   D) fight-or-flight mechanism
   E) central nervous system
   Answer: B
   Page Ref: 466
   Bloom's: 1) Knowledge

8) What sphincter regulates the passage of food from the esophagus into the stomach?
   A) internal anal sphincter
   B) external anal sphincter
   C) ileocecal sphincter
   D) pyloric sphincter
   E) cardioesophageal sphincter
   Answer: E
   Page Ref: 467
   Bloom's: 1) Knowledge
9) What do the enteroendocrine cells of the stomach produce?
A) pepsin
B) hydrochloric acid
C) intrinsic factor
D) gastrin
E) gastric juice
Answer: D
Page Ref: 469
Bloom's: 1) Knowledge

10) Hydrochloric acid is necessary in the stomach for the conversion of pepsinogen to ________.
A) acid
B) rennin
C) pepsin
D) rugae
E) gastrin
Answer: C
Page Ref: 469, 481
Bloom's: 1) Knowledge

11) What lymphatic tissue in the submucosa of the small intestine prevents bacteria from entering the blood?
A) Peyer's patches
B) rugae
C) appendix
D) circular folds (plicae circulares)
E) lacteals
Answer: A
Page Ref: 470
Bloom's: 1) Knowledge

12) The small intestine extends from the ________.
A) cardioesophageal sphincter to the pyloric sphincter (valve)
B) pyloric sphincter (valve) to the ileocecal valve
C) ileocecal valve to the appendix
D) appendix to the sigmoid colon
E) cardioesophageal sphincter to ileocecal valve
Answer: B
Page Ref: 469-470
Bloom's: 1) Knowledge
13) What organs release secretions into the duodenum of the small intestine?
A) pancreas and spleen
B) appendix and Peyer's patches
C) liver and pancreas
D) cecum and appendix
E) spleen and liver
Answer: C
Page Ref: 469-470
Bloom's: 1) Knowledge

14) Enzymes and bile are carried by the pancreatic duct and bile duct into the ________.
A) duodenum
B) jejunum
C) ileocecal valve
D) ileum
E) large intestine
Answer: A
Page Ref: 470
Bloom's: 1) Knowledge

15) One of the main functions of the small intestine is ________.
A) absorption of nutrients
B) absorption of water
C) waste secretion
D) vitamin conversion
E) mineral secretion
Answer: A
Page Ref: 470
Bloom's: 1) Knowledge

16) Which one of the following is NOT a modification (which is designed to increase surface area for absorption within the small intestine?
A) microvilli
B) villi
C) Peyer's patches
D) circular folds
E) plicae circulares
Answer: C
Page Ref: 470
Bloom's: 1) Knowledge
17) Which one of the following is NOT a subdivision of the large intestine?
A) cecum
B) appendix
C) duodenum
D) colon
E) rectum
Answer: C
Page Ref: 471
Bloom's: 1) Knowledge

18) The organ responsible for drying out indigestible food residue through water absorption and the elimination of feces is the ________.
A) stomach
B) large intestine
C) small intestine
D) pancreas
E) liver
Answer: B
Page Ref: 471
Bloom's: 1) Knowledge

19) What is the purpose of mastication?
A) to eliminate undigested food wastes from the body
B) to propel food from one digestive organ to the next
C) to transport nutrients into the blood and lymph
D) to chew, grind and tear food into smaller pieces while in the mouth
E) to move food back and forth along the walls of the small intestine
Answer: D
Page Ref: 473
Bloom's: 1) Knowledge

20) Amylase is an enzyme that is only able to digest ________.
A) protein
B) starch
C) fat
D) vitamins
E) minerals
Answer: B
Page Ref: 475
Bloom's: 1) Knowledge
21) The number of permanent teeth within a full set of adult teeth is ________.  
A) 20  
B) 24  
C) 28  
D) 32  
E) 36  
Answer: D  
Page Ref: 473  
Bloom's: 1) Knowledge

22) The anterior chisel-shaped teeth that are adapted for cutting are called ________.  
A) incisors  
B) canines  
C) premolars  
D) molars  
E) wisdom teeth  
Answer: A  
Page Ref: 473  
Bloom's: 1) Knowledge

23) Which accessory digestive organ is situated retroperitoneal?  
A) liver  
B) gallbladder  
C) salivary glands  
D) pancreas  
E) spleen  
Answer: D  
Page Ref: 475  
Bloom's: 1) Knowledge

24) What organ stores bile when food digestion is not occurring?  
A) liver  
B) pancreas  
C) gallbladder  
D) spleen  
E) the body has no capacity for bile storage  
Answer: C  
Page Ref: 475  
Bloom's: 1) Knowledge
25) Which tube brings bile directly back into the gallbladder for storage?
   A) common bile duct
   B) main pancreatic duct
   C) cystic duct
   D) accessory pancreatic duct
   E) common hepatic duct
   Answer:  C
   Page Ref: 475
   Bloom's:  1) Knowledge

26) The sequence of steps by which large food molecules are broken down into their respective building blocks by catalytic enzymes is called ________.
   A) ingestion
   B) propulsion
   C) mechanical breakdown
   D) digestion
   E) absorption
   Answer:  D
   Page Ref: 477
   Bloom's:  1) Knowledge

27) The propulsive process that moves food from one organ to the next is called ________.
   A) ingestion
   B) peristalsis
   C) digestion
   D) mastication
   E) absorption
   Answer:  B
   Page Ref: 477
   Bloom's:  1) Knowledge

28) The process by which food within the small intestine is mixed with digestive juices by backward and forward movement across the internal wall of the organ is called ________.
   A) peristalsis
   B) segmentation
   C) defecation
   D) digestion
   E) absorption
   Answer:  B
   Page Ref: 477
   Bloom's:  1) Knowledge
29) We do NOT have the enzymes to digest ________.
A) cellulose
B) sucrose
C) lactose
D) maltose
E) starch
Answer:  A
Page Ref: 478
Bloom's:  1) Knowledge

30) Proteins are digested to their building blocks which are called ________.
A) peptides
B) amino acids
C) polypeptides
D) fatty acids
E) glycerol
Answer:  B
Page Ref: 489
Bloom's:  1) Knowledge

31) After chewing food, you consciously decide to push the bolus to the back of your mouth into your pharynx with your tongue. This voluntary phase of swallowing is known as ________.
A) ingestion
B) buccal phase of deglutition
C) mastication
D) pharyngeal-esophageal phase of deglutition
E) segmentation
Answer:  B
Page Ref: 480
Bloom's:  1) Knowledge

32) Digestion is primarily controlled by the ________.
A) sympathetic division of the autonomic nervous system
B) medulla oblongata
C) somatic nervous system
D) pons
E) parasympathetic division of the autonomic nervous system
Answer:  E
Page Ref: 480
Bloom's:  1) Knowledge
33) Which of the following processes occurs last?
A) ingestion
B) propulsion
C) defecation
D) mastication
E) segmentation
Answer: C
Page Ref: 478
Bloom's: 2) Comprehension

34) Which of the following does NOT contribute to the digestion of proteins?
A) trypsin
B) pepsin
C) chymotrypsin
D) carboxypeptidase
E) amylase
Answer: E
Page Ref: 478, 479
Bloom's: 1) Knowledge

35) The process of swallowing is also known as ________.
A) mastication
B) segmentation
C) deglutition
D) defecation
E) absorption
Answer: C
Page Ref: 480
Bloom's: 1) Knowledge

36) Which one of the following alimentary segments has NO digestive function?
A) cardial region of the stomach
B) pyloric region of the stomach
C) mouth
D) esophagus
E) duodenum
Answer: D
Page Ref: 480
Bloom's: 1) Knowledge
37) Which digestive system organ is the target of gastrin?
A) esophagus
B) pancreas
C) stomach
D) small intestine
E) liver
Answer: C
Page Ref: 480
Bloom's: 1) Knowledge

38) Pepsin is necessary for the stomach to break down ________.
A) carbohydrates
B) proteins
C) saturated fats
D) polysaccharides
E) nucleic acids
Answer: B
Page Ref: 481
Bloom's: 1) Knowledge

39) What does the enterogastric reflex accomplish?
A) increases output of enzyme-rich pancreatic juice
B) stimulates the release of gastric juices
C) slows the emptying of the stomach contents
D) stimulates gallbladder to contract and expel bile
E) stimulates emptying of the stomach contents
Answer: C
Page Ref: 482
Bloom's: 1) Knowledge

40) The enzyme responsible for converting milk protein in an infant's stomach to a substance that looks like sour milk is ________.
A) pepsin
B) salivary amylase
C) pancreatic amylase
D) bile
E) rennin
Answer: E
Page Ref: 481
Bloom's: 1) Knowledge
41) The journey of chyme through the small intestine takes ________.
   A) 2-4 hours
   B) 3-6 hours
   C) 6-8 hours
   D) 8-10 hours
   E) 10-12 hours
   Answer: B
   Page Ref: 483
   Bloom's: 1) Knowledge

42) Enzyme-rich pancreatic juice contains all the following except ________.
   A) amylase
   B) trypsin
   C) nuclease
   D) pepsin
   E) lipase
   Answer: D
   Page Ref: 483
   Bloom's: 1) Knowledge

43) Which of the following influence the release of pancreatic juice and bile?
   A) rennin and cholecystokinin (CCK)
   B) gastrin and rennin
   C) cholecystokinin (CCK) and gastrin
   D) secretin and gastrin
   E) cholecystokinin (CCK) and secretin
   Answer: E
   Page Ref: 483
   Bloom's: 1) Knowledge

44) Haustral contractions ________.
   A) are powerful contractile waves
   B) propel food residue from the small intestine into the large intestine
   C) move food residue from one haustrum to the next haustrum within the large intestine
   D) occur three to four times daily
   E) propel food from the stomach into the small intestine
   Answer: C
   Page Ref: 485
   Bloom's: 1) Knowledge
45) The energy value of foods commonly counted by dieters is measured in units called ________.
   A) ATP
   B) decibels
   C) kilocalories (kcal) or Calories
   D) coenzymes
   E) carb units
   Answer: C
   Page Ref: 487
   Bloom's: 1) Knowledge

46) Which of these foods would be the most mineral-rich?
   A) cookies
   B) cereal
   C) pasta
   D) milk
   E) cake
   Answer: D
   Page Ref: 489-490
   Bloom's: 4) Analysis

47) The process by which larger molecules or structures are built up from smaller ones is called ________.
   A) anabolism
   B) catabolism
   C) metabolism
   D) carbolysis
   E) glycolysis
   Answer: A
   Page Ref: 490
   Bloom's: 1) Knowledge

48) Adenosine triphosphate (ATP) is produced in greatest quantity during ________.
   A) glycolysis
   B) the Krebs cycle
   C) protein metabolism
   D) the electron transport chain
   E) fat metabolism
   Answer: D
   Page Ref: 492
   Bloom's: 1) Knowledge
49) Which of the following chemical reactions performed by the liver creates sugars from noncarbohydrate sources such as fats and proteins?
A) anaerobic respiration
B) glycogenolysis
C) glycogenesis
D) gluconeogenesis
E) glycolysis
Answer: D
Page Ref: 495
Bloom's: 1) Knowledge

50) Ketoacidosis results from the incomplete breakdown of ________.
A) fats
B) proteins
C) glycogen
D) nucleic acids
E) cholesterol
Answer: A
Page Ref: 494
Bloom's: 1) Knowledge

51) Which one of the following is NOT a main role of the liver?
A) detoxify drugs and alcohol
B) degrade hormones
C) make cholesterol
D) process nutrients during digestion
E) add ammonia to the blood
Answer: E
Page Ref: 495
Bloom's: 1) Knowledge

52) Nutrients detour through the liver via the ________.
A) circle of Willis
B) hepatic portal circulation
C) Bowman's capsule
D) electron transport chain
E) glycogenesis
Answer: B
Page Ref: 495
Bloom's: 1) Knowledge
53) Which one of the following is NOT true of cholesterol?
A) Cholesterol provides energy fuel for muscle contraction.
B) Cholesterol serves as the structural basis of steroid hormones.
C) Cholesterol serves as the structural basis of vitamin D.
D) Cholesterol is a major building block of plasma membranes.
E) Only about 15 percent of cholesterol comes from the diet.
Answer: A
Page Ref: 496
Bloom's: 1) Knowledge

54) Which condition prevents pancreatic juices from reaching the small intestine to break down fats and fat-soluble vitamins?
A) cystic fibrosis
B) appendicitis
C) gastroenteritis
D) phenylketonuria
E) tracheoesophageal fistula
Answer: A
Page Ref: 501
Bloom's: 1) Knowledge

55) The reflex that helps an infant hold on to the nipple and swallow is called the ________.
A) rooting reflex
B) nursing reflex
C) sucking reflex
D) peristaltic reflex
E) fetal reflex
Answer: C
Page Ref: 502
Bloom's: 1) Knowledge

14.3 True/False Questions

1) The tongue is anchored to the floor of the mouth by the lingual frenulum.
Answer: TRUE
Page Ref: 465
Bloom's: 1) Knowledge

2) The mucosa is the outermost lining of the alimentary canal organs from the esophagus to the large intestine.
Answer: FALSE
Page Ref: 466
Bloom's: 1) Knowledge
3) Muscularis externa typically contains an inner circular layer and an outer longitudinal layer.
   Answer: TRUE
   Page Ref: 466
   Bloom's: 1) Knowledge

4) The pylorus region of the stomach is continuous with the small intestine through the pyloric
   sphincter (valve).
   Answer: TRUE
   Page Ref: 467
   Bloom's: 1) Knowledge

5) The lacy apron of the peritoneum that covers the abdominal organs is called the lesser omentum.
   Answer: FALSE
   Page Ref: 467
   Bloom's: 1) Knowledge

6) Pepsinogens are produced by parietal cells in the stomach.
   Answer: FALSE
   Page Ref: 469
   Bloom's: 1) Knowledge

7) The three subdivisions of the small intestine are duodenum, jejunum, and ileum.
   Answer: TRUE
   Page Ref: 469
   Bloom's: 1) Knowledge

8) The villi, microvilli, and circular folds of the large intestine all increase the surface area.
   Answer: FALSE
   Page Ref: 470
   Bloom's: 1) Knowledge

9) The ascending colon travels down the left side of the abdominal cavity, and then it enters the pelvis
   where it becomes the sigmoid colon.
   Answer: FALSE
   Page Ref: 471
   Bloom's: 1) Knowledge

10) Goblet cells in the mucosa of the large intestine produce mucus to lubricate the passage of feces.
    Answer: TRUE
    Page Ref: 471
    Bloom's: 1) Knowledge
11) Hastra are pocket-like sacs of the small intestine.
Answer: FALSE
Page Ref: 472
Bloom's: 1) Knowledge

12) The segment of the colon to which the appendix is attached is the cecum.
Answer: TRUE
Page Ref: 471
Bloom's: 1) Knowledge

13) The anal canal has a voluntary sphincter formed by smooth muscle only.
Answer: FALSE
Page Ref: 471
Bloom's: 1) Knowledge

14) Teeth function in mastication.
Answer: TRUE
Page Ref: 473
Bloom's: 1) Knowledge

15) The enamel found on teeth is heavily mineralized with calcium salts and comprises the hardest substance within the entire body.
Answer: TRUE
Page Ref: 474
Bloom's: 1) Knowledge

16) Wisdom teeth typically emerge later in life around age 30-40.
Answer: FALSE
Page Ref: 473
Bloom's: 1) Knowledge

17) Pancreatic enzymes are released into the stomach to break down all categories of digestible foods.
Answer: FALSE
Page Ref: 475
Bloom's: 1) Knowledge

18) Bile is produced by the liver but stored in the gallbladder.
Answer: TRUE
Page Ref: 475
Bloom's: 1) Knowledge

19) Digestive activities are mostly controlled by reflexes of the parasympathetic nervous system.
Answer: TRUE
Page Ref: 478
Bloom's: 1) Knowledge
20) The involuntary phase of swallowing is called the buccal phase.
Answer: FALSE
Page Ref: 480
Bloom's: 1) Knowledge

21) The pharynx and esophagus have no digestive roles.
Answer: TRUE
Page Ref: 480
Bloom's: 1) Knowledge

22) The presence of food or a rising pH stimulates the release of gastrin from the esophagus.
Answer: FALSE
Page Ref: 480
Bloom's: 1) Knowledge

23) Absence of either bile or pancreatic juice indicates that no fat digestion or absorption is occurring. This can lead to blood-clotting problems because the liver needs vitamin K to make prothrombin.
Answer: TRUE
Page Ref: 483
Bloom's: 1) Knowledge

24) Secretin and cholecystokinin influence the release of both pancreatic juice and bile.
Answer: TRUE
Page Ref: 483
Bloom's: 1) Knowledge

25) Bacteria in the small intestine make some vitamins, such as some B and K.
Answer: FALSE
Page Ref: 484
Bloom's: 1) Knowledge

26) Mass movements are slow-moving contractile waves that move over large areas of the colon three or four times each day.
Answer: TRUE
Page Ref: 485
Bloom's: 1) Knowledge

27) A nutrient may be a carbohydrate, lipid, protein, vitamin, mineral or water.
Answer: TRUE
Page Ref: 487
Bloom's: 1) Knowledge
28) The eight essential amino acids are ones the body cannot make and must be consumed through our diet.
Answer: TRUE
Page Ref: 489
Bloom's: 1) Knowledge

29) Fat is used as the major fuel for making ATP during cellular respiration in most body cells.
Answer: FALSE
Page Ref: 490
Bloom's: 1) Knowledge

30) Optimal health of tissues is achieved when HDL and LDL are present in equal amounts within the bloodstream.
Answer: FALSE
Page Ref: 496
Bloom's: 1) Knowledge

31) The body's thermostat, which constantly regulates body temperature, is located within the hypothalamus.
Answer: TRUE
Page Ref: 499
Bloom's: 1) Knowledge

32) Watery stools that result when food residue is rushed through the large intestine before sufficient water has been reabsorbed, causing dehydration and electrolyte imbalance, is called constipation.
Answer: FALSE
Page Ref: 487
Bloom's: 1) Knowledge
14.4 Matching Questions

*Match the following nutrients with their associated digestive enzymes:*

A) pepsin  
B) nuclease  
C) lipase  
D) lactase  
E) amylase

1) Protein  
Page Ref: 469  
Bloom's: 1) Knowledge

2) Lactose  
Page Ref: 479  
Bloom's: 1) Knowledge

3) Starch  
Page Ref: 475  
Bloom's: 1) Knowledge

4) Fat  
Page Ref: 483  
Bloom's: 1) Knowledge

5) Nucleic acids  
Page Ref: 483  
Bloom's: 1) Knowledge

Answers: 1) A 2) D 3) E 4) C 5) B
Identify the digestive organ that is primarily associated with each of the following functions:

A) stomach
B) esophagus
C) small intestine
D) large intestine
E) mouth

6) Organ where carbohydrate absorption occurs
   Page Ref: 470
   Bloom's: 1) Knowledge

7) Organ where starch digestion begins
   Page Ref: 475
   Bloom's: 1) Knowledge

8) Tube through which food is propelled to the stomach but lacks a digestive role
   Page Ref: 466, 480
   Bloom's: 1) Knowledge

9) Organ where protein digestion begins
   Page Ref: 469, 481
   Bloom's: 1) Knowledge

10) Organ where pancreatic enzymes and bile enter the alimentary canal
    Page Ref: 469-470
    Bloom's: 1) Knowledge

11) Organ where bacteria synthesize vitamin K
    Page Ref: 484
    Bloom's: 1) Knowledge

12) Organ where defecation reflex is initiated
    Page Ref: 485
    Bloom's: 1) Knowledge

Match the following phrases with the appropriate process:

A) mechanical breakdown  
B) propulsion  
C) defection  
D) ingestion  
E) absorption  
F) digestion

13) Placement of food into the mouth  
Page Ref: 477  
Bloom's: 1) Knowledge

14) Peristalsis moves food from one organ to the next  
Page Ref: 477  
Bloom's: 1) Knowledge

15) Transport of food products from the lumen of the GI tract to the blood or lymph  
Page Ref: 477  
Bloom's: 1) Knowledge

16) Physically fragmenting food particles into smaller particles  
Page Ref: 477  
Bloom's: 1) Knowledge

17) Elimination of indigestible food residues from the GI tract as feces  
Page Ref: 477  
Bloom's: 1) Knowledge

18) Enzymatic reactions that hydrolyze food particles into their building blocks  
Page Ref: 477  
Bloom's: 1) Knowledge

14.5 Essay Questions

1) Describe the four layers of the GI tract.
Answer:
1. Mucosa is the moist innermost layer; it lines the cavity of the organ.
2. The submucosa is found just beneath the mucosa layer. It contains blood vessels, nerve endings, lymph nodules, and lymphatic vessels.
3. The muscular externis is the next layer, which is typically made up of a circular and a longitudinal layer of smooth muscle.
4. The outermost layer is the serosa, which consists of two single layers of cells. The innermost serosa is the visceral peritoneum while the outermost layer is the parietal peritoneum. Between these layers is serous fluid.
Page Ref: 466
Bloom's: 2) Comprehension

2) Predict the effect on digestion if the pancreas is unable to make and release pancreatic juices.
Answer: Pancreatic juices are rich in both enzymes and bicarbonate. Without the enzyme-rich pancreatic juice, starch digestion will be incomplete, about half of protein digestion will not occur, all of fat digestion will cease, and nucleic acid digestion will not occur. Bicarbonate-rich pancreatic juice helps neutralize the acidic chyme entering the small intestine from the stomach. Without the alkaline environment in the small intestine, enzymatic activity would not occur.
Page Ref: 483-484
Bloom's: 3) Application

3) Discuss why an acidic pH is necessary for the stomach's activities to be accomplished.
Answer: Hydrochloric acid makes the stomach contents acidic. Acid is necessary for the activation of pepsinogen into pepsin. Pepsin is the active protein-digesting enzyme that begins protein digestion in the stomach. Without the acidic environment, about half of the process of protein digestion would not be able to occur.
Page Ref: 469, 481, 483
Bloom's: 2) Comprehension

4) Explain the role of the hormones cholecystokinin and secretin in regulating the release of bile and pancreatic juices.
Answer: When chyme enters the small intestine, it stimulates the mucosa cells to produce the hormones cholecystokinin and secretin. These hormones travel in the bloodstream to their target organs: the pancreas, liver, and gallbladder. The pancreas responds to cholecystokinin by releasing enzyme-rich pancreatic juice and secretin causes the secretion of bicarbonate-rich pancreatic juice. The liver responds to secretin by releasing bile while cholecystokinin stimulates the gallbladder to release stored bile.
Page Ref: 483
Bloom's: 2) Comprehension
5) What is the difference between the basal metabolic rate (BMR) and the total metabolic rate (TMR)? Which one should dieters focus on for weight loss?
Answer: Basal metabolic rate (BMR) is the amount of heat produced by the body at rest based on the amount of energy, or kilocalories, needed to operate per hour. Essential life operations include breathing, heart beat, kidney functions, etc.
Total metabolic rate (TMR) is the total amount of kilocalories needed for the body to perform all of the ongoing activities. Muscular activity increases TMR. Dieters should focus on the TMR and reduce the kilocalorie intake by 20 percent or more to induce weight loss.
Page Ref: 497
Bloom's: 4) Analysis

6) Discuss the mechanisms by which body cells generate adenosine triphosphate (ATP).
Answer: Cellular respiration includes all of the oxygen-dependent processes by which energy from the breakdown of glucose is captured within chemical bonds which unite adenosine diphosphate (ADP) and inorganic phosphate into the body's preferred metabolic fuel, adenosine triphosphate (ATP). One process, glycolysis, energizes each glucose molecule so that it can be split into two pyruvic acid molecules to yield ATP. The Krebs cycle, located within the mitochondria, produces all the carbon dioxide and water that results during cellular respiration, and it yields a small amount of ATP as well. The electron transport chain, also located within the mitochondria, is the primary producer of ATP. Hydrogen atoms removed during glycolysis and the Krebs cycle are delivered to the protein carriers of the electron transport chain, which form part of the mitochondrial cristae membranes. There the hydrogen atoms are split into their positive ions and negative electrons. The electrons then travel from carrier to carrier in a series of steps that enable phosphate to attach to ADP to form ATP.
Page Ref: 490
Bloom's: 2) Comprehension

7) Describe how these chemical reactions assist with blood sugar homeostasis: gluconeogenesis, glycogenolysis, and glycogenesis.
Answer: Gluconeogenesis is a reaction in which the liver uses non-carbohydrate sources (such as fats and proteins) to produce glucose. Glycogenolysis is a reaction in which the liver breaks down stored glycogen and turns it into glucose. Both of these reactions respond to hormones that are meant to raise blood sugar levels. Glycogenesis is a reaction in which the liver turns excess glucose in the blood into a large polysaccharide called glycogen. This type of reaction removes glucose from the blood and lowers blood sugar levels.
Page Ref: 495
Bloom's: 2) Comprehension