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# Nutrition for Life, 4e (Thompson/Manore) Chapter 2 The Human Body: Are We Really What We Eat?

#### 2.1 Multiple Choice Questions

- 1) Which of the following are made up of a group of organs that perform an integrated function?
- A) molecules
- B) tissues
- C) systems
- D) organelles

Answer: C Chapter: 2 Section: 2.2

Learning Outcome: 2 Difficulty: Easy

Blooms/Skills: Remembering

- 2) Which organ plays the primary role in prompting individuals to seek food?
- A) stomach
- B) small intestine
- C) brain
- D) mouth

Answer: C

Chapter: 2

Section: 2.1

Learning Outcome: 1 Difficulty: Medium

Blooms/Skills: Understanding

- 3) Which physiological trigger(s) will result in the sensation of hunger?
- A) low glucose levels
- B) high glucose levels
- C) release of the chemical messengers leptin and serotonin
- D) eating a meal with a high satiety value

Answer: A Chapter: 2 Section: 2.1

Learning Outcome: 1 Difficulty: Medium

- 4) Hunger is BEST described as
- A) a physiological desire to find food and eat.
- B) a psychological desire to find food and eat.
- C) eating that is often driven by environmental cues.
- D) eating that is often driven by emotional cues.

Learning Outcome: 1 Difficulty: Easy

Blooms/Skills: Remembering

- 5) Which of the following is NOT a regulator of satiety in the body?
- A) GI tract
- B) hypothalamus
- C) hormones
- D) kidneys

Answer: D Chapter: 2 Section: 2.1

Learning Outcome: 1 Difficulty: Medium

Blooms/Skills: Understanding

- 6) Which of the following snacks will have the highest satiety value, assuming the Calories and relative size are similar?
- A) slice of whole-grain bread
- B) serving of Greek yogurt
- C) glass of whole milk
- D) glass of skim milk

Answer: B Chapter: 2 Section: 2.1

Learning Outcome: 1 Difficulty: Medium Blooms/Skills: Applying

- 7) The smallest units of matter that cannot be broken down by natural means are
- A) atoms.
- B) molecules.
- C) cells.
- D) lipids.

Learning Outcome: 2 Difficulty: Easy

Blooms/Skills: Remembering

- 8) Which of the following sequences ranks the structures that make up the human body, from smallest to largest?
- A) molecules>atoms>organs>systems>tissues>cells
- B) atoms>molecules>cells>tissues>organs>systems
- C) organs>tissues>molecules>systems>atoms>organs
- D) atoms>cells>systems>tissues>molecules>organs

Answer: B Chapter: 2 Section: 2.2

Learning Outcome: 2 Difficulty: Medium

Blooms/Skills: Analyzing

- 9) Cell membranes are
- A) very rigid and resistant to all non-cellular molecules.
- B) semipermeable.
- C) the organelles responsible for ATP production.
- D) chemical messengers that are secreted into the bloodstream by a gland.

Answer: B Chapter: 2 Section: 2.2

Learning Outcome: 2 Difficulty: Easy

- 10) In which organelle is the cell's DNA located?
- A) nucleus
- B) mitochondria
- C) cell membrane
- D) cytoplasm

Learning Outcome: 2 Difficulty: Easy

Blooms/Skills: Remembering

- 11) The "powerhouses" of the cell that produce energy from food molecules are the
- A) mitochondria.
- B) ribosomes.
- C) nuclei.
- D) cytoplasm.

Answer: A Chapter: 2 Section: 2.2

Learning Outcome: 2 Difficulty: Easy

Blooms/Skills: Remembering

- 12) What is the term that describes the process by which the foods we eat are broken down into smaller components by either mechanical or chemical means?
- A) digestion
- B) absorption
- C) elimination
- D) peristalsis

Answer: A Chapter: 2 Section: 2.3

Learning Outcome: 4 Difficulty: Easy

- 13) Which of the following is NOT a role that the liver plays in digestion and absorption of nutrients?
- A) filtration of blood, removing potential toxins such as alcohol and drugs
- B) secretion of insulin and glucagon to assist in the regulation of blood glucose concentrations
- C) receiving products of digestion from the small intestine and releasing nutrients for the body's needs
- D) synthesis of bile to assist in the digestion and absorption of fat

Learning Outcome: 3 Difficulty: Medium

Blooms/Skills: Understanding

- 14) Most digestion and absorption occurs in the
- A) stomach.
- B) esophagus.
- C) small intestine.
- D) mouth. Answer: C Chapter: 2 Section: 2.3

Learning Outcome: 3 Difficulty: Easy

Blooms/Skills: Understanding

- 15) Juanita eats her breakfast, and her GI tract then begins the process of digesting and absorbing the nutrients from this meal. What is the order in which each of the organs of the GI tract will work to achieve this process?
- A) mouth>esophagus>small intestine>stomach>large intestine
- B) mouth>esophagus>stomach>small intestine>large intestine
- C) mouth>stomach>esophagus>small intestine>large intestine
- D) mouth>stomach>esophagus>large intestine>small intestine

Answer: B Chapter: 2 Section: 2.3

Learning Outcome: 4 Difficulty: Medium

- 16) The mechanical and chemical digestion of food is initiated in the
- A) mouth.
- B) small intestine.
- C) stomach.
- D) esophagus.

Learning Outcome: 4 Difficulty: Easy

Blooms/Skills: Understanding

- 17) Salivary amylase is a(n)
- A) hormone.
- B) antibody.
- C) bicarbonate.
- D) enzyme.

Answer: D Chapter: 2 Section: 2.3

Learning Outcome: 4 Difficulty: Easy

Difficulty. Easy

Blooms/Skills: Remembering

- 18) Which BEST explains why carbohydrate digestion ceases when food reaches the stomach?
- A) Carbohydrate is completely digested in the mouth.
- B) Salivary amylase cannot function in the acid environment of the stomach.
- C) Carbohydrate is completely absorbed in the esophagus.
- D) Intestinal bacteria are needed for carbohydrate digestion.

Answer: B Chapter: 2 Section: 2.3

Learning Outcome: 4 Difficulty: Medium

Blooms/Skills: Understanding

- 19) Which of the following is NOT a component of the gastric juices?
- A) hydrochloric acid
- B) pepsin
- C) insulin
- D) gastric lipase

Answer: C Chapter: 2 Section: 2.3

Learning Outcome: 4 Difficulty: Medium

- 20) What is chyme?
- A) ulcerations of the esophageal lining
- B) healthy bacteria of the small intestine
- C) mixture of partially digested food, water, and gastric juices
- D) substance that allows for the emulsification of dietary lipid

Learning Outcome: 4 Difficulty: Easy

Blooms/Skills: Remembering

- 21) A primary function of the mucus in the stomach is to
- A) neutralize stomach acid.
- B) activate pepsinogen to form pepsin.
- C) protect stomach cells from digestion.
- D) emulsify fats.

Answer: C Chapter: 2 Section: 2.3

Learning Outcome: 4 Difficulty: Easy

Blooms/Skills: Understanding

- 22) Which of the macronutrients is NOT broken down chemically in the stomach?
- A) protein
- B) carbohydrate
- C) fat

D) vitamin C Answer: B Chapter: 2 Section: 2.3

Learning Outcome: 4 Difficulty: Medium

- 23) Proteins that induce chemical changes to speed up body processes are called
- A) hormones.
- B) peptides.
- C) enzymes.
- D) chymes.

Answer: C

Chapter: 2 Section: 2.3

Learning Outcome: 4

Difficulty: Easy

Blooms/Skills: Remembering

- 24) The brush border is located in the
- A) esophagus.
- B) stomach.
- C) small intestine.
- D) large intestine.

Answer: C

Chapter: 2

Section: 2.3

Learning Outcome: 5

Difficulty: Easy

Blooms/Skills: Understanding

- 25) What is the name of the sphincter that separates the esophagus and the stomach?
- A) pyloric
- B) gastroesophageal
- C) ileocecal
- D) rectal

Answer: B

Chapter: 2

Section: 2.3

Learning Outcome: 3

Difficulty: Easy

Blooms/Skills: Remembering

- 26) The last section of the small intestine that connects to the ileocecal valve is called the
- A) bile duct.
- B) duodenum.
- C) jejunum.
- D) ileum.

Answer: D

Chapter: 2

Section: 2.3

Learning Outcome: 5

Difficulty: Easy

- 27) Responding to the presence of fat in our meal, the gallbladder releases a substance called
- A) lipase.
- B) pepsin.
- C) chyme. D) bile.
- Answer: D Chapter: 2 Section: 2.3

Learning Outcome: 3 Difficulty: Easy

Blooms/Skills: Understanding

- 28) What roles do the hormones insulin and glucagon play in signaling hunger?
- A) They detect changes in pressure in the stomach.
- B) They stimulate release of digestive juices.
- C) The respond to changing glucose levels and signal the hypothalamus.
- D) They initiate movements in the GI tract known as "hunger pangs."

Answer: C Chapter: 2 Section: 2.1

Learning Outcome: 1 Difficulty: Medium

Blooms/Skills: Understanding

- 29) The fingerlike projections of the small intestine that increase surface area and allow for the absorption of nutrients are called
- A) villi.
- B) lacteals.
- C) sphincters.
- D) diverticuli.

Answer: A Chapter: 2 Section: 2.3

Learning Outcome: 5 Difficulty: Easy

- 30) Which circulatory system carries most of the fats and fat-soluble nutrients?
- A) vascular
- B) mesenteric
- C) lymphatic
- D) enterohepatic

Learning Outcome: 4 Difficulty: Easy

Blooms/Skills: Understanding

- 31) Which large vessel transports absorbed nutrients to the liver?
- A) portal vein
- B) pulmonary vein
- C) aorta
- D) subclavian vein

Answer: A Chapter: 2 Section: 2.3

Learning Outcome: 4 Difficulty: Easy

Blooms/Skills: Remembering

- 32) In which organ does the majority of water absorption occur?
- A) mouth
- B) stomach
- C) small intestine
- D) large intestine

Answer: D Chapter: 2 Section: 2.3

Learning Outcome: 3 Difficulty: Medium

Blooms/Skills: Understanding

- 33) Collectively, the nerves of the gastrointestinal tract are referred to as
- A) peptic nerves.
- B) hepatic nerves.
- C) enteric nerves.
- D) gastric nerves.

Answer: C Chapter: 2 Section: 2.3

Learning Outcome: 3 Difficulty: Medium

- 34) If a person has GERD, which of the following is probably malfunctioning?
- A) gallbladder
- B) pancreas
- C) epiglottis
- D) gastroesophageal sphincter

Learning Outcome: 7 Difficulty: Medium

Blooms/Skills: Analyzing

- 35) What is the primary cause of peptic ulcers?
- A) stress
- B) H. pylori bacteria
- C) prolonged use of aspirin
- D) eating too many spicy foods

Answer: B Chapter: 2 Section: 2.4

Learning Outcome: 7 Difficulty: Easy

Blooms/Skills: Analyzing

- 36) Which of the following would be an appropriate treatment approach for someone who has GERD?
- A) surgical removal of the gallbladder
- B) omission of all lactose foods
- C) antibiotic therapy
- D) lose weight and quit smoking

Answer: D Chapter: 2 Section: 2.4

Learning Outcome: 7
Difficulty: Medium
Blooms/Skills: Applying

- 37) Which of the following statements BEST describes irritable bowel syndrome (IBS)?
- A) an erosion of the gastrointestinal tract caused by the overproduction of hydrochloric acid
- B) an immune response resulting from the ingestion of an allergen
- C) a hypersensitivity to wheat resulting in diarrhea and bloating
- D) a bowel disorder that interferes with the colon; no definite cause is known

Learning Outcome: 9 Difficulty: Medium

Blooms/Skills: Remembering

- 38) Mary experiences anaphylactic shock after eating a peanut butter sandwich. What is the MOST appropriate treatment for Mary?
- A) IV glucose
- B) Tylenol or another pain medication
- C) antibiotics D) epinephrine Answer: D Chapter: 2

Section: 2.4

Learning Outcome: 8 Difficulty: Medium Blooms/Skills: Applying

- 39) The liquid within an animal cell is known as
- A) gastric juice.
- B) glucagon.
- C) cytoplasm.
- D) mitochondria.

Answer: C Chapter: 2 Section: 2.2

Learning Outcome: 2 Difficulty: Easy

- 40) The psychological desire that encourages us to seek out a particular food is
- A) hunger.
- B) appetite.
- C) satiety.
- D) anorexia.

Learning Outcome: 1 Difficulty: Easy

Blooms/Skills: Remembering

- 41) The region of the forebrain where physiological signals are translated into thirst and hunger messages is the
- A) pituitary gland.
- B) adrenal gland.
- C) thalamus.
- D) hypothalamus.

Answer: D Chapter: 2 Section: 2.1

Learning Outcome: 1 Difficulty: Easy

Blooms/Skills: Remembering

- 42) Secreted from many glands of the body, hormones act as
- A) "powerhouses" of cells.
- B) chemical messengers that trigger a physiological response.
- C) absorptive features that increase the surface area of the small intestine.
- D) fat emulsifiers.

Answer: B Chapter: 2 Section: 2.3

Learning Outcome: 3 Difficulty: Easy

- 43) In contrast to hunger, appetite is triggered by
- A) signals from nerve cells in the stomach lining.
- B) insulin and glucagon.
- C) satiety.
- D) the sensory appeal of foods and their learned social and cultural associations.

Learning Outcome: 1 Difficulty: Medium

Blooms/Skills: Analyzing

- 44) The state in which a person has a physiologic need for food but no appetite is known as
- A) anorexia.
- B) peristalsis.
- C) satiety.
- D) hunger.

Answer: A Chapter: 2 Section: 2.1

Learning Outcome: 1 Difficulty: Easy

Blooms/Skills: Remembering

- 45) A functional grouping of similar cells is known as a(n)
- A) atom.
- B) molecule.
- C) tissue.
- D) organ.

Answer: C Chapter: 2

Section: 2.2

Learning Outcome: 2

Difficulty: Easy

- 46) Tight rings of muscles that control the movement of food through the organs of the gastrointestinal tract are known as
- A) villi.
- B) microvilli.
- C) mitochondria.
- D) sphincters.

Learning Outcome: 3 Difficulty: Easy

Blooms/Skills: Remembering

- 47) Lipase enzymes are NOT produced in the
- A) mouth.
- B) large intestine.
- C) stomach.
- D) small intestine.

Answer: B Chapter: 2 Section: 2.3

Learning Outcome: 4
Difficulty: Medium

Blooms/Skills: Analyzing

- 48) Elimination is the bodily process in which
- A) undigested portions of food and waste are removed from the body.
- B) the products of digestion are taken through the wall of the intestine.
- C) food is chemically and physically broken down into component molecules.
- D) probiotics are produced.

Answer: A Chapter: 2 Section: 2.3

Learning Outcome: 6 Difficulty: Easy

- 49) Carbohydrate digestion begins in the
- A) mouth.
- B) stomach.
- C) small intestine.
- D) large intestine.

Learning Outcome: 3 Difficulty: Medium

Blooms/Skills: Understanding

- 50) Protein digestion begins in the
- A) mouth.
- B) stomach.
- C) small intestine.
- D) large intestine.

Answer: B Chapter: 2 Section: 2.3

Learning Outcome: 3 Difficulty: Medium

Blooms/Skills: Understanding

- 51) Which structure keeps food from entering the trachea during swallowing?
- A) upper esophageal sphincter
- B) lower esophageal sphincter
- C) soft palateD) epiglottis

Answer: D Chapter: 2 Section: 2.3

Learning Outcome: 4 Difficulty: Easy

Blooms/Skills: Understanding

- 52) The wavelike contractions that move food along the GI tract are known as
- A) proteases.
- B) pepsin.
- C) peristalsis.
- D) pituitary glands.

Answer: C Chapter: 2 Section: 2.3

Learning Outcome: 4

Difficulty: Easy

- 53) What condition occurs when hydrochloric acid and pepsin erode a part of the GI tract?
- A) flatus
- B) diarrhea
- C) IBS
- D) peptic ulcer

Learning Outcome: 7 Difficulty: Easy

Blooms/Skills: Remembering

- 54) Celiac disease is caused by a(n)
- A) allergic reaction to gluten.
- B) immune response to gluten.
- C) sensitivity to proteins in dairy products.
- D) intolerance to lactose.

Answer: B Chapter: 2 Section: 2.4

Learning Outcome: 8 Difficulty: Medium

Blooms/Skills: Understanding

#### 2.2 True/False Questions

1) The cell's nucleus is the organelle responsible for producing energy from food molecules.

Answer: FALSE Chapter: 2 Section: 2.2

Learning Outcome: 2 Difficulty: Easy

Blooms/Skills: Remembering

2) The primary organ producing the sensation of hunger is the stomach.

Answer: FALSE

Chapter: 2 Section: 2.1

Learning Outcome: 1 Difficulty: Easy

3) Foods containing carbohydrate have the highest satiety value.

Answer: FALSE

Chapter: 2 Section: 2.1

Learning Outcome: 1 Difficulty: Easy

Blooms/Skills: Analyzing

4) Overall, very little digestion occurs in the human mouth.

Answer: TRUE Chapter: 2 Section: 2.3

Learning Outcome: 4 Difficulty: Easy

Blooms/Skills: Understanding

5) Typically, ingested food remains in the stomach for 2 hours prior to traveling to the small

intestine.

Answer: TRUE Chapter: 2 Section: 2.3

Learning Outcome: 4 Difficulty: Easy

Blooms/Skills: Understanding

6) The pancreas is the largest digestive organ.

Answer: FALSE

Chapter: 2 Section: 2.3

Learning Outcome: 3 Difficulty: Easy

Blooms/Skills: Analyzing

7) The small intestine is the longest portion of the human GI tract.

Answer: TRUE Chapter: 2 Section: 2.3

Learning Outcome: 5 Difficulty: Easy

Blooms/Skills: Analyzing

8) The majority of nutrient absorption takes place in the stomach.

Answer: FALSE

Chapter: 2 Section: 2.3

Learning Outcome: 4 Difficulty: Medium

Blooms/Skills: Understanding

9) Since they do not require further digestion, dietary vitamins and minerals are small enough to be absorbed by the gastrointestinal tract.

Answer: TRUE Chapter: 2 Section: 2.3

Learning Outcome: 4 Difficulty: Medium

Blooms/Skills: Understanding

10) The presence of any bacteria in the large intestine indicates a potentially serious systemic allergic reaction that can be fatal if left untreated.

Answer: FALSE

Chapter: 2 Section: 2.4

Learning Outcome: 8 Difficulty: Medium

Blooms/Skills: Understanding

11) The MOST common symptom of GERD is chronic diarrhea.

Answer: FALSE

Chapter: 2 Section: 2.4

Learning Outcome: 7 Difficulty: Easy

Blooms/Skills: Understanding

12) Irritable bowel syndrome is more common among women than men.

Answer: TRUE

Chapter: 2 Section: 2.4

Learning Outcome: 9 Difficulty: Easy

13) Most instances of constipation are caused by intestinal bacteria.

Answer: FALSE

Chapter: 2 Section: 2.4

Learning Outcome: 9 Difficulty: Easy

Blooms/Skills: Understanding

14) Diarrhea and dehydration are the MOST serious potential reactions when consuming an allergenic food product.

Answer: FALSE

Chapter: 2 Section: 2.4

Learning Outcome: 8 Difficulty: Easy

Blooms/Skills: Analyzing

15) Untreated diarrhea can be fatal in young children.

Answer: TRUE Chapter: 2 Section: 2.4

Learning Outcome: 9 Difficulty: Easy

Blooms/Skills: Understanding

16) Currently, the only treatment for celiac disease is a diet free of wheat, barley, and rye.

Answer: TRUE Chapter: 2 Section: 2.4

Learning Outcome: 8 Difficulty: Easy

Blooms/Skills: Understanding

17) Produced by the liver, bile is stored in the gallbladder and emulsifies fats in the small

intestine.

Answer: TRUE

Chapter: 2 Section: 2.3

Learning Outcome: 4 Difficulty: Medium

18) The brush border is a term that describes the microvilli of the large intestine's lining.

Answer: FALSE

Chapter: 2 Section: 2.3

Learning Outcome: 5 Difficulty: Easy

Blooms/Skills: Remembering

19) The gallbladder secretes bicarbonate into the small intestine to neutralize the acidity of

chyme.

Answer: FALSE

Chapter: 2 Section: 2.3

Learning Outcome: 3 Difficulty: Medium

Blooms/Skills: Understanding

20) Celiac disease can only be diagnosed with a blood test.

Answer: FALSE

Chapter: 2 Section: 2.4

Learning Outcome: 8 Difficulty: Medium

Blooms/Skills: Understanding

#### 2.3 Essay Questions

1) Starting at the mouth and ending at the rectum, describe the process of human digestion and absorption.

Chapter: 2 Section: 2.3

Learning Outcome: 3 Difficulty: Difficult

Blooms/Skills: Understanding

2) Describe the symptoms and treatment of irritable bowel syndrome (IBS).

Chapter: 2 Section: 2.4

Learning Outcome: 9 Difficulty: Medium

3) Describe the lining of the small intestine. How does its unique structure contribute to the process of nutrient absorption?

Chapter: 2 Section: 2.3

Learning Outcome: 5
Difficulty: Medium

Blooms/Skills: Analyzing

4) What is the difference between a food intolerance and a food allergy?

Chapter: 2 Section: 2.4

Learning Outcome: 8 Difficulty: Medium Blooms/Skills: Analyzing

5) Describe the main functions of the large intestine and identify the key processes that enable it to carry out these functions.

Chapter: 2 Section: 2.3

Learning Outcome: 6
Difficulty: Medium

Blooms/Skills: Analyzing

6) Define peristalsis and identify where it occurs in the GI tract. Explain how disruptions to this process can lead to GER, diarrhea, constipation, and IBS.

Chapter: 2 Section: 2.4

Learning Outcome: 9
Difficulty: Difficult

Blooms/Skills: Analyzing

### 2.4 Questions from Chapter's Feature Boxes

- 1) What is the MOST important factor contributing to the prevalence of traveler's diarrhea?
- A) exposure to allergens in unlabeled foods
- B) effect of unfamiliar foods on the GI tract
- C) overconsumption of canned beverages
- D) untreated drinking water

Answer: D Chapter: 2 Section: 2.4

Learning Outcome: 9 Difficulty: Medium

Blooms/Skills: Evaluating

- 2) In the first week of a backpacking trip, Seth came down with dysentery. Which symptom indicates that he should contact a physician immediately for treatment?
- A) abdominal cramping
- B) low-grade fever
- C) bloody stools
- D) watery diarrhea

Answer: C Chapter: 2 Section: 2.4

Learning Outcome: 9 Difficulty: Medium

Blooms/Skills: Evaluating

- 3) Traveler's diarrhea is caused by
- A) food allergies.
- B) stress.
- C) antibiotic overuse.
- D) viral or bacterial infections.

Answer: D Chapter: 2 Section: 2.4

Learning Outcome: 9 Difficulty: Easy

- 4) One appetizing and safe alternative to barley for people with celiac disease is
- A) wheat.
- B) gluten.
- C) Job's tears.
- D) rye.

Learning Outcome: 8 Difficulty: Medium Blooms/Skills: Applying

5) Because the activity of probiotics in the GI tract is short-lived, they need to be consumed on a daily basis to be effective.

Answer: TRUE Chapter: 2 Section: 2.4

Learning Outcome: 9 Difficulty: Easy

Blooms/Skills: Understanding

- 6) Which of the following food sources is a rich source of probiotics?
- A) whole-wheat bread
- B) yogurt
- C) orange juice
- D) calcium supplements

Answer: B Chapter: 2 Section: 2.4

Learning Outcome: 9 Difficulty: Easy

Blooms/Skills: Understanding

7) The emerging field of nutrigenomics studies how nutrition and environment can affect gene function.

Answer: TRUE

Chapter: 2 Section: 2.2

Learning Outcome: 2 Difficulty: Easy

8) What are probiotics and how are they involved in keeping us healthy?

Chapter: 2 Section: 2.3

Learning Outcome: 4 Difficulty: Medium

Blooms/Skills: Understanding

9) List the eight major allergenic foods. Explain how and why the U.S. Food and Drug Administration (FDA) regulates these ingredients in packaged foods.

Chapter: 2 Section: 2.4

Learning Outcome: 8 Difficulty: Medium Blooms/Skills: Analyzing

10) Define the concept of functional foods and give examples of the most common ones. Explain how probiotic foods are related to functional foods.

Chapter: 2 Section: 2.3

Learning Outcome: 4 Difficulty: Difficult

Blooms/Skills: Analyzing