

***Nutrition for Life, 3e* (Thompson)**

**Chapter 2 The Human Body: Are We Really What We Eat?**

Multiple-Choice Questions

1) Which of the following are grouped together to perform an integrated function?

- A) molecules
- B) tissues
- C) systems
- D) organelles

Answer: C

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2) Which of the following is MOST responsible for prompting individuals to seek food?

- A) stomach
- B) small intestine
- C) hypothalamus
- D) mouth

Answer: C

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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

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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.

Answer: A

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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

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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) piece of cheese
- C) glass of whole milk
- D) glass of skim milk

Answer: B

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7) The smallest units of matter that cannot be broken down by natural means are

- A) atoms.
- B) molecules.
- C) cells.
- D) lipids.

Answer: A

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8) The human body is organized into the following structural levels (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

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9) Cell membranes are

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

Answer: B

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10) In which organelle is the cell's DNA located?

- A) nucleus
- B) mitochondria
- C) cell membrane
- D) cytoplasm

Answer: A

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11) The "powerhouses" of the cell that produce energy from food molecules are the

- A) mitochondria.
- B) ribosomes.
- C) nuclei.
- D) cytoplasm.

Answer: A

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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

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13) Which of the following is NOT a role that the liver plays in digestion and absorption of nutrients?

- A) Filters the blood, removing potential toxins such as alcohol and drugs.
- B) Secretes insulin and glucagon to assist in the regulation of blood glucose concentrations.
- C) Receives the products of digestion from the small intestine and releases nutrients depending on body needs.
- D) Synthesizes bile to assist in the digestion and absorption of fat.

Answer: B

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14) Most digestion and absorption occurs in the

- A) stomach.
- B) esophagus.
- C) small intestine.
- D) mouth.

Answer: C

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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

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16) The mechanical and chemical digestion of food is initiated in the

- A) mouth.
- B) small intestine.
- C) stomach.
- D) esophagus.

Answer: A

Page Ref: 46-47

17) Salivary amylase is a(n)

- A) hormone.
- B) antibody.
- C) bicarbonate.
- D) enzyme.

Answer: D

Page Ref: 47

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

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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

Page Ref: 49

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

Answer: C

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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

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22) Which of the macronutrients is NOT broken down chemically in the stomach?

- A) protein
- B) carbohydrate
- C) fat
- D) vitamin C

Answer: B

Page Ref: 49

23) Proteins that induce chemical changes to speed up body processes are called

- A) hormones.
- B) peptides.
- C) enzymes.
- D) chymes.

Answer: C

Page Ref: 47

24) The brush border is located in the

- A) esophagus.
- B) stomach.
- C) small intestine.
- D) large intestine.

Answer: C

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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

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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

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- 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

Page Ref: 51

- 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) They respond to changing glucose levels and signal the hypothalamus.
  - D) They initiate movements in the GI tract known as "hunger pangs."

Answer: C

Page Ref: 38-39

- 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

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

Answer: C

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

Answer: A

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32) In which organ does the majority of water absorption occur?

- A) mouth
- B) stomach
- C) small intestine
- D) large intestine

Answer: D

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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

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34) If a person has GERD, which of the following is probably malfunctioning?

- A) gallbladder
- B) pancreas
- C) epiglottis
- D) gastroesophageal sphincter

Answer: D

Page Ref: 56

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

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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

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- 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

Answer: D

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- 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

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- 39) The liquid within an animal cell is known as

- A) gastric juice.
- B) glucagon.
- C) cytoplasm.
- D) mitochondria.

Answer: C

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- 40) The psychological desire that encourages us to seek out a particular food is

- A) hunger.
- B) appetite.
- C) satiety.
- D) anorexia.

Answer: B

Page Ref: 38

- 41) The 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

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- 42) Secreted from many glands of the body, hormones acts 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

Page Ref: 38

- 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.

Answer: D

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- 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

Page Ref: 38

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

Answer: C

Page Ref: 45

- 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.

Answer: D

Page Ref: 45

47) Approximately how long is the human GI tract?

- A) 30 inches
- B) 30 feet
- C) 50 inches
- D) 50 feet

Answer: B

Page Ref: 45

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

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49) Carbohydrate digestion begins in the

- A) mouth.
- B) stomach.
- C) small intestine.
- D) large intestine.

Answer: A

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50) Protein digestion begins in the

- A) mouth.
- B) stomach.
- C) small intestine.
- D) large intestine.

Answer: B

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51) Which structure keeps food from entering the trachea during swallowing?

- A) upper esophageal sphincter
- B) lower esophageal sphincter
- C) soft palate
- D) epiglottis

Answer: D

Page Ref: 48

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

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## True/False Questions

1) Atoms are the smallest units of matter.

Answer: TRUE

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

Answer: FALSE

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3) Hunger is the physical sensation that drives humans to eat.

Answer: TRUE

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

Answer: FALSE

Page Ref: 38

5) Foods containing carbohydrate have the highest satiety value.

Answer: FALSE

Page Ref: 39

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

Answer: TRUE

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

Answer: TRUE

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8) The pancreas is the largest digestive organ.

Answer: FALSE

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

Answer: TRUE

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

Answer: FALSE

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

Answer: TRUE

Page Ref: 50-51

12) 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

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13) The most common symptom of GERD is chronic diarrhea.

Answer: FALSE

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

Answer: TRUE

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15) The sigmoid colon is the first segment of the large intestine.

Answer: FALSE

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16) Food allergies cause an immune response by the body.

Answer: TRUE

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

Answer: FALSE

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

Answer: FALSE

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19) Untreated diarrhea can be fatal in young children.

Answer: TRUE

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

Answer: TRUE

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21) Adults cannot learn to enjoy a food unless it was introduced to them in childhood.

Answer: FALSE

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22) Produced by the liver, bile is stored in the gallbladder and emulsifies fats in the small intestine.

Answer: TRUE

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

Answer: FALSE

Page Ref: 51

24) The gallbladder secretes bicarbonate into the small intestine to neutralize the acidity of chyme.

Answer: FALSE

Page Ref: 51

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

Answer: FALSE

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### Essay Questions

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

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

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

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

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### Questions from Chapter Boxes

1) Bile reacts with fats in a similar way as soap does.

Answer: TRUE

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2) Probiotics have been shown to be effective in treating

A) traveler's diarrhea.

B) food allergies.

C) gastroesophageal reflux disease (GERD).

D) diabetes mellitus.

Answer: A

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3) Traveler's diarrhea is caused by

- A) food allergies.
- B) stress.
- C) antibiotic overuse.
- D) viral or bacterial infections.

Answer: D

Page Ref: 63

4) One appetizing and safe alternative to barley for people with celiac disease is

- A) wheat.
- B) gluten.
- C) Job's tears.
- D) rye.

Answer: C

Page Ref: 62

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

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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

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

Answer: TRUE

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

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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.

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