Test Bank Chapter: 3
Digestion, Absorption, and Metabolism

Question type: Multiple Choice

1) What are the units of matter that cannot be further broken down by chemical means?

a) Organic compounds
b) Cells
c) Atoms
d) Solvents

Answer: c

Difficulty: Easy
Learning Objective: Describe the organization of life from atoms to organisms.
Section Reference: 3.1 Food Becomes Us

2) Nutrients classified as “organic molecules” have a molecular structure which contains which element?

a) carbon.
b) oxygen.
c) nitrogen.
d) sulphur.

Answer: a

Difficulty: Easy
Learning Objective: Describe the organization of life from atoms to organisms.
Section Reference: 3.1 Food Becomes Us

3) Which sequence is organized from the simplest to the most complex arrangement?

a) atoms: molecules: tissues: organs
b) molecules: tissues: atoms: organs
c) tissues: atoms: molecules: organs
d) atoms: organs: tissues: molecules

Answer: a

Difficulty: Easy
Learning Objective: Describe the organization of life from atoms to organisms.
Section Reference: 3.1 Food Becomes Us

4) The digestive system is an example of which of the following?

a) an organ system that includes the liver and has, as its only function, the secretion of chemical messengers that regulate food intake.
b) an organ system that includes the gall bladder and has, as one of its functions, the absorption of nutrients into the blood.
c) the only organ system involved in the ingestion, digestion, absorption and elimination of food.
d) an organ system that includes the pancreas which is also part of the nervous system.

Answer: b

Difficulty: Hard
Learning Objective: Describe the organization of life from atoms to organisms.
Section Reference: 3.1 Food Becomes Us

5) Which is correctly matched?

a) eliminates wastes: circulatory system
b) secretes hormones: adrenal glands
c) includes muscles and joints: skeletal system
d) includes lymph structures: circulatory system

Answer: b

Difficulty: Hard
Learning Objective: Describe the organization of life from atoms to organisms.
Section Reference: 3.1 Food Becomes Us

6) There are two major functions associated with the digestive system. One is digestion. Which is the other?

a) metabolism.
b) absorption.
c) circulation.
d) excretion.

Answer: b

Difficulty: Medium
Learning Objective: Explain the gastrointestinal tract structure and the roles of mucus, enzymes, nerves, and hormones in the digestive tract.
Section Reference: 3.2 An Overview of the Digestive System

7) What is another name for the digestive tract?

a) urinary tract.
b) gastrointestinal tract.
c) endocrine system.
d) integumentary system.

Answer: b

Difficulty: Easy
Learning Objective: Explain the gastrointestinal tract structure and the roles of mucus, enzymes, nerves, and hormones in the digestive tract.
Section Reference: 3.2 An Overview of the Digestive System

8) Which corresponds to beginning of digestive tract: end of gastrointestinal tract?

a) esophagus; small intestine.
b) mouth; pancreas.
c) esophageal sphincter; stomach.
d) mouth; anus.

Answer: d

Difficulty: Medium
Learning Objective: Explain the gastrointestinal tract structure and the roles of mucus, enzymes, nerves, and hormones in the digestive tract.
Section Reference: 3.2 An Overview of the Digestive System

9) Which best describes transit time?

a) It is the amount of time taken by food to move through the digestive tract.
b) It is rate at which chyme forms after food is swallowed.
c) It is a measure of how quickly nutrients enter the blood.
d) It is the rate at which food is swallowed.

Answer: a

Difficulty: Medium
Learning Objective: Explain the gastrointestinal tract structure and the roles of mucus, enzymes, nerves, and hormones in the digestive tract.
Section Reference: 3.2 An Overview of the Digestive System

10) Which statement best describes mucus?

a) It protects the cells of the digestive tract from damage.
b) It is a specialized cell of the immune system.
c) It is a layer of muscle that moves in a way that lubricates cells.
d) It acts as a barrier to prevent water from entering the cells of the small intestine.

Answer: a

Difficulty: Medium
Learning Objective: Explain the gastrointestinal tract structure and the roles of mucus, enzymes, nerves, and hormones in the digestive tract.

Section Reference: 3.2 An Overview of the Digestive System

11) What are protein molecules that accelerate the rate of specific chemical reactions without being changed themselves?

a) Hormones
b) Mucus
c) Enzymes
d) Chyme

Answer: c

Difficulty: Easy
Learning Objective: Explain the gastrointestinal tract structure and the roles of mucus, enzymes, nerves, and hormones in the digestive tract.
Section Reference: 3.2 An Overview of the Digestive System

12) Which of the following digestive secretions functions as a "chemical messenger"?

a) mucus
b) enzymes
c) chyme
d) hormones

Answer: d
Difficulty: Easy
Learning Objective: Explain the gastrointestinal tract structure and the roles of mucus, enzymes, nerves, and hormones in the digestive tract.
Section Reference: 3.2 An Overview of the Digestive System

13) What regulates the movement of food through the digestive tract?

a) endocrine and nervous system.
b) lymphatic and muscular system.
c) respiratory and urinary system.
d) cardiovascular system.

Answer: a

Difficulty: Medium
Learning Objective: Explain the gastrointestinal tract structure and the roles of mucus, enzymes, nerves, and hormones in the digestive tract.
Section Reference: 3.2 An Overview of the Digestive System

14) The GI tract limits the absorption of toxins and disease-causing organisms. What are these invading substances?

a) antibodies.
b) antigens.
c) enzymes.
d) mucus.

Answer: b

Difficulty: Easy
Learning Objective: Explain the gastrointestinal tract structure and the roles of mucus, enzymes, nerves, and hormones in the digestive tract.
Section Reference: 3.2 An Overview of the Digestive System

15) What does the immune system produce in response to an allergen present in the diet or environment?

a) antigens
b) antibodies
c) enzymes
d) mucus

Answer: b

Difficulty: Medium
Learning Objective: Explain the gastrointestinal tract structure and the roles of mucus, enzymes, nerves, and hormones in the digestive tract.
Section Reference: 3.2 An Overview of the Digestive System

16) Which statement best describes the typical action of a phagocyte?

a) Phagocytes are specialized cells in the pancreas that secrete digestive enzymes.
b) Phagocytes engulf pathogens and present pathogen proteins.
c) Phagocytes are lymphocytes that circulate in the lymphatic system.
d) Phagocytes secrete antibodies that bind to disease-causing organisms.

Answer: b

Difficulty: Medium
Learning Objective: Explain the gastrointestinal tract structure and the roles of mucus, enzymes, nerves, and hormones in the digestive tract.
Section Reference: 3.2 An overview of the digestive system

17) “Food proteins trigger the formation of antibodies.” What is being described?

a) An **inappropriate** reaction of the immune system, commonly seen in foods such as eggs, seafood, and nuts.
b) An **appropriate** immune response, to harmful organisms, found in food.
c) An **appropriate** reaction of the immune system, commonly seen in foods such as wheat, soy and peanuts.
d) An **inappropriate** immune response to disease-causing organisms that contaminate food.

Answer: a

Difficulty: Hard
Learning Objective: Explain the gastrointestinal tract structure and the roles of mucus, enzymes, nerves, and hormones in the digestive tract.
Section Reference: 3.2 An overview of the digestive system

18) "Activity in the digestive tract begins in response to the sight and smell of food." What response is being described?

a) cephalic
b) gastric
c) intestinal
d) cognitive

Answer: a

Difficulty: Medium
Learning Objective: Discuss how nutrients are digested and absorbed in the digestive tract.
Section Reference: 3.3 Digestion and Absorption

19) In what way does chewing improve digestion?

a) It increases the surface area of the food that comes in contact with digestive enzymes.
b) It increases the surface area of the food that comes in contact with hormones that regulate food intake.
c) It releases enzymes that are naturally-occurring in food and which aid in digestion.
d) It increases the particle size of food aiding in swallowing and peristalsis.

Answer: a
Difficulty: Medium
Learning Objective: Discuss how nutrients are digested and absorbed in the digestive tract.
Section Reference: 3.3 Digestion and Absorption

20) Which of the following forms in the mouth?

a) bolus
b) rugae
c) chime
d) bile

Answer: a

Difficulty: Medium
Learning Objective: Discuss how nutrients are digested and absorbed in the digestive tract.
Section Reference: 3.3 Digestion and Absorption

21) Which structure prevents food from entering the lungs?

a) trachea
b) pharynx
c) esophageal sphincter
d) epiglottis

Answer: d

Difficulty: Easy
Learning Objective: Discuss how nutrients are digested and absorbed in the digestive tract.
Section Reference: 3.3 Digestion and Absorption

22) The epiglottis guides food from the pharynx to what location?

a) large intestine.
b) small intestine.
c) esophagus.
d) lungs.

Answer: c

Difficulty: Medium
Learning Objective: Discuss how nutrients are digested and absorbed in the digestive tract.
Section Reference: 3.3 Digestion and Absorption

23) The pharynx is a cavity shared by the digestive system and which other organ system?

a) urinary
b) respiratory
c) endocrine
d) immune

Answer: b

Difficulty: Medium
Learning Objective: Discuss how nutrients are digested and absorbed in the digestive tract.
Section Reference: 3.3 Digestion and Absorption

24) What happens when the gastroesophageal sphincter contracts?

a) Food flows from the esophagus into the stomach.
b) Food is prevented from reentering the esophagus from the stomach.
c) Food leaves the stomach and enters the small intestine.
d) Food is eliminated from the body through the anus.

Answer: b

Difficulty: Medium
Learning Objective: Discuss how nutrients are digested and absorbed in the digestive tract.
Section Reference: 3.3 Digestion and Absorption

25) What are the wavelike contractions that move food through the digestive tract?

a) quickening.
b) the Heimlich maneuver.
c) peristalsis.
d) segmentation.

Answer: c

Difficulty: Easy
Learning Objective: Discuss how nutrients are digested and absorbed in the digestive tract.
Section Reference: 3.3 Digestion and Absorption

26) What is the function of sphincters in the digestive tract?

a) to coordinate muscular contractions that propel food forward.
b) to regulate the flow of food.
c) to release bile.
d) to regulate enzymatic reactions.

Answer: b

Difficulty: Easy
Learning Objective: Discuss how nutrients are digested and absorbed in the digestive tract.
Section Reference: 3.3 Digestion and Absorption

27) Through what does chyme pass when moving out of the stomach?

a) gastroesophageal sphincter.
b) hard and soft palate.
c) pyloric sphincter.
d) common bile duct.

Answer: c

Difficulty: Medium
Learning Objective: Discuss how nutrients are digested and absorbed in the digestive tract.
Section Reference: 3.3 Digestion and Absorption

28) The formation of chyme occurs in which part of the GI tract?

a) pancreas
b) large intestine

c) gallbladder
d) stomach

Answer: d

Difficulty: Medium
Learning Objective: Discuss how nutrients are digested and absorbed in the digestive tract.
Section Reference: 3.3 Digestion and Absorption

29) What protects the stomach wall from the acidity of the gastric juice?

a) *Helicobacter pylori*.
b) a viscous mucus layer.
c) the hormone gastrin.
d) the enzyme pepsin.

Answer: b

Difficulty: Medium
Learning Objective: Discuss how nutrients are digested and absorbed in the digestive tract.
Section Reference: 3.3 Digestion and Absorption

30) What causes the release of the hormone gastrin?

a) the presence of food in the stomach.
b) contraction of the gastroesophageal sphincter.
c) relaxation of the anal sphincter.
d) the presence of the bacteria *Helicobacter pylori* in the stomach.

Answer: a

Difficulty: Medium
Learning Objective: Discuss how nutrients are digested and absorbed in the digestive tract.
Section Reference: 3.3 Digestion and Absorption

31) What is the active protein-digesting enzyme secreted in the gastric juice?

a) peptic ulcer.
b) pepsinogen.
c) pepsin.
d) parietal cells.

Answer: c

Difficulty: Medium
Learning Objective: Discuss how nutrients are digested and absorbed in the digestive tract.
Section Reference: 3.3 Digestion and Absorption

32) Which sphincter regulates the flow of chyme from the stomach into the small intestine?.

a) gastroesophageal
b) celiac
c) anal
d) pyloric

Answer: d

Difficulty: Easy
Learning Objective: Discuss how nutrients are digested and absorbed in the digestive tract.
Section Reference: 3.3 Digestion and Absorption

33) Which of the following is most likely to inhibit gastric secretion and motility?

a) the sight and smell of food
b) the release of the hormone gastrin from the stomach
c) the passage of chyme into the small intestine
d) the release of bile from the gallbladder

Answer: c

Difficulty: Hard
Learning Objective: Discuss how nutrients are digested and absorbed in the digestive tract.
Section Reference: 3.3 Digestion and Absorption

34) Which of the following meals is likely to stay in the stomach the longest?

a) cheeseburger, small French fries, small soft drink, and ice cream
b) grilled chicken breast, mashed potato with butter, green beans, and skim milk
c) tuna sandwich on whole wheat, pickle, and ice tea
d) puffed rice cereal, skim milk, blueberries, and coffee

Answer: a

Difficulty: Medium
Learning Objective: Discuss how nutrients are digested and absorbed in the digestive tract.
Section Reference: 3.3 Digestion and Absorption

35) Which of the following does NOT affect stomach emptying?

a) the nutrient composition of a meal.
b) the time of day the meal is consumed.
c) the meal consistency (liquid versus solid).
d) emotional states (sadness, fear, anger).

Answer: b

Difficulty: Medium
Learning Objective: Discuss how nutrients are digested and absorbed in the digestive tract.
Section Reference: 3.3 Digestion and Absorption

36) What is the main site of nutrient absorption?

a) liver.
b) large intestine.
c) stomach.
d) small intestine.

Answer: d

Difficulty: Easy
Learning Objective: Discuss how nutrients are digested and absorbed in the digestive tract.
Section Reference: 3.3 Digestion and Absorption

37) Which of the following digestive organs is covered with finger-like projections called villi?

a) esophagus
b) stomach
c) small intestine
d) large intestine

Answer: c

Difficulty: Easy
Learning Objective: Discuss how nutrients are digested and absorbed in the digestive tract.
Section Reference: 3.3 Digestion and Absorption

38) What increases the absorptive surface of the small intestine?

a) sphincters.
b) microvilli.
c) lymph vessels.
d) gastric pits.

Answer: b

Difficulty: Medium
Learning Objective: Discuss how nutrients are digested and absorbed in the digestive tract.
Section Reference: 3.3 Digestion and Absorption

39) Which of the following accessory organs releases its secretions into the GI tract?

a) gallbladder

b) pancreas
c) salivary glands
d) All of the above answer choices are correct.

Answer: d

Difficulty: Medium
Learning Objective: Discuss how nutrients are digested and absorbed in the digestive tract.
Section Reference: 3.3 Digestion and Absorption

40) A diseased gallbladder interferes with what function?

a) fat digestion and absorption.
b) chyme formation.
c) the ability to chew.
d) the ability to regulate blood glucose levels.

Answer: a

Difficulty: Hard
Learning Objective: Discuss how nutrients are digested and absorbed in the digestive tract.
Section Reference: 3.3 Digestion and Absorption

41) Which of the following is included in pancreatic secretions?

a) bicarbonate ions.
b) bile.
c) cholecystokinin (CCK).
d) chyme.

Answer: a

Difficulty: Medium
Learning Objective: Discuss how nutrients are digested and absorbed in the digestive tract.
Section Reference: 3.3 Digestion and Absorption

42) Chyme is neutralized in the small intestine by secretions from which organ?

a) gallbladder.
b) kidneys.
c) liver.
d) pancreas.

Answer: d

Difficulty: Medium
Learning Objective: Discuss how nutrients are digested and absorbed in the digestive tract.
Section Reference: 3.3 Digestion and Absorption

43) How is the release of bile and pancreatic juice into the small intestine controlled?

a) by hormones secreted by the mucosal lining of the duodenum.
b) by the stimulation of stretch receptors in the stomach.
c) by the hormone gastrin.
d) by salivary amylase.

Answer: a

Difficulty: Hard
Learning Objective: Discuss how nutrients are digested and absorbed in the digestive tract.
Section Reference: 3.3 Digestion and Absorption

44) What is required in order for the absorption of nutrients by simple diffusion to occur?

a) a carrier molecule.
b) energy.
c) a concentration gradient.
d) All of the above answer choices are correct

Answer: c

Difficulty: Medium
Learning Objective: Discuss how nutrients are digested and absorbed in the digestive tract.
Section Reference: 3.3 Digestion and Absorption

45) Which absorption mechanism requires both a carrier molecule and energy to move across a cell membrane?

a) simple diffusion
b) osmosis
c) facilitated diffusion
d) active transport

Answer: d

Difficulty: Medium
Learning Objective: Discuss how nutrients are digested and absorbed in the digestive tract.
Section Reference: 3.3 Digestion and Absorption

46) Which of the following structures is located past (beyond) the ileocecal valve?

a) colon
b) common bile duct
c) stomach
d) pancreas

Answer: a

Difficulty: Hard
Learning Objective: Discuss how nutrients are digested and absorbed in the digestive tract.
Section Reference: 3.3 Digestion and Absorption

47) What is the primary function of the large intestine?

a) prepare unabsorbed food residue for excretion.
b) provide a surface for nutrient absorption.
c) to neutralize chyme.
d) All of the above answer choices are correct.

Answer: a

Difficulty: Medium
Learning Objective: Discuss how nutrients are digested and absorbed in the digestive tract.
Section Reference: 3.3 Digestion and Absorption

48) Which of the following is an example of probiotic therapy?

a) Taking an antibiotic to clear up an infection.
b) Eating yogurt which contains live bacteria.
c) Drinking alcohol with our meals to kill foodborne pathogens.
d) Pasteurization of our food supply.

Answer: b
Difficulty: Medium
Learning Objective: Discuss how nutrients are digested and absorbed in the digestive tract.
Section Reference: 3.3 Digestion and Absorption

49) Which of the following statements regarding intestinal microflora is FALSE?

a) The large intestine is home to many different species of bacteria.
b) Bacteria in the gut break down indigestible dietary substances.
c) Intestinal microflora interfere with immune function in the GI tract.
d) Intestinal microflora optimize intestinal motility and transit time.

Answer: c

Difficulty: Hard
Learning Objective: Discuss how nutrients are digested and absorbed in the digestive tract.
Section Reference: 3.3 Digestion and Absorption

50) Which statement best describes the absorption of nutrients?

a) From the cells of the small intestine, amino acids and glucose pass into the bloodstream while long chain fatty acids pass into the lymphatic system.
b) From the cells of the large intestine, amino acids and amylose pass into the bloodstream while long chain fatty acids pass into the lymphatic system.
c) From the parietal cells of the small intestine, glucose and short chain fatty acids pass into the bloodstream, while long chain fatty acids and fat-soluble vitamins enter the lymphatic system.
d) From the mucosal cells of the large intestine, amino acids and fatty acids enter the lymphatic system, while indigestible fibre is eliminated from the body.

Answer: a

Difficulty: Hard
Learning Objective: Discuss how nutrients are digested and absorbed in the digestive tract.
Section Reference: 3.3 Digestion and Absorption

51) Which statement best describes pepsinogen?

a) It is secreted by the same cells in the stomach that produce HCl.
b) In its active form, it begins the digestion of food proteins,
c) In its active form, it continues the digestion of starch begun by salivary amylase.
d) It is secreted by the chief cells in the stomach, which also secrete the intrinsic factor.

Answer: b

Difficulty: Hard
Learning Objective: Discuss how nutrients are digested and absorbed in the digestive tract.
Section Reference: 3.3 Digestion and Absorption

52) Which is a process that occurs in the mouth?

a) the process of digestion which begins with the action of lysozyme
b) the digestion of starch by the action of salivary pepsin.
c) the breakdown of starch into shorter chains of glucose.
d) the breakdown of dietary fibre through the action of salivary amylase.

Answer: c

Difficulty: Hard
Learning Objective: Discuss how nutrients are digested and absorbed in the digestive tract.
Section Reference: 3.3 Digestion and Absorption

53) What is being described: “A food bolus encounters the contraction of circular and longitudinal muscles.”

a) the entry of food into the small intestine
b) the safe movement of food past the epiglottis
c) the movement of food down the esophagus
d) the breakdown of food in the mouth into smaller particles.

Answer: c

Difficulty: Hard
Learning Objective: Discuss how nutrients are digested and absorbed in the digestive tract.
Section Reference: 3.3 Digestion and Absorption

54) Which statement best distinguishes between the action of secretin and CCK?

a) Secretin suppresses the release of gastric juices, while CCK suppresses the release of digestive enzymes from the pancreas.
b) CCK stimulates the release of bicarbonate from the pancreas, while secretin stimulates the release of bile from the gall bladder.
c) Secretin promotes the release of gastric juices, while CCK promotes the secretion of bile from the liver to the gall bladder.
d) Secretin stimulates the release of compounds that neutralize chyme, while CCK stimulates the release of a substance that helps emulsify fat.

Answer: d

Difficulty: Hard
Learning Objective: Discuss how nutrients are digested and absorbed in the digestive tract.
Section Reference: 3.3 Digestion and Absorption

55) Which statement best distinguishes between secretin and gastrin?

a) gastrin responds to the entry of food into the stomach, while secretin responds to entry of food into the small intestine.
b) gastrin suppresses the release of gastric juices, while secretin suppresses the release of bile from the liver.
c) gastrin reduces gastric motility as food leaves the stomach, while secretin stimulates the secretion of pancreatic juice as food enters the small intestine.
d) gastrin stimulates gastric motility, while secretin stimulates the contraction of the gall bladder.

Answer: a

Difficulty: Hard
Learning Objective: Discuss how nutrients are digested and absorbed in the digestive tract.
Section Reference: 3.3 Digestion and Absorption

56) Which statement best describes the connection between prebiotics and probiotics.

a) **pre**biotics are **indigestible** carbohydrates, found in common foods, that support the growth of **pro**biotics, bacteria that growth in the large intestine and may be beneficial to health.
b) **pre**biotics are **digestible** carbohydrates, found in common foods, that support the growth of **pro**biotics, bacteria that growth in the large intestine and may be beneficial to health.
c) **pre**biotics are **indigestible** carbohydrates, **not** found in common foods, that support the growth of **pro**biotics, bacteria that growth in the large intestine and may be beneficial to health.

d) **pre**biotics are **indigestible** carbohydrates, found in common foods, that suppress the growth of **pro**biotics, which are harmful bacteria that growth in the large intestine

Answer: a

Difficulty: Hard
Learning Objective: Discuss how nutrients are digested and absorbed in the digestive tract.
Section Reference: 3.3 Digestion and Absorption

57) "Chyme and digestive juices are moved backward and forward in the small intestine to enhance absorption at the brush border." What is being described?

a) Gastric secretion
b) Barrier function
c) Peristalis
d) Segmentation

Answer: d

Difficulty: hard
Learning Objective: Discuss how nutrients are digested and absorbed in the digestive tract.
Section Reference: 3.3 Digestion and Absorption

58) Which mechanism requires the most energy?

a) active transport
b) facilitated diffusion
c) osmosis
d) simple diffusion

Answer: a

Difficulty: Medium
Learning Objective: Discuss how nutrients are digested and absorbed in the digestive tract.
Section Reference: 3.3 Digestion and Absorption

59) Which statement best describes heartburn?

a) It is caused by acidic stomach contents leaking into the esophagus.
b) It is caused when the stomach bulges through the pyloric sphincter.
c) It is more common in men and those who are underweight.
d) All of the above answer choices correctly describe heartburn.

Answer: a

Difficulty: Medium
Learning Objective: Describe how certain stages of life affect the type of foods that can be consumed and the function of the digestive tract.

Section Reference: 3.4 Digestion and Health

60) What is the most common cause of ulcers?

a) stress.
b) eating fatty foods.
c) bacterial infection.
d) the pain reliever Tylenol.

Answer: c

Difficulty: Medium
Learning Objective: Describe how certain stages of life affect the type of foods that can be consumed and the function of the digestive tract.
Section Reference: 3.4 Digestion and Health

61) What occurs when an inflammation of the lining of the small intestine reduces the ability of the intestine to absorb water or nutrients?

a) constipation.
b) diarrhea.
c) gastroesophageal reflux disease.
d) gallstones.

Answer: b
Difficulty: Hard
Learning Objective: Describe how certain stages of life affect the type of foods that can be consumed and the function of the digestive tract.
Section Reference: 3.4 Digestion and Health

62) Which statement about *Helicobacter pylori* is TRUE?

a) These bacteria are killed by the stomach's acid environment.
b) Dr. B. J. Marshall developed gastric inflammation after he drank a culture of *H. pylori*.
c) *H. pylori* causes irritable bowel syndrome.
d) *H. pylori* causes ulcers if the stomach is already inflamed from stress.

Answer: b

Difficulty: Medium
Learning Objective: Describe how certain stages of life affect the type of foods that can be consumed and the function of the digestive tract.
Section Reference: 3.4 Digestion and Health

63) What is it called when nutrients essential to life are provided directly into the bloodstream?

a) enteral feeding.

b) tube-feeding.
c) total parenteral nutrition.
d) force feeding.

Answer: c

Difficulty: Easy
Learning Objective: Describe how certain stages of life affect the type of foods that can be consumed and the function of the digestive tract.
Section Reference: 3.4 Digestion and Health

64) During which stage of life can the digestive system absorb intact proteins?

a) infancy
b) childhood
c) adulthood
d) aging adulthood

Answer: a

Difficulty: Medium
Learning Objective: Describe how certain stages of life affect the type of foods that can be consumed and the function of the digestive tract.
Section Reference: 3.4 Digestion and Health

65) Which of the following statements about aging is FALSE?

a) There are dramatic changes in nutrient requirements with aging.
b) The senses of smell and taste are often diminished or lost with age.
c) With age there is a reduction in the production of saliva.
d) Gastrointestinal secretions may be reduced with age.

Answer: a

Difficulty: Hard
Learning Objective: Describe how certain stages of life affect the type of foods that can be consumed and the function of the digestive tract.
Section Reference: 3.4 Digestion and Health

66) According to Canadian regulations, which is an acceptable probiotic claim for a probiotic yogurt?

a) “probiotic that naturally forms part of the gut flora and improves immune function”
b) “provides live micro-organisms that naturally form part of the gut flora”
c) “probiotic that contributes to healthy gut flora and decreases diarrhea”
d) “provides live micro-organisms that will relieve constipation

Answer: b

Difficulty: Medium
Learning Objective: Describe how certain stages of life affect the type of foods that can be consumed and the function of the digestive tract.
Section Reference: 3.3 Digestion and Absorption

67) Which choice completes the following phrase "More than 1 billion _____ per serving that contribute to healthy _____" which can typically be found on a probiotic yogurt label.

a) probiotic bacteria; gut flora
b) probiotic bacteria; body
c) prebiotic bacteria; gut flora
d) inactive bacteria; body

Answer: a

Difficulty: Medium
Learning Objective: Discuss how nutrients are digested and absorbed in the digestive tract.
Section Reference: 3.3 Digestion and Absorption

68) Which statement best describes the link between observational studies and *H pylori*?

a) Observational studies demonstrated a direct association between H pylori infection and peptic ulcer.
b) Observational studies established an inverse association between H pylori infection and inflammation in the stomach.
c) Observational studies confirmed that antibiotic therapy was effective for the treatment of peptic ulcer.
d) Observational studies identified a direct association between H pylori infection and gall bladder disease.

Answer: a

Difficulty: Difficult
Learning Objective: Discuss how nutrients are digested and absorbed in the digestive tract.
Section Reference: 3.3 Digestion and Absorption

69) For a patient who is unable to swallow but can absorb food, which feeding method is recommended?

a) total parenteral nutrition
b) antacid treatment
c) tube-feeding
d) epiglottal message

Answer: c

Difficulty: Medium
Learning Objective: Describe how certain stages of life affect the type of foods that can be consumed and the function of the digestive tract.
Section Reference: 3.4 Digestion and Health

70) The absorption of what nutrient could be impaired if the gallbladder is not producing enough bile?

a) sucrose
b) fat-soluble vitamins
c) starch
d) amino acids

Answer: b

Difficulty: Hard
Learning Objective: Describe how certain stages of life affect the type of foods that can be consumed and the function of the digestive tract.
Section Reference: 3.4 Digestion and Health

71) A person has a rare condition that dramatically reduces the amount of pancreatic amylase that is secreted into the small intestine. What treatment would be most effective?

a) Increase the amount of time chewing so that food can be exposed to sufficient salivary amylase
b) Consume a supplement that contains the emzyme chymotrypsin, which can digest starch
c) Consume a diet very low in starch
d) Consume bread at each meal

Answer: c

Difficulty: Hard
Learning Objective: Describe how certain stages of life affect the type of foods that can be consumed and the function of the digestive tract.
Section Reference: 3.4 Digestion and Health

72) Which is NOT a characteristic of the digestive tract of a newborn infant?

a) The ability to digest dietary fat in the stomach.
b) The presence of enzyme rennin for the digestion of breast milk protein.
c) High levels of pancreatic enzymes for the digestion of lactose.
d) The presence of lactase in the brush border.

Answer: c

Difficulty: Hard
Learning Objective: Describe how certain stages of life affect the type of foods that can be consumed and the function of the digestive tract.
Section Reference: 3.4 Digestion and Health

73) Nutrient Q is a nutrient normally bound to protein in food. In this form it cannot be absorbed. Fortunately the binding between nutrient Q and protein is broken by the HCl in the gastric juices. What is one possible consequence of atrophic gastritis?

a) development of nutrient Q deficiency.
b) excessive absorption of nutrient Q.
c) no consequence as pepsin, secreted by the pancreas, can break the binding between nutrient Q and protein.
d) no consequence as atrophic gastritis causes inflammation but does not alter gastric secretion of HCl.

Answer: a

Difficulty: Hard
Learning Objective: Describe how certain stages of life affect the type of foods that can be consumed and the function of the digestive tract.
Section Reference: 3.4 Digestion and Health

74) After water soluble nutrients are absorbed in the mucosal cells of the small intestine, they are transported where? via what?

a) to the kidneys via capillaries.
b) to the liver via hepatic portal vein.
c) to the gall bladder viabile duct.
d) to the lymphatic system via the hepatic portal vein.

Answer: b

Difficulty: Medium
Learning Objective: Discuss the roles of the cardiovascular and lymphatic systems in nutrition.
Section Reference: 3.5 Transporting Nutrients to Body Cells

75) Hepatic portal circulation carries nutrients from the small intestine to what organ?

a) stomach.
b) kidneys.
c) brain.
d) liver.

Answer: d

Difficulty: Medium
Learning Objective: Discuss the roles of the cardiovascular and lymphatic systems in nutrition.
Section Reference: 3.5 Transporting Nutrients to Body Cells

76) Which of the following nutrients are absorbed into the lymphatic system before entering the blood?

a) fat
b) water
c) water-soluble vitamins
d) glucose

Answer: a

Difficulty: Medium
Learning Objective: Discuss the roles of the cardiovascular and lymphatic systems in nutrition.
Section Reference: 3.5 Transporting Nutrients to Body Cells

77) What controls which substances enter and exit the cell?

a) cytoplasm
b) mitochondria
c) cell membrane
d) organelle

Answer: c

Difficulty: Medium
Learning Objective: Discuss the roles of the cardiovascular and lymphatic systems in nutrition.
Section Reference: 3.5 Transporting Nutrients to Body Cells

78) What cellular structure is responsible for metabolic reactions that provide energy?

a) cytoplasm.
b) mitochondria.
c) cell membrane.
d) organelle.

Answer: b

Difficulty: Medium
Learning Objective: Discuss the roles of the cardiovascular and lymphatic systems in nutrition.
Section Reference: 3.5 Transporting Nutrients to Body Cells

79) Which statement best distinguishes between hepatic portal circulation and lymphatic system, with respect to nutrient transport?

a) The hepatic portal circulation transports **water**-soluble nutrients **directly** from the small intestine to the liver, while the lymphatic system **directly** transports **fat**-soluble nutrients from the small intestine to the liver.
b) The hepatic portal circulation transports **water**-soluble nutrients **directly** from the small intestine to the liver, while the lymphatic system transports **fat**-soluble nutrients from the small intestine **directly** to the circulatory system.
c) The hepatic portal circulation transports **fat**-soluble nutrients **directly** from the small intestine to the liver, while the lymphatic system transports **water**-soluble nutrients from the small intestine **directly** to the circulatory system.
d) The hepatic portal circulation transports **water**-soluble nutrients **directly** from the small intestine to general blood circulation, while the lymphatic system transports **fat**-soluble nutrients from the small intestine **directly** to the liver.

Answer: b

Difficulty: Hard
Learning Objective: Discuss the roles of the cardiovascular and lymphatic systems in nutrition.
Section Reference: 3.5 Transporting Nutrients to Body Cells

80) Which correctly describes the absorption of a fatty acid?

a) fatty acids move out of the mucosal cell as part of a micelle, enter the lacteal, then the lymphatic vessel and finally the blood stream.
b) fatty acids move out of the chief cell as part of a chylomicron, enter the lymphatic vessel, then the lacteal and finally the blood stream.
c) fatty acids move out of the mucosal cell as part of a chylomicron, enter the blood capillary, then the lymphatic vessel and finally the blood stream.
d) fatty acids move out of the mucosal cell as part of a chylomicron, enter the lacteal, then the lymphatic vessel and finally the blood stream.

Answer: d

Difficulty: Hard
Learning Objective: Discuss the roles of the cardiovascular and lymphatic systems in nutrition.
Section Reference: 3.5 Transporting Nutrients to Body Cells

81) What is meant by selectively-permeable?

a) it refers to the ability of the cytosol to metabolize some substances, while ejecting toxic compounds from the cell.
b) it refers to the ability of the mitochondria to selectively metabolize glucose, amino acids, and fatty acids.
c) it refers to the ability of a cellular structure to allow some substances to enter freely, while limiting the entry of others.
d) it refers to the ability of the organelles to control the shape of cellular proteins.

Answer: c

Difficulty: Hard
Learning Objective: Discuss the roles of the cardiovascular and lymphatic systems in nutrition.
Section Reference: 3.5 Transporting Nutrients to Body Cells

82) What is the sum of the chemical reactions that occur inside body cells?

a) digestion.
b) absorption.
c) metabolism.
d) hydrolysis.

Answer: c

Difficulty: Easy
Learning Objective: Discuss how glucose, fatty acids, and amino acids are used by the cells to provide energy.
Section Reference: 3.6 Metabolism of Nutrients: An Overview

83) What is the name given to metabolic reactions that build body structures?

a) catabolic reactions.
b) anabolic reactions.
c) hydrolytic reactions.
d) deamination reactions.

Answer: b

Difficulty: Easy
Learning Objective: Discuss how glucose, fatty acids, and amino acids are used by the cells to provide energy.
Section Reference: 3.6 Metabolism of Nutrients: An Overview

84) The metabolic breakdown of glucose for available energy is an example of what type of metabolic process?

a) catabolism.
b) anabolism.
c) digestion.
d) excretion.

Answer: a

Difficulty: Medium
Learning Objective: Discuss how glucose, fatty acids, and amino acids are used by the cells to provide energy.
Section Reference: 3.6 Metabolism of Nutrients: An Overview

85) Which of the following is not an end product of carbohydrate metabolism?

a) water.
b) carbon dioxide.
c) energy (ATP).
d) urea.

Answer: d

Difficulty: Medium
Learning Objective: Discuss how glucose, fatty acids, and amino acids are used by the cells to provide energy.
Section Reference: 3.6 Metabolism of Nutrients: An Overview

86) What is the name of the catabolic process that produces ATP?

a) metabolic analysis.
b) metabolic acidosis.
c) cellular respiration.
d) cellular perspiration.

Answer: c

Difficulty: Medium
Learning Objective: Discuss how glucose, fatty acids, and amino acids are used by the cells to provide energy.
Section Reference: 3.6 Metabolism of Nutrients: An Overview

87) Consider the following processes of cellular metabolism:
1) Citric acid cycle
2) Reactions that generate body heat.
3) Chemical reactions that convert glucose into glycogen.
4) Chemical reactions that converts glucose to fatty acids.
5) Chemical reactions that converts fatty acids to triglycerides.

Which of this processes would be considered part of catabolic pathways?
a) Processes 1, 2, and 4 only.
b) Process 1 only.
c) Process 3, 4, and 5 only.
d) Process 1 and 2 only.

Answer: d

Difficulty: Hard
Learning Objective: Discuss how glucose, fatty acids, and amino acids are used by the cells to provide energy.
Section Reference: 3.6 Metabolism of Nutrients: An Overview

88) Which of the following a reactions does NOT occur in the human body?

a) Conversion of glucose to triglycerides.
b) Conversion of glycogen to glucose.
c) Conversion of ATP to amino acids.
d) Conversion of proteins to amino acids.

Answer: c

Difficulty: Hard
Learning Objective: Discuss how glucose, fatty acids, and amino acids are used by the cells to provide energy.
Section Reference: 3.6 Metabolism of Nutrients: An Overview

89) Why does acetyl Co-A occupy a central role in cellular metabolism?

a) Amino acids, fatty acids and glucose can all be converted to acetyl Co-A.
b) Fatty acids and glucose, but no other compounds, can be converted to acetyl Co-A.
c) Acetyl Co-A is essential to the anabolic process that includes the citric acid cycle.
d) Acetyl Co-A is essential to the catabolic process that includes triglyceride synthesis..

Answer: a

Difficulty: Hard
Learning Objective: Discuss how glucose, fatty acids, and amino acids are used by the cells to provide energy.
Section Reference: 3.6 Metabolism of Nutrients: An Overview

90) Which of the following organs filters metabolic waste products out of the blood?

a) kidneys
b) small intestine
c) pancreas
d) spleen

Answer: a

Difficulty: Easy
Learning Objective: Explain the ways that waste products are eliminated from the body.
Section Reference: 3.7 Elimination of Metabolic Wastes

91) What do the urinary and respiratory systems eliminate from the body?

a) unabsorbed food residue.
b) metabolic waste products.
c) excess calories.
d) All of the above answer choices are correct.

Answer: b

Difficulty: Medium
Learning Objective: Explain the ways that waste products are eliminated from the body.
Section Reference: 3.7 Elimination of Metabolic Wastes

ESSAY QUESTIONS

92) Describe the organization of the human body beginning with atoms and ending with the major body systems.

Answer: Atoms are the smallest units of an element. Elements cannot be broken down into products with different properties. Elements are linked together by forces called chemical bonds. In the body, carbon, hydrogen, oxygen, and nitrogen are the most abundant elements, and are also the most abundant elements in food. A molecule is a unit of two or more atoms of elements bonded together. Molecules are organized into the smallest unit of life, the cell. Cells of similar structure and function are organized into tissues, and tissues into organs of discrete structure and function.

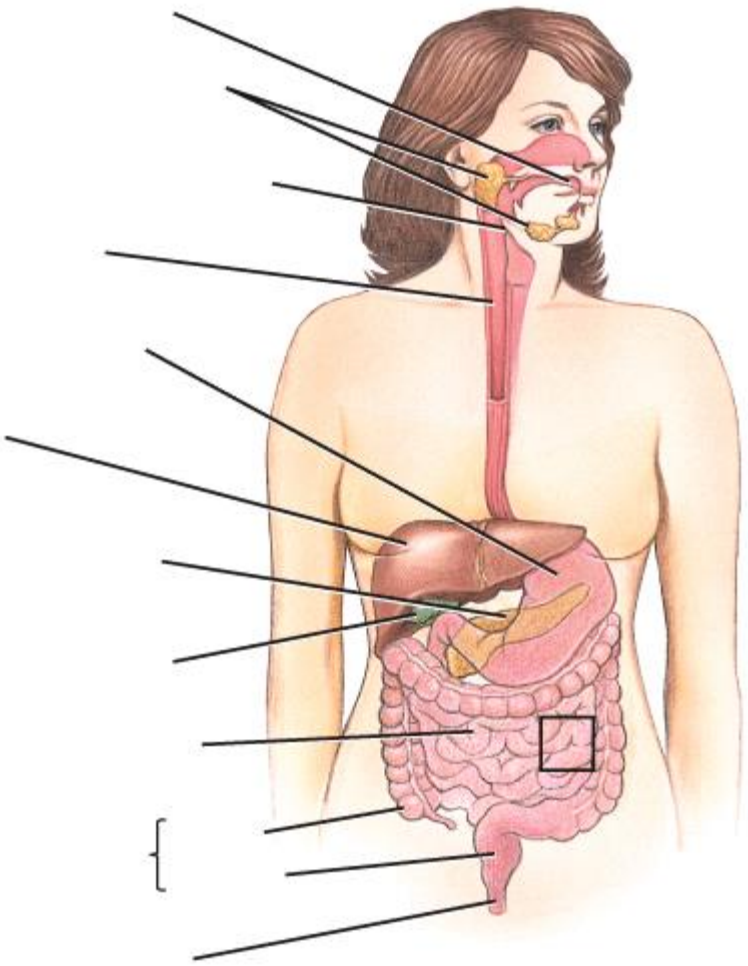
Difficulty: Easy
Learning Objective: Describe the organization of life from atoms to organisms.
Section Reference: 3.1 Food Becomes Us

93) Describe the signals that regulate gastric secretion and motility.

Answer: The sight and smell of food and presence of food in the gut stimulates nerves in the GI tract that stimulate movement and the release or inhibition of gastric secretions. Hormones from the gut and accessory organs also regulate GI motility and secretions.

Difficulty: Easy
Learning Objective: Explain the gastrointestinal tract structure and the roles of mucus, enzymes, nerves, and hormones in the digestive tract.
Section Reference: 3.2 An Overview of the Digestive System

94) Identify the organs of the digestive system. Briefly describe the digestive process that occurs in each organ or section of the system.



Answer: Mouth: Chews food and mixes it with saliva
Salivary glands: Produce saliva, which contains a starch-digesting enzyme
Pharynx: Swallows chewed food mixed with saliva
Esophagus: Moves food to the stomach
Stomach: Churns and mixes food; secretes acid and a protein-digesting enzyme
Liver: Makes bile, which aids in digestion and absorption of fat
Pancreas: Releases bicarbonate to neutralize intestinal contents; produces enzymes that digest carbohydrate, protein, and fat
Gallbladder: Stores bile and releases it into the small intestine when needed
Small intestine: Absorbs nutrients into blood or lymph; most digestion occurs here
Large intestine: Absorbs water and some vitamins and minerals; home to intestinal bacteria; passes waste material
Anus: Opens to allow waste to leave the body

Difficulty: Hard
Learning Objective: Explain the gastrointestinal tract structure and the roles of mucus, enzymes, nerves, and hormones in the digestive tract.
Section Reference: 3.2 An Overview of the Digestive System

95) What factors impact the rate at which food leaves the stomach?

Answer:
Large meal (slower gastric emptying) vs. small meal (faster gastric emptying); solids meal (slower) vs. liquid meal (faster); Meal high in fat (slowest); high in protein (intermediate); high in carbohydrate (fastest).

Slower	Faster
Large meal	Small meal
Solids	Liquids
Fat	Protein
	Carbohydrate

Difficulty: Easy
Learning Objective 1: Discuss how nutrients are digested and absorbed in the digestive tract.
Section Reference 1: 3.3 Digestion and Absorption

96) Explain why a person who consumes toast, fruit, and coffee for breakfast is more likely to feel hunger sooner compared to a person who eats an egg and fried potatoes for breakfast.

Answer: There are several factors that influence the rate of gastric emptying, which include the size of the meal, solids vs. liquids, and the nutritional composition. Fat takes longer to leave the stomach because its presence in the stomach triggers the release of hormones that slow GI motility. Carbohydrate leaves the stomach at the fastest rate. Toast, fruit, and coffee are primarily carbohydrate and low in fat. Eggs and fried potatoes will contain a considerably higher amount of fat.

Difficulty: Medium
Learning Objective: Describe what happens in each of the organs of the gastrointestinal tract. Discuss factors that influence how quickly food moves through the gastrointestinal tract.
Section Reference: 3.3 Digestion and Absorption

97) What regulates the release of bile and pancreatic enzymes?

Answer: Two hormones secreted by the duodenal mucosa: secretin and cholecystokinin (CCK).

Difficulty: Easy
Learning Objective: Describe what happens in each of the organs of the gastrointestinal tract.
Section Reference: 3.3 Digestion and Absorption

98) How do the gallbladder and pancreas contribute to the process of digestion?

Answer: The pancreas secretes bicarbonate to neutralize gastric acid and digestive enzymes into the small intestine. Amylase from the pancreas digests carbohydrate, trypsin and chymotrypsin break down protein, and lipases aid in fat digestion. The gallbladder stores and concentrates bile formed in the liver. Bile released into the small intestine emulsifies, or breaks down fat, into smaller droplets facilitating the action of lipase and the absorption of fat into the small intestine.

Difficulty: Medium

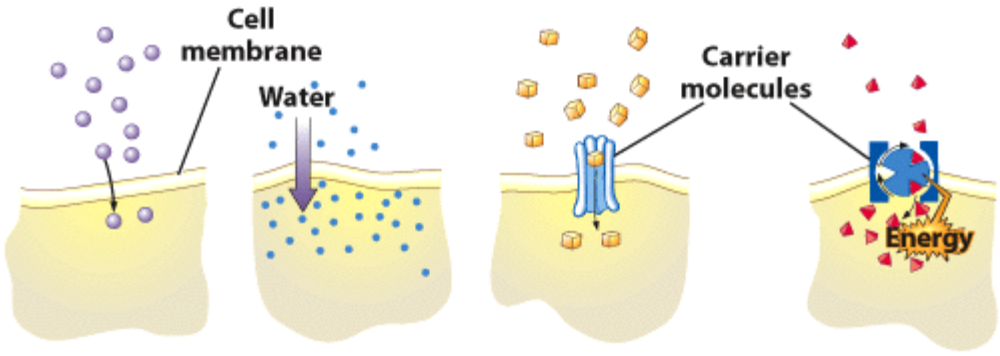
Learning Objective: Describe what happens in each of the organs of the gastrointestinal tract.
Section Reference: 3.3 Digestion and Absorption

99) There are several mechanisms whereby nutrients can be absorbed, including simple diffusion, facilitated diffusion, and active transport. Explain each of these absorptive processes.

Answer: 1) Simple diffusion: particles move from an area of high concentration to an area of low concentration. No energy is required.
2) Facilitated diffusion: movement of particles across a cell membrane from area of high concentration to area of low concentration with the aid of a carrier molecule. No energy is required.
3) Active transport: movement of particle across a cell membrane with the aid of a carrier and the expending of energy. May be across a concentration gradient.

Difficulty: Easy
Learning Objective: Distinguish simple diffusion, facilitated diffusion, and active transport.
Section Reference: 3.3 Digestion and Absorption

100) Describe the type of absorption mechanism represented by each of the four separate parts in the figure.



Answer: Simple diffusion, osmosis, facilitated diffusion, active transport

Difficulty: Medium
Learning Objective: Discuss how nutrients are digested and absorbed in the digestive tract.
Section Reference: 3.3 Digestion and Absorption

101) What is the difference between probiotics and prebiotics? How can these be used to promote gastrointestinal health?

Answer: Probiotics are specific organisms found in fermented dairy products and supplements. They have been found to have some specific health benefits like aiding in the digestion of lactose, preventing or treating diarrhea, improving immune function in the gut, and modifying the risk of colon cancer. They have to be consumed regularly.
Prebiotics are indigestible carbohydrates found in foods such as onions, bananas, and garlic that promote the growth of healthy bacteria that provide health benefits.

Difficulty: Medium
Learning Objective: Discuss how nutrients are digested and absorbed in the digestive tract.
Section Reference: 3.3 Digestion and Absorption

102) Describe the major digestive events taking place in each of the following organs:

a) Mouth
b) Stomach
c) Small Intestine
d) Large Intestine

Answer:
a) Mouth - Chewing breaks food down for better digestion, mixes food with saliva for tasting and formation of bolus; salivary amylase initiates starch digestion.
b) Stomach - Bolus is mixed with acid secretions to form chyme; starch digestion stops and protein digestion begins with pepsin; acidic secretions kill bacteria in food.
c) Small Intestine - Primary site of digestion and absorption; starch is broken down by pancreatic amylase and brush border enzymes digest sugars. Protein is further digested by pancreatic enzymes; bile from gallbladder emulsifies fats and lipase from pancreas digests fat.
d) Large Intestine - Water and some vitamins absorbed; microflora act on fibre, feces formed.

Difficulty: Easy
Learning Objective: Discuss how nutrients are digested and absorbed in the digestive tract.
Section Reference: 3.3 Digestion and Absorption

103) What causes heartburn? What lifestyle changes can a person make to try to alleviate this problem?

Answer: Heartburn occurs when stomach acid leaks backward from the stomach into the esophagus. This happens with the lower esophageal sphincter is relaxed. It may be caused by overeating, anxiety, stress, pregnancy, or disease. Eat smaller, low fat meals, remain upright after eating, and take medications as prescribed.

Difficulty: Medium
Learning Objective: Describe how certain stages of life affect the type of foods that can be consumed and the function of the digestive tract.
Section Reference: 3.4 Digestion and Health

104) At different stages of life, special diets may be needed to maximize nutrient intake and absorption. How does the digestive system of an infant differ from that of an older adult?

Answer: Infants only consume liquids; the enzyme rennin, which aids in digestion of milk protein, is present in infants and not adults; gastric lipase is more important in infants and starch is not easily digested; absorption of whole proteins may cause food allergies; gut flora are different.

Difficulty: Easy
Learning Objective: Describe how certain stages of life affect the type of foods that can be consumed and the function of the digestive tract.
Section Reference: 3.4 Digestion and Health

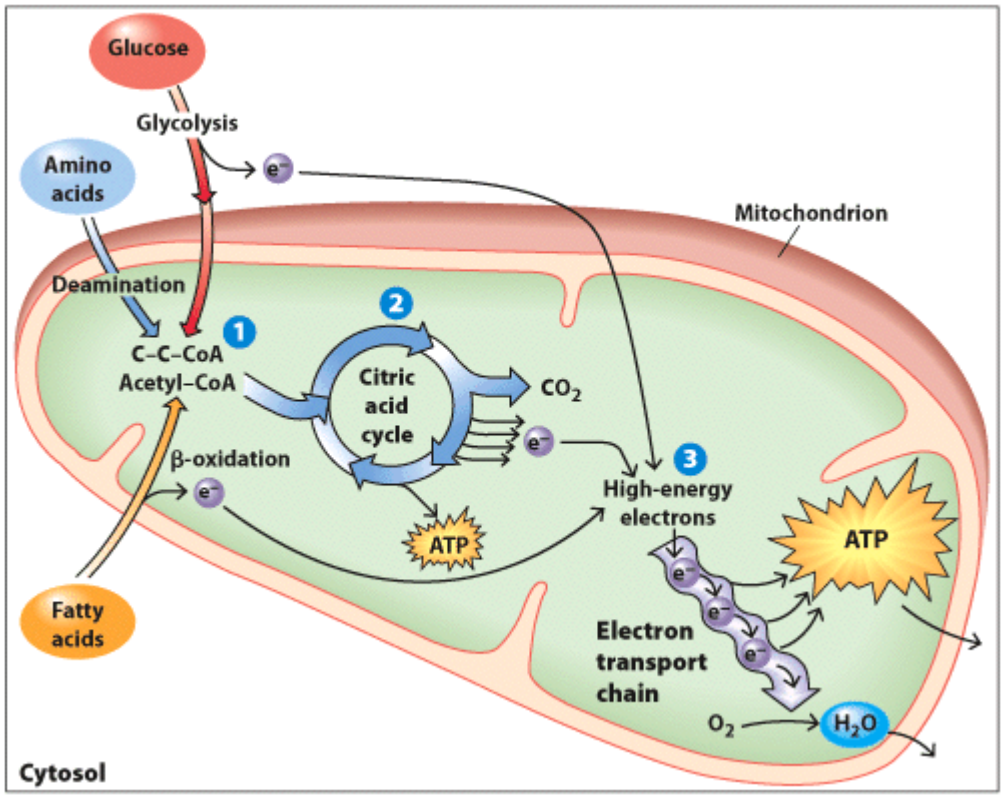
105) Explain how fat and glucose differ in terms of absorption and circulation.

Answer: Fat is formed into molecules too large to enter capillaries. It enters the lymph system instead and then the circulation via the thoracic duct.
Glucose enters the hepatic portal circulation after absorption in the small intestine and goes first to the liver. The liver can store glucose as glycogen, release it to the circulation, or release glucose from glycogen stores, if needed.

Difficulty: Medium
Learning Objective: Discuss the roles of the cardiovascular and lymphatic systems in nutrition.
Section Reference: 3.5 Transporting Nutrients to Body Cells

106) Using the figure as a guide, complete the description of the process of cellular respiration. Why is this process referred to as "respiration?"

a) Cellular respiration uses _____ to convert glucose, fatty acids, and amino acids into _____, water, and _____, in the form of ATP.
b) In the presence of oxygen, glucose, fatty acids, and amino acids can be metabolized to produce _____.
c) _____ is broken down by the citric acid cycle to yield carbon dioxide (CO_2) and high-electrons.
d) The _____ are shuttled to the electron transport chain where their energy is used to generate ATP and they combined with oxygen and hydrogen to form water.



Answer: It requires oxygen, which enters the body via the respiratory system and is delivered to cells by the circulatory system.

a) oxygen, carbon dioxide, energy
b) acetyl-CoA
c) acetyl-CoA
c) electrons

Difficulty: Medium
Learning Objective: Discuss how glucose, fatty acids, and amino acids are used by the cells to provide energy.
Section Reference: 3.6 Metabolism of Nutrients: An Overview

LEGAL NOTICE