*Biology for a Changing World 2e,* Chapter 4 Test Bank

1. Macronutrients provided by food include

1. proteins, fats, sugars, and minerals.
2. proteins, carbohydrates, and sugars.
3. proteins, fats, and nucleic acids.
4. proteins, carbohydrates, and fats.
5. proteins, carbohydrates, and nucleic acids.

Answer: D

DQ: What are the macronutrients and micronutrients provided by food?

Type: Know It

Difficulty: Easy

Important Words/Concepts: macronutrients

2. Which of the following is an organic molecule that is NOT considered a macronutrient?

1. nucleic acids
2. proteins
3. lipids
4. fats
5. sugars

Answer: A

DQ: What are the macronutrients and micronutrients provided by food?

Type: Know It

Difficulty: Easy

Important Words/Concepts: macronutrients

3. Grains, including bread, rice, and pasta, are a rich source of

1. proteins.
2. fats.
3. carbohydrates.
4. nucleic acids.
5. All of the above.

Answer: C

DQ: What are the macronutrients and micronutrients provided by food?

Type: Use It

Difficulty: Easy

Important Words/Concepts: macronutrients

4. Dairy products are a good source of these macronutrients.

1. proteins and carbohydrates
2. proteins and fats
3. carbohydrates and nucleic acids
4. carbohydrates and protein
5. nucleic acids, proteins, fats, and carbohydrates

Answer: B

DQ: What are the macronutrients and micronutrients provided by food?

Type: Use It

Difficulty: Easy

Important Words/Concepts: macronutrients in food

5. Legumes are a good source of these macronutrients.

1. proteins
2. carbohydrates
3. fats
4. nucleic acids
5. All of the above.

Answer: A

DQ: What are the macronutrients and micronutrients provided by food?

Type: Use It

Difficulty: Easy

Important Words/Concepts: macronutrients in food

6. What is a macronutrient? What are the three primary macronutrients we obtain from our diet?

*Answer:* Macronutrients are nutrients the body needs in large amounts. The three primary macronutrients we obtain from our diet are proteins, carbohydrates, and fats.

DQ: What are the macronutrients and micronutrients provided by food?

Type: Know It

Difficulty: Easy

Important Words/Concepts: carbohydrate, fat, macronutrient, protein

7. You eat a spinach salad with croutons and Italian dressing. Which of the following additions to your salad would ensure you obtain all the macronutrients your body needs?

* 1. avocado
  2. raisins
  3. carrots
  4. tomato
  5. beans

Answer: E

DQ: What are the macronutrients and micronutrients provided by food?

Type: Use It

Difficulty: Easy

Important Words/Concepts: carbohydrate, fat, macronutrient, protein

8. Why are vegetarians often advised to consume legumes?

*Answer:* Vegetarians do not eat meat; therefore, they will have a difficult time obtaining the protein they need. Legumes are a good source of protein, so consuming legumes can provide the protein they need.

DQ: What are the macronutrients and micronutrients provided by food?

Type: Use It

Difficulty: Easy

Important Words/Concepts: diet, legume, macronutrient, protein

9. Macronutrients are

1. nutrients that are large in terms of molecular structure.
2. nutrients that our body can’t make.
3. nutrients our body needs in large amounts.
4. molecules that include proteins, carbohydrates, and nucleic acids.
5. A and B

Answer: C

DQ: What are the macronutrients and micronutrients provided by food?

Type: Know It

Difficulty: Easy

Important Words/Concepts: nutrition, macronutrient, food

10. A turkey sandwich with cheese, mayonnaise, lettuce, and tomato on whole-grain bread has which of the following macronutrients?

1. protein
2. fat
3. carbohydrates
4. A and B
5. A, B, and C

Answer: E

DQ: What are the macronutrients and micronutrients provided by food?

Type: Use It

Difficulty: Easy

Important Words/Concepts: nutrition, macronutrient, food, fat, carbohydrate, protein

11. Which of the following is a good source of carbohydrates?

1. apple
2. turkey
3. milk
4. steak
5. beans

Answer: A

DQ: What are the macronutrients and micronutrients provided by food?

Type: Use It

Difficulty: Easy

Important Words/Concepts: nutrition, macronutrient, food, fat, carbohydrate, protein

12. Which of the following is a good source of fat?

1. apple
2. turkey
3. milk
4. corn
5. beans

Answer: C

DQ: What are the macronutrients and micronutrients provided by food?

Type: Use It

Difficulty: Easy

Important Words/Concepts: nutrition, macronutrient, food, fat, carbohydrate, protein

13. Which of the following is a good source of protein?

1. apple
2. turkey
3. milk
4. steak
5. corn

Answer: D

DQ: What are the macronutrients and micronutrients provided by food?

Type: Use It

Difficulty: Easy

Important Words/Concepts: nutrition, macronutrient, food, fat, carbohydrate, protein

14. If you were told you needed to consume a large dose of carbohydrates quickly, which of the following would you consume?

1. a steak
2. a glass of milk
3. a glass of buttermilk
4. a glass of orange juice
5. chicken wings

Answer: D

DQ: What are the macronutrients and micronutrients provided by food?

Type: Use It

Difficulty: Hard

Important Words/Concepts: macromolecules

15. Explain what is meant by a balanced diet in the context of the macromolecules discussed in this chapter.

*Answer:* A balanced diet is one that provides all three categories of essential macromolecules: proteins, carbohydrates, and fats. Additionally, it provides them in balance with the requirements of the body; each type of food has a different use in the body. It also takes into account the specific amino acid needs of the body.

DQ: What are the macronutrients and micronutrients provided by food?

Type: Use It

Difficulty: Hard

Important Words/Concepts: balanced diet

16. In the process of digestion, proteins are broken down into\_\_\_\_\_\_\_, while carbohydrates are broken down into \_\_\_\_\_\_\_\_.

1. nucleotides; amino acids
2. sugars; amino acids
3. glycerol; sugars
4. nucleic acids; sugars
5. amino acids; sugars

Answer: E

DQ: What are the macronutrients and micronutrients provided by food?

Type: Know It

Difficulty: Easy

Important Words/Concepts: macromolecules, amino acids, and nucleotides

17. In the process of digestion, nucleic acids are broken down into\_\_\_\_\_\_\_, while fats are broken down into \_\_\_\_\_\_\_\_.

1. nucleotides; fatty acids and glycerol
2. amino acids; fatty acids
3. sugars; fatty acids and glycerol
4. nucleotides; fatty acids
5. fatty acids and glycerol; nucleotides

Answer: A

DQ: What are the macronutrients and micronutrients provided by food?

Type: Know It

Difficulty: Easy

Important Words/Concepts: macromolecules, amino acids, and nucleotides

18. Complex carbohydrates are made up of smaller

1. nucleotides.
2. amino acids.
3. fatty acids.
4. sugar molecules.
5. All of the above.

Answer: D

DQ: What are the macronutrients and micronutrients provided by food?

Type: Know It

Difficulty: Easy

Important Words/Concepts: macromolecules, amino acids, and nucleotides

19. When macromolecules are ingested, into what smaller building blocks are they broken down for cell use?

1. fats, carbohydrates, nucleic acids, and proteins
2. amino acids, carbohydrates, nucleotides, and proteins
3. amino acids, sugars, nucleotides, fatty acids, and glycerol
4. sugar molecules, nucleotides, fats, and nucleic acids
5. fats, carbohydrates, DNA, sugar, and protein

Answer: C

DQ: What are the macronutrients and micronutrients provided by food?

Type: Know It

Difficulty: Hard

Important Words/Concepts: macromolecules, amino acids, and nucleotides

20. What important macronutrient(s) would you be missing if you ate a diet that contained only meat? What would be the consequences to your cells if you were missing this/these component(s)?

*Answer:* If you ate a diet consisting solely of meat, you would obtain proteins and fats, but you would not gain many carbohydrates. Without carbohydrates, your cells could not make cell-surface markers or store quick energy.

DQ: What are the macronutrients and micronutrients provided by food?

Type: Know It

Difficulty: Hard

Important Words/Concepts: carbohydrate, fat, macronutrient, protein

21. Which of the following will be broken down into amino acids by the digestive system?

1. carbohydrates
2. proteins
3. fats
4. nucleic acids
5. sugars

Answer: B

DQ: What are the macronutrients and micronutrients provided by food?

Type: Know It

Difficulty: Easy

Important Words/Concepts: carbohydrate, fat, macronutrient, nucleic acid, protein

22. Glycerol is a component of which of the following?

* 1. carbohydrates
  2. proteins
  3. fats
  4. nucleic acids
  5. sugars

Answer: C

DQ: What are the macronutrients and micronutrients provided by food?

Type: Know It

Difficulty: Easy

Important Words/Concepts: carbohydrate, fat, macronutrient, nucleic acid, protein

23. Which macromolecules can be made from fatty acids and glycerol?

1. enzymes
2. phospholipids
3. DNA
4. glycogen
5. starch

Answer: B

DQ: What are the macronutrients and micronutrients provided by food?

Type: Know It

Difficulty: Easy

Important Words/Concepts: macromolecule, fatty acid, phospholipid

24. Much of biological chemistry is the building of polymers from monomers, such as a protein made from amino acids. Many macromolecules are basically polymers made of monomers of the same chemical composition and structure. Which of the following does NOT necessarily follow this pattern?

1. fats
2. proteins
3. nucleic acids
4. carbohydrates
5. All of the above follow that pattern.

Answer: A

DQ: What are the macronutrients and micronutrients provided by food?

Type: Use It

Difficulty: Hard

Important Words/Concepts: macromolecule, fat, carbohydrate, nucleic acid, protein

25. When a fat is digested, what is released?

1. fatty acids and glycerol
2. fatty acids and glycogen
3. nucleotides
4. amino acids
5. simple sugars

Answer: A

DQ: What are the macronutrients and micronutrients provided by food?

Type: Know It

Difficulty: Easy

Important Words/Concepts: macromolecule, fatty acid, carbohydrate, nucleic acid, protein, nucleotide, sugar, glycerol

26. \_\_\_\_\_\_\_\_\_ are metabolized and used for energy storage and for cell-surface molecules.

1. Fats
2. Phospholipids
3. Carbohydrates
4. Proteins
5. Nucleic acids

Answer: C

DQ: What are the macronutrients and micronutrients provided by food?

Type: Know It

Difficulty: Easy

Important Words/Concepts: membranes

27. The primary material for our cell membranes comes from

1. proteins.
2. sugars.
3. starches.
4. essential amino acids.
5. fats.

Answer: E

DQ: What are the macronutrients and micronutrients provided by food?

Type: Know It

Difficulty: Easy

Important Words/Concepts: membranes

28. Describe the metabolic route of a protein molecule that is consumed by a human.

*Answer:* A protein molecule is broken down into its individual amino-acid units. These amino acids can be metabolized to make energy, or they can be used as the building blocks of other proteins. In particular, the eight essential amino acids that the body is unable to make for itself will be used in other proteins.

DQ: What are the macronutrients and micronutrients provided by food?

Type: Use It

Difficulty: Easy

Important Words/Concepts: proteins, amino acids, essential amino acids

29. Cell-surface markers are made using these building blocks.

1. nucleotides
2. sugars
3. amino acids
4. nucleic acids
5. amino acids and sugars

Answer: B

DQ: What are the macronutrients and micronutrients provided by food?

Type: Know It

Difficulty: Easy

Important Words/Concepts: macromolecules in cells

30. Cells utilize these macromolecules for energy requirements.

1. nucleotides
2. sugars
3. proteins
4. nucleic acids
5. carbohydrates

Answer: E

DQ: What are the macronutrients and micronutrients provided by food?

Type: Know It

Difficulty: Easy

Important Words/Concepts: macromolecules in cells

31. Sugar monomers can be used to make

1. proteins.
2. starch.
3. membranes.
4. DNA.
5. lipids.

Answer: B

DQ: What are the macronutrients and micronutrients provided by food?

Type: Know It

Difficulty: Easy

Important Words/Concepts: macromolecule, starch, sugar

32. Can a cheeseburger be used to make all of the macromolecules needed for a cell?

1. No, a cheeseburger does not have all the different types of subunits required to make a cell.
2. Yes, a cheeseburger has protein, carbohydrates, and fats, which can be broken down into their subunits and reassembled into cellular structures.
3. No, a cheeseburger is missing carbohydrates, which are needed to make a cell.
4. No, a cheeseburger is missing the fats needed to make a cell membrane.
5. Not enough information is given to answer the question.

Answer: B

DQ: What are the macronutrients and micronutrients provided by food?

Type: Use It

Difficulty: Easy

Important Words/Concepts: macromolecule, sugar, fat, protein

33. Describe the metabolic route of a fat molecule that is consumed by a human.

*Answer:* Fat molecules, also called triglycerides, are composed of a glycerol backbone and three fatty acids. When we break down fat, we break it down into these units. The glycerol and fatty acids can be used to make phospholipids (each containing a glycerol and two fatty acids), or they can be used to generate energy during cellular respiration. If the body consumes more fat than is needed for new membrane material or immediate energy use, it can be reassembled as a storage fat and stored in fat cells.

DQ: What are the macronutrients and micronutrients provided by food?

Type: Use It

Difficulty: Hard

Important Words/Concepts: fat metabolism, phospholipids

34. Which of the following is the best source of carbohydrates?

1. fish
2. meat
3. grains
4. cheese
5. beans

Answer: C

DQ: What are the macronutrients and micronutrients provided by food?

Type: Know It

Difficulty: Easy

Important Words/Concepts: complex carbohydrates

35. When humans exercise, they burn up energy that was stored in their muscles as complex carbohydrates in the form of

1. simple sugars.
2. fats.
3. glycogen.
4. starch.
5. fiber.

Answer: C

DQ: What are the consequences of a diet lacking sufficient nutrients?

Type: Use It

Difficulty: Hard

Important Words/Concepts: carbohydrate, digestion, enzyme, glycogen, starch

36. What is the complex carbohydrate used for energy storage in animal cells?

A. fat

B. glucose

C. glycogen

D. starch

E. sucrose

Answer: C

DQ: What are the macronutrients and micronutrients provided by food?

Type: Know It

Difficulty: Easy

Important Words/Concepts: complex carbohydrates

37. What is the complex carbohydrate used for energy storage in plant cells?

1. glucose
2. starch
3. fiber
4. glycogen
5. fat

Answer: B

DQ: What are the macronutrients and micronutrients provided by food?

Type: Know It

Difficulty: Easy

Important Words/Concepts: complex carbohydrates

38. You have just been served a grilled piece of chicken with the skin intact. Which of the following macromolecules is NOT present in that chicken?

A. proteins

B. fats

C. DNA

D. glycogen

E. starch

Answer: E

DQ: What are the macronutrients and micronutrients provided by food?

Type: Use It

Difficulty: Hard

Important Words/Concepts: macromolecules

39. Another term for vitamins and minerals is “micronutrients” because they are

1. very small compared to other molecules in the body.
2. only needed in small amounts by our body.
3. used by very few reactions in the body.
4. not very nutritionally dense.
5. used by smaller cells more than by larger cells.

Answer: B

DQ: What are the macronutrients and micronutrients provided by food?

Type: Know It

Difficulty: Easy

Important Words/Concepts: vitamin, mineral, micronutrient

40. Essential nutrients needed in only small amounts are called

* + 1. vitamins.
    2. micromolecules.
    3. minerals.
    4. bases.
    5. micronutrients.

Answer: E

DQ: What are the macronutrients and micronutrients provided by food?

Type: Know It

Difficulty: Easy

Important Words/Concepts: vitamins and minerals

41. A healthful, well-balanced meal would contain approximately what percentage of each category of food?



A. 50% whole grains; 20% fruits and vegetables; 20% meat, fish, and beans; 10% dairy; and 10% refined sugars and fats

B. 25% whole grains; 25% fruits and vegetables; 10% meat, fish, and beans; 15% dairy; and 10% refined sugars and fats

C. 40% whole grains; 20% fruits and vegetables; 15% meat, fish, and beans; 15% dairy; and 10% refined sugars and fats

D. 30% whole grains; 30% fruits and vegetables; 15% meat, fish, and beans; 15% dairy; and 10% refined sugars and fats

E. 20% whole grains; 50% fruits and vegetables; 15% meat, fish, and beans; 15% dairy; and 10% refined sugars and fats

Answer: D

DQ: What are the macronutrients and micronutrients provided by food?

Type: Use It

Difficulty: Easy

Important Words/Concepts: reading pie chart infographic, healthy diet

42. There are \_\_\_\_ amino acids of which \_\_\_\_ are essential amino acids.

1. 20; 20
2. 11; 9
3. 20; 12
4. 20; 9
5. 24; 9

Answer: D

DQ: What are essential nutrients?

Type: Know It

Difficulty: Hard

Important Words/Concepts: amino acids

43. Explain the difference between essential and non-essential amino acids in the human diet.

*Answer:* Essential amino acids are the eight amino acids that the human body is unable to synthesize. We can synthesize the other 12 non-essential amino acids.

DQ: What are essential nutrients?

Type: Use It

Difficulty: Easy

Important Words/Concepts: amino acids

44. What is the definition of “essential nutrient”?

*Answer:* An essential nutrient is a nutrient your body cannot make on its own, so it must be ingested.

DQ: What are essential nutrients?

Type: Know It

Difficulty: Easy

Important Words/Concepts: amino acid, essential nutrient, protein

45. Essential amino acids are monomers required to make

A. lipids.

B. proteins.

C. glycogen.

D. carbohydrates.

E. DNA.

Answer: B

DQ: What are essential nutrients?

Type: Know It

Difficulty: Easy

Important Words/Concepts: proteins

46. Jesse visits the doctor because of weight loss due to undernourishment. The doctor determines that Jesse has adequate protein and carbohydrate intake. What is the doctor likely to recommend to Jesse?

A. a diet higher in meat

B. more exercise

C. a diet lower in fat

D. to drink more water

E. a vitamin and mineral supplement

Answer: E

DQ: What are essential nutrients?

Type: Use It

Difficulty: Hard

Important Words/Concepts: essential nutrients, vitamins, and minerals

47. What is the definition of “essential nutrients”?

A. nutrients that are essential for making part of the cell

B. the set of nutrients that are the minimum necessary for making the body

C. nutrients your body cannot make on its own, so they must be ingested

D. nutrients that are the basis from which more complex nutrients are made

E. nutrients that are not soluble in water and that are stored in fat cells

Answer: C

DQ: What are essential nutrients?

Type: Know It

Difficulty: Hard

Important Words/Concepts: amino acid, essential nutrient, protein

48. Many traditional diets are based on a combination of a grain and a legume (e.g., corn and beans, rice and lentils). Eaten together, the grain and legume provide complete protein for the human diet. This means that they have all the \_\_\_\_\_\_\_\_\_\_\_\_\_\_ needed by humans.

A. essential amino acids

B. vitamins and minerals

C. essential enzymes

D. full-length proteins

E. essential nutrients

Answer: A

DQ: What are essential nutrients?

Type: Use It

Difficulty: Hard

Important Words/Concepts: amino acid, essential nutrient, protein

49. When food is being digested and broken down into its constituent molecules, which macromolecular subunits are re-used to make enzymes?

1. sugars from carbohydrates
2. amino acids from proteins
3. fatty acids from fats
4. nucleotides from nucleic acids
5. All of the above.

Answer: B

DQ: What are enzymes and how do they work?

Type: Know It

Difficulty: Easy

Important Words/Concepts: macromolecule, protein, amino acid, enzyme

50. Enzymes are proteins that are made up of

1. nucleotides.
2. sugars.
3. amino acids.
4. nucleic acids.
5. amino acids and sugars.

Answer: C

DQ: What are enzymes and how do they work?

Type: Know It

Difficulty: Easy

Important Words/Concepts: proteins, amino acids

51. \_\_\_\_\_ reactions break down food and release subunits that can be used in \_\_\_\_\_\_ reactions to make larger macromolecules.

1. Anabolic; catabolic
2. Catabolic; anabolic
3. Oxidizing; reducing
4. Metabolic; reductive
5. Substrate; enzyme

Answer: B

DQ: What are enzymes and how do they work?

Type: Know It

Difficulty: Easy

Important Words/Concepts: metabolism, anabolic, catabolic

52. Anabolic reactions\_\_\_\_\_\_\_ bonds, whereas catabolic reactions \_\_\_\_\_\_\_\_\_\_ bonds.

1. break; make
2. make; break
3. loosen; tighten.
4. decrease; increase.
5. weaken; strengthen

Answer: B

DQ: What are enzymes and how do they work?

Type: Use It

Difficulty: Easy

Important Words/Concepts: bonds, anabolic, catabolic

53. Enzymes work by

A. raising cell temperature.

B. lowering cell energy.

C. modifying carbohydrates.

D. lowering activation energy.

E. anabolizing simple sugars.

Answer: D

DQ: What are enzymes and how do they work?

Type: Know It

Difficulty: Easy

Important Words/Concepts: enzymes, activation energy

54. Specialized proteins called \_\_\_\_ help break your food down into smaller chemical units.

1. amino acids
2. nitrogenous bases
3. enzymes
4. corticosteroids
5. digestizymes

Answer: C

DQ: What are enzymes and how do they work?

Type: Know It

Difficulty: Easy

Important Words/Concepts: digestion, enzymes

55. Explain why each kind of enzyme only works with specific substrate molecules.

*Answer:* Enzymes each have a specific shape with regions called active sites. The shape of the active site interacts with the specific substrate molecule in a lock-and-key manner. Only the right substrate molecule can fit into the active site. The substrate molecule is the molecule being changed with the help of the enzyme.

DQ: What are enzymes and how do they work?

Type: Use It

Difficulty: Hard

Important Words/Concepts: active site, substrate molecule, enzyme

56. Enzymes speed up chemical reactions by

1. breaking the bonds between molecules.
2. lowering the activation energy of the reaction.
3. assembling chemical bonds.
4. increasing the cell’s metabolism.
5. increasing the activation energy of the reaction.

Answer: B

DQ: What are enzymes and how do they work?

Type: Know It

Difficulty: Easy

Important Words/Concepts: enzymes, activation energy

57. All the biochemical reactions in a cell are described as its

1. catabolism.
2. anabolism.
3. activation energy.
4. metabolism.
5. homeostasis.

Answer: D

DQ: What are enzymes and how do they work?

Type: Know It

Difficulty: Easy

Important Words/Concepts: enzymes, catabolism, anabolism, metabolism

58. In the process of catabolism, a substrate

1. is broken into smaller products.
2. binds to the enzyme and is released.
3. holds the enzyme in its active site.
4. lowers the activation energy of a reaction.
5. is assembled into a dimer.

Answer: A

DQ: What are enzymes and how do they work?

Type: Know It

Difficulty: Hard

Important Words/Concepts: enzymes, catabolism, anabolism, metabolism

59. In the process of anabolism, the substrate

1. is broken down into smaller products.
2. binds to the enzyme and is released.
3. is assembled into more complex products.
4. lowers the activation energy of a reaction.
5. is completely degraded.

Answer: C

DQ: What are enzymes and how do they work?

Type: Know It

Difficulty: Hard

Important Words/Concepts: enzymes, substrate, catabolism, and anabolism

60. Enzymes are

* 1. carbohydrates.
  2. proteins.
  3. fats.
  4. nucleic acids.
  5. polysaccharides.

Answer: B

DQ: What are enzymes and how do they work?

Type: Know It

Difficulty: Easy

Important Words/Concepts: protein, enzyme

61. All of the following are true about enzymes EXCEPT

* 1. each enzyme is specific to one type of reaction.
  2. they are proteins.
  3. they speed up chemical reactions.
  4. they can be used over and over again.
  5. they increase activation energy.

Answer: E

DQ: What are enzymes and how do they work?

Type: Know It

Difficulty: Easy

Important Words/Concepts: activation energy, active site, enzyme, protein

62. What is the difference between a catabolic reaction and an anabolic reaction?

*Answer:* A catabolic reaction is a reaction that breaks a macromolecule down into its smaller component molecules. An anabolic reaction is a reaction that assembles small molecules into larger molecules.

DQ: What are enzymes and how do they work?

Type: Know It

Difficulty: Hard

Important Words/Concepts: anabolic reaction, catabolic reaction, digestion, enzyme, protein

63. All the chemical reactions that occur in your body are collectively called

* 1. anabolism.
  2. catabolism.
  3. metabolism.
  4. nutrients.
  5. enzymes.

Answer: C

DQ: What are enzymes and how do they work?

Type: Know It

Difficulty: Easy

Important Words/Concepts: anabolic reaction, catabolic reaction, digestion, enzyme, metabolism, protein

64. Lactose is a sugar found in milk that is made of two simple sugars bonded together. If someone is lactose intolerant, they cannot digest lactose into its two parts. What, specifically, do you imagine is the cause for this problem?

*Answer:* Someone who is lactose intolerant likely lacks a functional enzyme to break down the lactose sugar.

DQ: What are enzymes and how do they work?

Type: Use It

Difficulty: Easy

Important Words/Concepts: carbohydrate, digestion, enzyme, lactose

65. When an enzyme is involved in a catabolic reaction

1. its active site binds the substrates and changes shape, stressing the bond, lowering the activation energy, and breaking the bond.
2. its active site binds the substrates and changes shape, bringing them close together, lowering the activation energy, and creating a bond.
3. its active site binds the substrates and changes shape, stressing the bond, increasing the activation energy, and breaking the bond.
4. its active site binds the substrates and changes shape, creating a bond by increasing the activation energy.
5. None of the above.

Answer: A

DQ: What are enzymes and how do they work?

Type: Know It

Difficulty: Hard

Important Words/Concepts: enzymes, anabolic, catabolic, activation energy

66. Would a mutation in an enzyme that changes the shape of its active site change the function of the enzyme?

1. No, because the enzyme would probably bind to the substrate anyway.
2. No, because another enzyme would make up for it.
3. No, because the shape of the active site has no effect on its activity.
4. Yes, because the active sites of all the enzymes have to match in order to work.
5. Yes, because the substrate has to fit specifically into the active site to undergo the reaction.

Answer: E

DQ: What are enzymes and how do they work?

Type: Use It

Difficulty: Hard

Important Words/Concepts: enzymes, active site, substrate

67. Cellular respiration takes glucose and breaks it down into carbon dioxide. What type of metabolic reaction is this?

*Answer:* catabolic

DQ: What are enzymes and how do they work?

Type: Use It

Difficulty: Hard

Important Words/Concepts: metabolism, catabolism

68. Photosynthesis builds glucose molecules from carbon dioxide. What type of metabolic reaction is this?

*Answer:* anabolic

DQ: What are enzymes and how do they work?

Type: Use It

Difficulty: Hard

Important Words/Concepts: metabolism, anabolism

69. If you hold a piece of food in your mouth that is made exclusively of carbohydrates, such as a cracker or cookie, that food will eventually be transformed in your mouth into simple sugars. If you hold a piece of meat in your mouth, however, that piece of meat will not dissolve. What does this tell you about what is present in saliva?

*Answer:* Saliva has enzymes that are able to digest carbohydrates but not proteins or fats.

DQ: What are enzymes and how do they work?

Type: Use It

Difficulty: Hard

Important Words/Concepts: carbohydrate, protein, digestion, enzyme

70. Cofactors are important because

* 1. they enable enzymes to bind to their substrates.
  2. they serve to inactivate an enzyme, so as to better regulate chemical reactions.
  3. they are the building blocks of proteins.
  4. they prevent spikes in blood sugar.
  5. they signal cells to release enzymes.

Answer: A

DQ: What are enzymes and how do they work?

Type: Know It

Difficulty: Easy

Important Words/Concepts: cofactor, enzyme

71. A coenzyme is another name for

1. an organic cofactor.
2. an inorganic cofactor.
3. a mineral.
4. an enzyme.
5. a pair of enzymes.

Answer: A

DQ: What are enzymes and how do they work?

Type: Know It

Difficulty: Easy

Important Words/Concepts: cofactors, coenzymes, and vitamins

72. Cofactors affect

1. the rate of the reaction.
2. the active site.
3. enzyme substrate binding.
4. the products produced.
5. All of the above.

Answer: E

DQ: What are enzymes and how do they work?

Type: Use It

Difficulty: Easy

Important Words/Concepts: cofactors, enzyme

73. What would happen to enzyme function if you ate a diet that was missing one or more essential vitamins or minerals?

*Answer:* If you do not ingest one or more essential vitamins or minerals, then the enzymes that rely on them as cofactors cannot perform their function, vital chemical reactions will not take place, and disease could be the result.

DQ: What are enzymes and how do they work?

Type: Use It

Difficulty: Easy

Important Words/Concepts: coenzyme, cofactor, enzyme, micronutrient, mineral, vitamin

74. All of the following are true of most vitamins EXCEPT

* 1. they are essential for good health.
  2. they can act as cofactors.
  3. they enhance enzymatic activity.
  4. they are inorganic molecules.
  5. they are micronutrients.

Answer: D

DQ: What are enzymes and how do they work?

Type: Know It

Difficulty: Easy

Important Words/Concepts: coenzyme, cofactor, enzyme, micronutrient, vitamin

75. One way a vitamin can act as a coenzyme is to

1. bind to a substrate to help it find its enzyme.
2. bind to the enzyme so the enzyme can change its shape and bind to its substrate.
3. bind to the outside of a cell, so an enzyme can enter and carry out reactions.
4. bind to another vitamin, signaling a cell to activate its enzymes.
5. replace the activation-energy-lowering activity of a missing enzyme.

Answer: B

DQ: What are enzymes and how do they work?

Type: Know It

Difficulty: Hard

Important Words/Concepts: vitamin, mineral, cofactor, enzyme

76. What is a cofactor?

*Answer:* A cofactor is a molecule, often a mineral or vitamin, that helps an enzyme to function.

DQ: What are enzymes and how do they work?

Type: Use It

Difficulty: Easy

Important Words/Concepts: cofactor

77. Bones are primarily made up of the minerals

1. cartilage and muscle.
2. calcium and phosphorus.
3. carbohydrates and protein.
4. calcium and potassium.
5. calcium, potassium, and phosphorus,

Answer: B

DQ: What are the consequences of a diet lacking sufficient nutrients?

Type: Know It

Difficulty: Easy

Important Words/Concepts: dietary minerals and healthy bone

78. Bone loss can result from

1. dietary deficiencies.
2. calcium deficiency.
3. vitamin cofactor deficiencies.
4. lifestyle choices.
5. All of the above.

Answer: E

DQ: What are the consequences of a diet lacking sufficient nutrients?

Type: Know It

Difficulty: Easy

Important Words/Concepts: dietary minerals and healthy bone

79. What are the two primary minerals that are needed to make healthy bone?

*Answer:* Bone is comprised primarily of calcium and phosphorus.

DQ: What are the consequences of a diet lacking sufficient nutrients?

Type: Know It

Difficulty: Easy

Important Words/Concepts: cofactor, mineral, vitamin, bone health

80. Doctors recommend at least 15 minutes of sunlight per day. Why? What health benefit does sunlight provide?

*Answer:* Sunlight allows your body to make vitamin D, which is required for bone health.

DQ: What are the consequences of a diet lacking sufficient nutrients?

Type: Know It

Difficulty: Hard

Important Words/Concepts: cofactor, enzyme, micronutrient, mineral, vitamin, bone health

81. A woman will lose close to 50% of her interior bone mass during her lifetime. What supplement should women take to help offset this deficiency?

1. iron
2. vitamin A
3. potassium
4. vitamin C
5. calcium

Answer: E

DQ: What are the consequences of a diet lacking sufficient nutrients?

Type: Know It

Difficulty: Easy

Important Words/Concepts: bone mass, calcium, supplement

82. When a person has a diet deficient in calcium or phosphorus, how does the body compensate?

*Answer:* The body will break down bone to release these important minerals as needed.

DQ: What are the consequences of a diet lacking sufficient nutrients?

Type: Know It

Difficulty: Hard

Important Words/Concepts: bone, calcium, phosphorus, diet

83. Which of the following does NOT supply an important mineral needed for good bone health?

A. milk

B. ice cream

C. fish

D. broccoli

E. starch

Answer: E

DQ: What are the consequences of a diet lacking sufficient nutrients?

Type: Know It

Difficulty: Easy

Important Words/Concepts: bone health, minerals

84. Most of our body’s \_\_\_\_ is stored in the skeleton.

A. calcium

B. proteins

C. carbohydrates

D. iron

E. oxygen

Answer: A

DQ: What are the consequences of a diet lacking sufficient nutrients?

Type: Know It

Difficulty: Easy

Important Words/Concepts: bone health, minerals

85. Osteoporosis is caused by \_\_\_\_ deficiency.

1. calcium
2. fat
3. carbohydrates
4. iron
5. oxygen

Answer: A

DQ: What are the consequences of a diet lacking sufficient nutrients?

Type: Know It

Difficulty: Easy

Important Words/Concepts: osteoporosis, minerals

86. When our body needs the minerals \_\_\_\_\_\_\_ or \_\_\_\_\_\_\_, it will steal them from the skeleton.

*Answer:* calcium; phosphorus

DQ: What are the consequences of a diet lacking sufficient nutrients?

Type: Know It

Difficulty: Hard

Important Words/Concepts: calcium, phosphorus, bone

87. Vitamins are an important dietary ingredient because most are

1. inorganic cofactors.
2. coenzymes.
3. enzymes.
4. macronutrients.
5. electrolytes

Answer: B

DQ: What are the consequences of a diet lacking sufficient nutrients?

Type: Know It

Difficulty: Easy

Important Words/Concepts: cofactors, coenzymes, and vitamins

88. Vitamins can be either fat soluble or water soluble. Which is least dangerous to overconsume? Why?

*Answer:* Water-soluble vitamins are least dangerous to overconsume because the excess can be excreted in the urine.

DQ: What are the consequences of a diet lacking sufficient nutrients?

Type: Know It

Difficulty: Hard

Important Words/Concepts: coenzyme, cofactor, mineral, micronutrient, vitamin

89. Which of the following is TRUE of micronutrients?

1. They are required for proper growth and development.
2. They are smaller than macronutrients.
3. They are required by the body in large amounts.
4. If lacking in a person’s diet, there are only few noticeable health problems.
5. Most are so naturally abundant that food companies rarely add them to their products.

Answer: A

DQ: What are the consequences of a diet lacking sufficient nutrients?

Type: Know It

Difficulty: Easy

Important Words/Concepts: coenzyme, cofactor, enzyme, micronutrient, vitamin

90. Rickets is a disease caused by a deficiency in vitamin D. Knowing this, what part of the body do you suspect is affected the most? If you were a doctor, what suggestions would you have to help fight this disease and reverse the problems associated with this part of the body?

*Answer:* A deficiency in vitamin D most likely affects the bones the most and likely makes them weaker. A doctor would recommend consuming plenty of vitamins C, D, and K; getting plenty of calcium, phosphorous, zinc, and magnesium; and getting at least 15 minutes of sunlight per day.

DQ: What are the consequences of a diet lacking sufficient nutrients?

Type: Use It

Difficulty: Hard

Important Words/Concepts: coenzyme, cofactor, enzyme, micronutrient, mineral, vitamin

91. If you eat a diet deficient in vitamins and minerals, all of the following are likely EXCEPT

1. the deficiency would likely result in your developing a disease.
2. your enzyme activity would be severely slowed down.
3. your cellular processes would be only minimally affected.
4. your enzymes would not be able to properly bind their substrates.
5. your body would be lacking in cofactors.

Answer: C

DQ: What are the consequences of a diet lacking sufficient nutrients?

Type: Know It

Difficulty: Easy

Important Words/Concepts: coenzyme, cofactor, enzyme, micronutrient, vitamin

92. Vitamins and minerals can act as

1. enzymes.
2. cofactors.
3. proteins.
4. a source of metabolic energy.
5. useful but non-essential nutrients.

Answer: B

DQ: What are the consequences of a diet lacking sufficient nutrients?

Type: Know It

Difficulty: Easy

Important Words/Concepts: vitamin, mineral, cofactor, enzyme

93. Which disease or disorder can result from deficiencies in micronutrients?

1. osteoporosis
2. goiter
3. depression
4. anemia
5. All of the above.

Answer: E

DQ: What are the consequences of a diet lacking sufficient nutrients?

Type: Know It

Difficulty: Easy

Important Words/Concepts: vitamin, mineral, disease

94. The tissue-degenerating disease scurvy is caused by \_\_\_\_\_\_\_ in the human diet.

A. a lack of vitamin A

B. a phosphorus deficiency

C. a vitamin C deficiency

D. too much calcium

E. too much vitamin B12

Answer: C

DQ: What are the consequences of a diet lacking sufficient nutrients?

Type: Know It

Difficulty: Easy

Important Words/Concepts: vitamins and minerals, scurvy

95. A goiter, enlargement of the thyroid gland, is caused by \_\_\_\_\_\_\_ in the human diet.

A. a lack of vitamin D

B. an iron deficiency

C. a vitamin C deficiency

D. an iodine deficiency

E. too much vitamin B12

Answer: D

DQ: What are the consequences of a diet lacking sufficient nutrients?

Type: Know It

Difficulty: Easy

Important Words/Concepts: vitamins and minerals, goiter

96. A lack of \_\_\_\_\_\_\_ in the human diet causes anemia.

A. vitamin D

B. iron

C. vitamin A

D. magnesium

E. vitamin B6

Answer: B

DQ: What are the consequences of a diet lacking sufficient nutrients?

Type: Know It

Difficulty: Easy

Important Words/Concepts: anemia, vitamins and minerals

97. Table salt is typically iodized to prevent

1. goiters.
2. thrush.
3. kidney stones.
4. myopia.
5. chlorine poisoning.

Answer: A

DQ: What are the consequences of a diet lacking sufficient nutrients?

Type: Know It

Difficulty: Hard

Important Words/Concepts: vitamins and minerals, goiter

98. When someone who has adequate macronutrients in their diet is still suffering from malnutrition, they are most likely lacking

1. essential amino acids.
2. carbohydrates.
3. fatty acids.
4. enzymes.
5. vitamins or minerals.

Answer: E

DQ: What are the consequences of a diet lacking sufficient nutrients?

Type: Know It

Difficulty: Hard

Important Words/Concepts: malnutrition, vitamins and minerals

99. The children in Malawi with whom Dr. Manary worked showed an increase in survival when he added potassium to their diet. This happened because their diet

A. was deficient in vitamin C.

B. needed more of this vitamin.

C. needed more essential amino acids.

D. lacked enough carbohydrates.

E. was deficient in this mineral.

Answer: C

DQ: What are the consequences of a diet lacking sufficient nutrients?

Type: Use It

Difficulty: Hard

Important Words/Concepts: malnutrition, vitamins and minerals

100. Which of the following is the MOST important feature of a “Ready-to-Use Therapeutic Food” (RUTF)?

A. It is tasty and appealing.

B. It contains a nutritional balance of macronutrients, micronutrients, and calories.

C. It can be mass produced in a central location and shipped to remote villages.

D. It has a long shelf life.

E. It does not have to be cooked.

Answer: B

DQ: What are the consequences of a diet lacking sufficient nutrients?

Type: Use It

Difficulty: Hard

Important Words/Concepts: malnutrition, RUTF

101. When Dr. Manary first arrived in Malawi he supplemented the diet of malnourished children with potassium, which helped cure their

A. weak bones.

B. anemia.

C. blindness.

D. muscle and nerve problems.

E. skin problems.

Answer: D

DQ: What are the consequences of a diet lacking sufficient nutrients?

Type: Use It

Difficulty: Hard

Important Words/Concepts: malnutrition, vitamins and minerals

102. What are the features of peanut butter that make it useful as a base ingredient in a “Ready-to-Use Therapeutic Food” (RUTF)?

*Answer:* Peanut butter has a high percentage of fat (50% fat) to help with weight gain, has low water content and pasty consistency that helps it resist spoiling, does not need to be cooked, and has high protein content. And, unlike in developed countries, few children in developing countries are allergic to peanuts.

DQ: What are the consequences of a diet lacking sufficient nutrients?

Type: Know It

Difficulty: Hard

Important Words/Concepts: malnutrition, RUTF

103. Why do children under 6 months of age, in developing countries, rarely suffer from malnutrition?

A. They are breast fed, and their mother’s milk provides all required nutrition.

B. Children do not require as many different nutrients at that young age.

C. They have not been alive long enough for malnourishment to occur.

D. Most cultures in developing countries have the custom of providing scarce food to infants before other family members eat.

E. They have adequate food from their family’s farm during this period of their life.

Answer: A

DQ: What are the consequences of a diet lacking sufficient nutrients?

Type: Know It

Difficulty: Easy

Important Words/Concepts: malnutrition, infant diet