AP Biology - Ch 6 - Cellular Respiration Study Guide

Multiple Choice

Identify the choice that best completes the statement or answers the question.

____ 1. When ADP gains a phosphate to form ATP,
   a. free energy is released by the loss of a phosphate.
   b. energy is consumed.
   c. the reaction ends.
   d. chemical energy is converted to light energy.
   e. ribose loses an oxygen to become deoxyribose.

____ 2. Phosphorylation of ADP to ATP is endergonic, whereas the hydrolysis of ATP to ADP is exergonic. The two reactions are therefore said to be
   a. substrates.
   b. endergonic.
   c. kinetic.
   d. activated.
   e. coupled.

____ 3. The exergonic reaction 1,3-diphosphoglycerate $\rightarrow$ 3-phosphoglycerate is coupled to the reaction ADP + P_i $\rightarrow$ ATP. Which of the following is most likely to be true about the reaction ADP + P_i $\rightarrow$ ATP?
   a. The reaction never reaches equilibrium.
   b. The reaction is spontaneous.
   c. There is a large decrease in free energy.
   d. The reaction is endergonic.
   e. Temperature will not affect the rate constant of the reaction.

____ 4. Which of the following statements about metabolic pathways is *false*?
   a. The product of one reaction becomes the reactant for the next reaction.
   b. They are a series of enzyme-catalyzed reactions.
   c. Almost all are endergonic.
   d. They are similar in all organisms.
   e. Many are compartmentalized in eukaryotes.

____ 5. Which of the following statements about metabolic pathways is true?
   a. Complex chemical transformations in the cell occur in a single reaction.
   b. Each reaction requires ATP.
   c. In eukaryotes, they occur in the cytoplasm.
   d. They vary from organism to organism.
   e. Each one is regulated by specific enzymes.

____ 6. Which of the following statements about ATP is true?
   a. It is an energy-storage compound.
   b. It is the cell's principal compound for energy transfers.
   c. It stands for adenosine triphosphate.
   d. It is the molecule all living cells rely on to do chemical work.
   e. All of the above

____ 7. When a molecule loses hydrogen atoms (as opposed to hydrogen ions), it becomes
   a. reduced.
   b. oxidized.
   c. redoxed.
   d. hydrogenated.
   e. hydrolyzed.

____ 8. Oxidation and reduction
   a. entail the gain or loss of proteins.
   b. are defined as the loss of electrons.
   c. are both endergonic reactions.
   d. always occur together.
   e. proceed only under aerobic conditions.

____ 9. Which of the following statements about NAD is true?
   a. It is a key electron carrier in redox reactions.
   b. It requires oxygen to function.
   c. It is found only in prokaryotes.
   d. It binds with an acetyl group to form acetyl CoA.
   e. It detoxifies hydrogen peroxide.

____ 10. The function of NAD^+ is to
   a. cause the release of energy to adjacent cells when energy is needed in aerobic conditions.
   b. hasten the release of energy when the cell has been deprived of oxygen.
   c. carry hydrogen atoms and free energy from compounds being oxidized, and to give hydrogen atoms and free energy to compounds being reduced.
   d. block the release of energy to adjacent cells.
   e. None of the above

____ 11. When NADH donates two electrons to ubiquinone during respiration, ubiquinone is
a. reduced.
b. oxidized.
c. phosphorylated.
d. aerobic.
e. hydrolyzed.

____ 12. The proton motive force is
a. ATP synthase.
b. the proton concentration gradient and electric charge difference.
c. a metabolic pathway.
d. a redox reaction.
e. None of the above

____ 13. Which statement about oxidative phosphorylation is *false*?
a. It forms ATP by the respiratory chain/ATP synthesis.
b. It is brought about by chemiosmosis.
c. It requires aerobic conditions.
d. It takes place in mitochondria.
e. Its functions can be served equally well by fermentation.

____ 14. The role of oxygen gas in our cells is to
a. catalyze reactions in glycolysis.
b. produce CO_2.
c. form ATP.
d. accept electrons from the respiratory chain.
e. react with glucose to split water.

____ 15. In all cells, glucose metabolism begins with
a. glycolysis.
b. fermentation.
c. pyruvate oxidation.
d. the citric acid cycle.
e. chemosmosis.

____ 16. Which statement about pyruvate is *false*?
a. It is the end product of glycolysis.
b. It becomes reduced during fermentation.
c. It is a precursor of acetyl CoA.
d. It is a protein.
e. It contains three carbon atoms.

____ 17. The process that converts glucose to pyruvate, generating a small amount of ATP but no carbon dioxide, is called
a. pyruvate oxidation.
b. glycolysis.
c. the citric acid cycle.
d. the respiratory chain.

____ 18. During glycolysis, for each mole of glucose oxidized to pyruvate,
a. 6 moles of ATP are produced.
b. 2 moles of ATP are produced.
c. 4 moles of ATP are produced.
d. 2 moles of NAD^+ are produced.
e. no ATP is produced.

____ 19. Glycolysis
a. takes place in the mitochondrion.
b. produces no ATP.
c. has no connection with the respiratory chain.
d. is the same thing as fermentation.
e. reduces two molecules of NAD^+ for every glucose molecule processed.

____ 20. The citric acid cycle
a. has no connection with the respiratory chain.
b. takes place in the mitochondrion.
c. reduces two NAD^+ for every glucose processed.
d. produces no ATP.
e. is the same thing as fermentation.

____ 21. Pyruvate oxidation generates
a. acetate.
b. NADH + H^+ from NAD^+.
c. a change in free energy.
d. CO_2.
e. All of the above

____ 22. During the first step of the citric acid cycle, energy stored in acetyl CoA is used to
a. create a proton gradient.
b. drive the reaction ADP + $P_i \rightarrow$ ATP.
c. reduce NAD^+ to NADH.
d. drive the reaction oxaloacetate $\rightarrow$ citric acid.
e. reduce FAD to $FADH_2$.

____ 23. The citric acid cycle begins with
a. glucose.
b. pyruvate.
c. acetyl CoA.
d. NADH + H^+.
e. ATP synthase.

____ 24. In the citric acid cycle, oxidative steps are coupled to
a. oxidative phosphorylation.
b. the oxidation of water.
c. the oxidation of electron carriers.
d. the hydrolysis of ATP.
e. the reduction of electron carriers.

____ 25. More free energy is released during the citric acid cycle than during glycolysis, but only 1 mole of ATP is produced for each mole of acetyl CoA that enters the cycle. Most of the remaining free energy produced during the citric acid cycle
a. used to synthesize GTP.
b. used to reduce electron carriers.
c. lost as heat.
d. used to reduce pyruvate.
e. converted to kinetic energy.

____ 26. For the citric acid cycle to proceed, it is necessary for
a. pyruvate to bind to oxaloacetate.
b. carbon dioxide to bind to oxaloacetate.
c. an acetyl group to bind to oxaloacetate.
d. water to be oxidized.
e. None of the above

____ 27. The oxidation of malate to oxaloacetate is coupled to the reduction of the coenzyme NAD^+ to NADH + H^+. NAD^+ is a(n)
a. reducing agent.
b. oxidizing agent.
c. vitamin.
d. phosphate ester.
e. phosphorylating agent.

____ 28. Which of the following is produced during the citric acid cycle?
a. FAD
b. Pyruvate
c. Reduced electron carriers
d. Lactic acid
e. Water

____ 29. In the cell, the site of oxygen utilization is the
a. nucleus.
b. chloroplast.
c. endoplasmic reticulum.
d. mitochondrion.
e. cytosol.

____ 30. The electron transport chain contains four large protein complexes. These proteins
a. are embedded in the inner membrane of the mitochondrion.
b. change in a similar way when reduced.
c. regulate the passage of water through the respiratory chain.
d. oxidize NADH.
e. complete oxidation of pyruvate to acetate.

____ 31. The respiratory chain
a. is located in the mitochondrial matrix.
b. includes only peripheral membrane proteins.
c. always produces ATP.
d. reoxidizes reduced coenzymes.
e. operates simultaneously with fermentation.

____ 32. When hydrogen ions are pumped from the mitochondrial matrix across the inner membrane into the intermembranous space, the result is the
a. formation of ATP.
b. reduction of NAD^+.
c. creation of a proton gradient.
d. restoration of the Na^+–K^+ balance across the membrane.
e. reduction of glucose to lactic acid.

____ 33. The chemiosmotic generation of ATP is driven by
a. osmotic movement of water into an area of high solute concentration.
b. the addition of protons to ADP and phosphate via enzymes.
c. oxidative phosphorylation.
d. the proton motive force.
e. isocitrate dehydrogenase.

____ 34. In the conversion of succinate to fumarate, hydrogen atoms are transferred to FAD. The conversion of succinate and FAD to fumarate and $FADH_2$ is an example of
a. hydrolysis.
b. an allosteric reaction.
c. a metabolic pathway.
d. an aerobic reaction.
e. a redox reaction.

____ 35. Which of the following statements about the electron transport chain is true?
a. Electrons are received from NADH and $FADH_2$.
b. Electrons are passed from donor to recipient carrier molecules in a series of oxidation–reduction reactions.
c. The terminal electron acceptor is usually oxygen.
d. Most of the enzymes are part of the inner mitochondrial membrane.
e. All of the above

____ 36. The oxidizing agent at the end of the electron transport chain is
a. O_2.
b. NAD^+.
c. ATP.
d. FAD.
e. ubiquinone.

____ 37. Which of the following events occurs as part of the electron transport chain?
a. Release of CO_2
b. Reduction of CO_2
c. Oxidation of FADH and NADH
d. Reduction of NAD^+
e. Both a and b

____ 38. The four large protein complexes in the electron transport chain
a. transport electrons.
b. ensure the production of water and oxygen.
c. regulate the passage of water through the chain.
d. oxidize NADH.
e. None of the above

____ 39. The water that is a by-product of cellular respiration is produced as a result of the
a. combining of carbon dioxide with protons.
b. conversion of pyruvate to acetyl CoA.
c. degradation of glucose to pyruvate.
d. reduction of oxygen at the end of the electron transport chain.
e. None of the above

____ 40. According to the chemiosmotic theory, the energy for the synthesis of ATP as electrons flow down the respiratory chain is provided directly by the
a. hydrolysis of GTP.
b. reduction of NAD^+.
c. diffusion of protons.
d. reduction of FAD.
e. hydrolysis of ATP.

____ 41. The hydrogen ion gradient is maintained by
a. electron transport and proton pumping.
b. the splitting of water.
c. the ionization of glucose.
d. ATP synthase.
e. acetyl CoA.

____ 42. The component of aerobic respiration that produces the most ATP per mole of glucose is
a. the electron transport chain.
b. the citric acid cycle.
c. glycolysis.
d. lactic acid fermentation.
e. alcoholic fermentation.

____ 43. Most ATP produced in our bodies is made
a. by glycolysis.
b. in the citric acid cycle.
c. using ATP synthase.
d. from photosynthesis.
e. by burning fat.

____ 44. Which of the following processes occurs when oxygen is *not* available?
a. Pyruvate oxidation
b. The citric acid cycle
c. Fermentation
d. An electron transport chain
e. All of the above

____ 45. How does the reduction of pyruvate to lactic acid during fermentation allow glycolysis to continue in the absence of oxygen?
a. Water is formed during this reaction.
b. This reaction is a kinase reaction.
c. This reaction is coupled to the oxidation of NADH to NAD^+.
d. This reaction is coupled to the formation of ATP.
e. This reaction is coupled to the reduction of NAD^+ to NADH.

____ 46. Fermentation
a. takes place in the mitochondrion.
b. takes place in all animal cells.
c. does not require O_2.
d. requires lactic acid.
e. prevents glycolysis.

____ 47. During the fermentation of one molecule of glucose, the net production of ATP is _____ molecule(s).
a. one
b. two
c. three
d. six
e. eight

____ 48. Many species derive their energy from fermentation, which
a. reduces NAD^+.
b. oxidizes CO_2.
c. ensures a continued supply of ATP.
d. produces acetyl CoA.
e. None of the above

____ 49. In alcoholic fermentation, NAD^+ is produced during the
a. oxidation of pyruvate to acetyl CoA.
b. reduction of pyruvate to lactic acid.
c. reduction of acetaldehyde to ethanol.
d. hydrolysis of ATP to ADP.
e. oxidation of glucose.

____ 50. Compared with fermentation, the aerobic pathways of glucose metabolism produce
a. more ATP.
b. pyruvate.
c. fewer protons for pumping in the mitochondria.
d. less CO_2.
e. more oxidized coenzymes.

____ 51. The formation of ethanol from pyruvate is an example of
a. an exergonic reaction.
b. an extra source of energy as the result of glycolysis.
c. a fermentation process that takes place in the absence of oxygen.
d. cellular respiration.
e. None of the above

____ 52. Regardless of the electron or hydrogen acceptor employed, fermentation always produces
a. AMP.
b. DNA.
c. P_i.
d. NAD^+.
e. None of the above

____ 53. In the absence of oxygen, cells capable of fermentation
a. accumulate glucose.
b. no longer produce ATP.
c. accumulate pyruvate.
d. oxidize FAD.
e. oxidize NADH to produce NAD^+.

____ 54. When bacteria are shifted from an aerobic to an anaerobic environment, they can continue to grow relatively rapidly by
a. increasing the rate of the citric acid cycle.
b. producing more ATP per mole of glucose during glycolysis.
c. producing ATP during the oxidation of NADH.
d. increasing the rate of electron transport down the respiratory chain.
e. increasing the rate of the glycolytic reactions.

____ 55. Yeast cells tend to create anaerobic conditions and therefore
a. exhibit a red pigment.
b. exhibit a green pigment.
c. die.
d. produce ethanol.
e. None of the above

____ 56. In human muscle cells, the fermentation process produces
a. lactic acid.
b. 12 moles of ATP.
c. pyruvic acid.
d. an excessive amount of energy.
e. None of the above

____ 57. Before starch can be used for respiratory ATP production, it must be hydrolyzed to
a. pyruvate.
b. fatty acids.
c. amino acids.
d. glucose.
e. oxaloacetate.

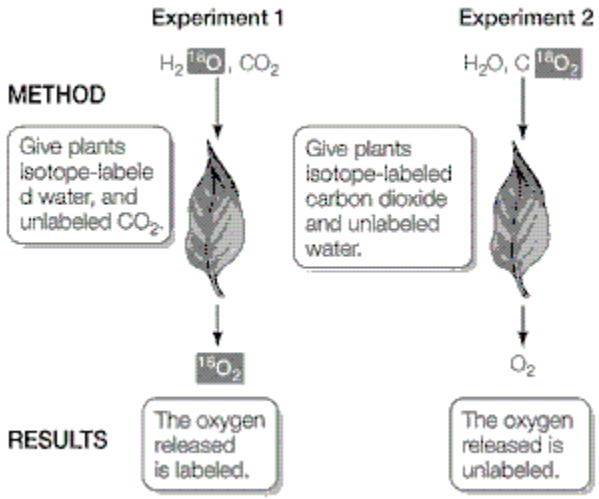
____ 58. When the supply of acetyl CoA being produced exceeds the demands of the citric acid cycle, some of the acetyl CoA is diverted to the synthesis of
a. pyruvate.
b. NAD.
c. proteins.
d. fatty acids.
e. lactic acid.

____ 59. If a cell has an abundant supply of ATP, acetyl CoA may be used
a. to enhance fermentation.
b. to enhance oxidative metabolism.
c. for fatty acid synthesis.
d. to convert glucose to glycogen.
e. None of the above

____ 60. Which of the following biological groups is dependent on photosynthesis for its survival?
a. Vertebrates
b. Mammalia
c. Fishes
d. Plants
e. All of the above

____ 61. Which of the following is the balanced equation for the generation of sugar from sunlight, water, and CO_2?
a. $6\ CO_2 + 6\ H_2O \rightarrow C_6H_{12}O_6 + O_2$
b. $6\ CO_2 + 12\ H_2O \rightarrow C_6H_{12}O_6 + 6\ O_2 + 6\ H_2O$
c. $6\ CO_2 + 6\ H_2O \rightarrow C_6H_{12}O_6 + 6\ O_2$
d. $12\ CO_2 + 12\ H_2O \rightarrow 2\ C_6H_{12}O_6 + 2\ O_2$
e. None of the above

____ 62. Refer to the diagram below. Which of the following was proved by experiments tracing isotopes of oxygen through the process of photosynthesis?



a. CO_2 is the source of the oxygen released during photosynthesis.
b. All the oxygen gas produced during photosynthesis comes from water.
c. The oxygen released by water is incorporated into glucose.
d. Oxygen is needed to made rubisco.
e. NADPH is made during the Calvin cycle.

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Answer Section

MULTIPLE CHOICE

1. ANS: B PTS: 1 REF: Page 101
   TOP: Concept 6.1 ATP, Reduced Coenzymes, and Chemiosmosis Play Important Roles in Biological Energy Metabolism SKL: 2. Understanding
2. ANS: E PTS: 1 REF: Page 101
   TOP: Concept 6.1 ATP, Reduced Coenzymes, and Chemiosmosis Play Important Roles in Biological Energy Metabolism SKL: 2. Understanding
3. ANS: D PTS: 1 REF: Page 101
   TOP: Concept 6.1 ATP, Reduced Coenzymes, and Chemiosmosis Play Important Roles in Biological Energy Metabolism SKL: 2. Understanding
4. ANS: C PTS: 1 REF: Page 101
   TOP: Concept 6.1 ATP, Reduced Coenzymes, and Chemiosmosis Play Important Roles in Biological Energy Metabolism SKL: 2. Understanding
5. ANS: E PTS: 1 REF: Page 101
   TOP: Concept 6.1 ATP, Reduced Coenzymes, and Chemiosmosis Play Important Roles in Biological Energy Metabolism SKL: 2. Understanding
6. ANS: E PTS: 1 REF: Page 101-102
   TOP: Concept 6.1 ATP, Reduced Coenzymes, and Chemiosmosis Play Important Roles in Biological Energy Metabolism SKL: 2. Understanding
7. ANS: B PTS: 1 REF: Page 102
   TOP: Concept 6.1 ATP, Reduced Coenzymes, and Chemiosmosis Play Important Roles in Biological Energy Metabolism SKL: 1. Remembering
8. ANS: D PTS: 1 REF: Page 102
   TOP: Concept 6.1 ATP, Reduced Coenzymes, and Chemiosmosis Play Important Roles in Biological Energy Metabolism SKL: 2. Understanding
9. ANS: A PTS: 1 REF: Page 102
   TOP: Concept 6.1 ATP, Reduced Coenzymes, and Chemiosmosis Play Important Roles in Biological Energy Metabolism SKL: 1. Remembering
10. ANS: C PTS: 1 REF: Page 102-103
    TOP: Concept 6.1 ATP, Reduced Coenzymes, and Chemiosmosis Play Important Roles in Biological Energy Metabolism SKL: 2. Understanding
11. ANS: A PTS: 1 REF: Page 102-103
    TOP: Concept 6.1 ATP, Reduced Coenzymes, and Chemiosmosis Play Important Roles in Biological Energy Metabolism SKL: 3. Applying
12. ANS: B PTS: 1 REF: Page 103
    TOP: Concept 6.1 ATP, Reduced Coenzymes, and Chemiosmosis Play Important Roles in Biological Energy Metabolism SKL: 1. Remembering
13. ANS: E PTS: 1 REF: Page 103
    TOP: Concept 6.1 ATP, Reduced Coenzymes, and Chemiosmosis Play Important Roles in Biological Energy Metabolism SKL: 4. Analyzing
14. ANS: D PTS: 1 REF: Page 104
    TOP: Concept 6.1 ATP, Reduced Coenzymes, and Chemiosmosis Play Important Roles in Biological Energy Metabolism SKL: 2. Understanding
15. ANS: A PTS: 1 REF: Page 106-107

TOP: Concept 6.2 Carbohydrate Catabolism in the Presence of Oxygen Releases a Large Amount of Energy
SKL: 1. Remembering

16. ANS: D PTS: 1 REF: Page 106-108
TOP: Concept 6.2 Carbohydrate Catabolism in the Presence of Oxygen Releases a Large Amount of Energy
SKL: 4. Analyzing

17. ANS: B PTS: 1 REF: Page 107
TOP: Concept 6.2 Carbohydrate Catabolism in the Presence of Oxygen Releases a Large Amount of Energy
SKL: 1. Remembering

18. ANS: C PTS: 1 REF: Page 107
TOP: Concept 6.2 Carbohydrate Catabolism in the Presence of Oxygen Releases a Large Amount of Energy
SKL: 3. Applying

19. ANS: E PTS: 1 REF: Page 107
TOP: Concept 6.2 Carbohydrate Catabolism in the Presence of Oxygen Releases a Large Amount of Energy
SKL: 3. Applying

20. ANS: B PTS: 1 REF: Page 107-108
TOP: Concept 6.2 Carbohydrate Catabolism in the Presence of Oxygen Releases a Large Amount of Energy
SKL: 2. Understanding

21. ANS: E PTS: 1 REF: Page 108
TOP: Concept 6.2 Carbohydrate Catabolism in the Presence of Oxygen Releases a Large Amount of Energy
SKL: 1. Remembering

22. ANS: D PTS: 1 REF: Page 108
TOP: Concept 6.2 Carbohydrate Catabolism in the Presence of Oxygen Releases a Large Amount of Energy
SKL: 2. Understanding

23. ANS: C PTS: 1 REF: Page 108
TOP: Concept 6.2 Carbohydrate Catabolism in the Presence of Oxygen Releases a Large Amount of Energy
SKL: 1. Remembering

24. ANS: E PTS: 1 REF: Page 108
TOP: Concept 6.2 Carbohydrate Catabolism in the Presence of Oxygen Releases a Large Amount of Energy
SKL: 2. Understanding

25. ANS: B PTS: 1 REF: Page 108
TOP: Concept 6.2 Carbohydrate Catabolism in the Presence of Oxygen Releases a Large Amount of Energy
SKL: 4. Analyzing

26. ANS: C PTS: 1 REF: Page 108
TOP: Concept 6.2 Carbohydrate Catabolism in the Presence of Oxygen Releases a Large Amount of Energy
SKL: 2. Understanding

27. ANS: B PTS: 1 REF: Page 108
TOP: Concept 6.2 Carbohydrate Catabolism in the Presence of Oxygen Releases a Large Amount of Energy
SKL: 2. Understanding

28. ANS: C PTS: 1 REF: Page 108
TOP: Concept 6.2 Carbohydrate Catabolism in the Presence of Oxygen Releases a Large Amount of Energy
SKL: 2. Understanding

29. ANS: D PTS: 1 REF: Page 108-109
TOP: Concept 6.2 Carbohydrate Catabolism in the Presence of Oxygen Releases a Large Amount of Energy
SKL: 1. Remembering

30. ANS: A PTS: 1 REF: Page 108-109
TOP: Concept 6.2 Carbohydrate Catabolism in the Presence of Oxygen Releases a Large Amount of Energy
SKL: 1. Remembering

31. ANS: D PTS: 1 REF: Page 108-109
TOP: Concept 6.2 Carbohydrate Catabolism in the Presence of Oxygen Releases a Large Amount of Energy

SKL: 4. Analyzing

32. ANS: C PTS: 1 REF: Page 108-109
TOP: Concept 6.2 Carbohydrate Catabolism in the Presence of Oxygen Releases a Large Amount of Energy
SKL: 2. Understanding

33. ANS: D PTS: 1 REF: Page 108-109
TOP: Concept 6.2 Carbohydrate Catabolism in the Presence of Oxygen Releases a Large Amount of Energy
SKL: 2. Understanding

34. ANS: E PTS: 1 REF: Page 109
TOP: Concept 6.2 Carbohydrate Catabolism in the Presence of Oxygen Releases a Large Amount of Energy
SKL: 3. Applying

35. ANS: E PTS: 1 REF: Page 109
TOP: Concept 6.2 Carbohydrate Catabolism in the Presence of Oxygen Releases a Large Amount of Energy
SKL: 4. Analyzing

36. ANS: A PTS: 1 REF: Page 109
TOP: Concept 6.2 Carbohydrate Catabolism in the Presence of Oxygen Releases a Large Amount of Energy
SKL: 2. Understanding

37. ANS: C PTS: 1 REF: Page 109
TOP: Concept 6.2 Carbohydrate Catabolism in the Presence of Oxygen Releases a Large Amount of Energy
SKL: 1. Remembering

38. ANS: A PTS: 1 REF: Page 109
TOP: Concept 6.2 Carbohydrate Catabolism in the Presence of Oxygen Releases a Large Amount of Energy
SKL: 2. Understanding

39. ANS: D PTS: 1 REF: Page 109
TOP: Concept 6.2 Carbohydrate Catabolism in the Presence of Oxygen Releases a Large Amount of Energy
SKL: 2. Understanding

40. ANS: C PTS: 1 REF: Page 109
TOP: Concept 6.2 Carbohydrate Catabolism in the Presence of Oxygen Releases a Large Amount of Energy
SKL: 2. Understanding

41. ANS: A PTS: 1 REF: Page 109-110
TOP: Concept 6.2 Carbohydrate Catabolism in the Presence of Oxygen Releases a Large Amount of Energy
SKL: 2. Understanding

42. ANS: A PTS: 1 REF: Page 109-110
TOP: Concept 6.2 Carbohydrate Catabolism in the Presence of Oxygen Releases a Large Amount of Energy
SKL: 2. Understanding

43. ANS: C PTS: 1 REF: Page 109-110
TOP: Concept 6.2 Carbohydrate Catabolism in the Presence of Oxygen Releases a Large Amount of Energy
SKL: 3. Applying

44. ANS: C PTS: 1 REF: Page 110
TOP: Concept 6.3 Carbohydrate Catabolism in the Absence of Oxygen Releases a Small Amount of Energy
SKL: 2. Understanding

45. ANS: C PTS: 1 REF: Page 110
TOP: Concept 6.3 Carbohydrate Catabolism in the Absence of Oxygen Releases a Small Amount of Energy
SKL: 3. Applying

46. ANS: C PTS: 1 REF: Page 110
TOP: Concept 6.3 Carbohydrate Catabolism in the Absence of Oxygen Releases a Small Amount of Energy
SKL: 2. Understanding

47. ANS: B PTS: 1 REF: Page 110
TOP: Concept 6.3 Carbohydrate Catabolism in the Absence of Oxygen Releases a Small Amount of Energy
SKL: 2. Understanding

48. ANS: C PTS: 1 REF: Page 110
TOP: Concept 6.3 Carbohydrate Catabolism in the Absence of Oxygen Releases a Small Amount of Energy
SKL: 2. Understanding
49. ANS: C PTS: 1 REF: Page 110
TOP: Concept 6.3 Carbohydrate Catabolism in the Absence of Oxygen Releases a Small Amount of Energy
SKL: 2. Understanding
50. ANS: A PTS: 1 REF: Page 110-111
TOP: Concept 6.3 Carbohydrate Catabolism in the Absence of Oxygen Releases a Small Amount of Energy
SKL: 2. Understanding
51. ANS: C PTS: 1 REF: Page 110-111
TOP: Concept 6.3 Carbohydrate Catabolism in the Absence of Oxygen Releases a Small Amount of Energy
SKL: 2. Understanding
52. ANS: D PTS: 1 REF: Page 110-111
TOP: Concept 6.3 Carbohydrate Catabolism in the Absence of Oxygen Releases a Small Amount of Energy
SKL: 2. Understanding
53. ANS: E PTS: 1 REF: Page 110-111
TOP: Concept 6.3 Carbohydrate Catabolism in the Absence of Oxygen Releases a Small Amount of Energy
SKL: 2. Understanding
54. ANS: E PTS: 1 REF: Page 110-111
TOP: Concept 6.3 Carbohydrate Catabolism in the Absence of Oxygen Releases a Small Amount of Energy
SKL: 2. Understanding
55. ANS: D PTS: 1 REF: Page 110-111
TOP: Concept 6.3 Carbohydrate Catabolism in the Absence of Oxygen Releases a Small Amount of Energy
SKL: 2. Understanding
56. ANS: A PTS: 1 REF: Page 111
TOP: Concept 6.3 Carbohydrate Catabolism in the Absence of Oxygen Releases a Small Amount of Energy
SKL: 1. Remembering
57. ANS: D PTS: 1 REF: Page 112
TOP: Concept 6.4 Catabolic and Anabolic Pathways Are Integrated
SKL: 1. Remembering
58. ANS: D PTS: 1 REF: Page 113
TOP: Concept 6.4 Catabolic and Anabolic Pathways Are Integrated
SKL: 2. Understanding
59. ANS: C PTS: 1 REF: Page 113
TOP: Concept 6.4 Catabolic and Anabolic Pathways Are Integrated
SKL: 1. Remembering
60. ANS: E PTS: 1 REF: Page 113
TOP: Concept 6.5 During Photosynthesis, Light Energy Is Converted to Chemical Energy
SKL: 2. Understanding
61. ANS: C PTS: 1 REF: Page 113
TOP: Concept 6.5 During Photosynthesis, Light Energy Is Converted to Chemical Energy
SKL: 2. Understanding
62. ANS: B PTS: 1 REF: Page 117
TOP: Concept 6.5 During Photosynthesis, Light Energy Is Converted to Chemical Energy
SKL: 4. Analyzing