AP Biology - Cell Unit Exam

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

1) A chemical reaction that has a positive $\Delta G$ is correctly described as
   A) endothermic.
   B) endergonic.
   C) exothermic.
   D) spontaneous.
   E) enthalpic.

For the following questions, match the labeled component of the cell membrane in the figure with its description.

2) Which component is the peripheral protein?
   A) A
   B) B
   C) C
   D) D
   E) E

3) Which component is a microfilament of the cytoskeleton?
   A) A
   B) B
   C) C
   D) D
   E) E
4) Which component is the fiber of the extracellular matrix?
   A) A
   B) B
   C) C
   D) D
   E) E

5) Which of the following statements is a logical consequence of the second law of thermodynamics?
   A) Energy can be transferred or transformed, but it cannot be created or destroyed.
   B) Every energy transfer requires activation energy from the environment.
   C) Every chemical reaction must increase the total entropy of the universe.
   D) If there is an increase in the energy of a system, there must be a corresponding decrease in the energy of the rest of the universe.
   E) If the entropy of a system increases, there must be a corresponding decrease in the entropy of the universe.

6) Glucose diffuses slowly through artificial phospholipid bilayers. The cells lining the small intestine, however, rapidly move large quantities of glucose from the glucose–rich food into their glucose–poor cytoplasm. Using this information, which transport mechanism is most probably functioning in the intestinal cells?
   A) facilitated diffusion
   B) simple diffusion
   C) phagocytosis
   D) exocytosis
   E) active transport pumps

7) Energy released by the electron transport chain is used to pump H⁺ into which location in eukaryotic cells?
   A) mitochondrial matrix
   B) mitochondrial outer membrane
   C) cytosol
   D) mitochondrial inner membrane
   E) mitochondrial intermembrane space

8) The immediate energy source that drives ATP synthesis by ATP synthase during oxidative phosphorylation is the
   A) flow of electrons down the electron transport chain.
   B) transfer of phosphate to ADP.
   C) affinity of oxygen for electrons.
   D) oxidation of glucose and other organic compounds.
   E) H⁺ concentration across the membrane holding ATP synthase.
9) A biologist wants specifically to examine the surfaces of different types of cells in kidney tubules of small mammals. The cells in question can be distinguished by external shape, size, and 3-D characteristics. Which of the following would be the optimum method for her study?
   A) scanning electron microscopy
   B) light microscopy using stains specific to kidney function
   C) cell fractionation
   D) light microscopy of living unstained material
   E) transmission electron microscopy

10) When a glucose molecule loses a hydrogen atom as the result of an oxidation–reduction reaction, the molecule becomes
   A) hydrogenated.
   B) an oxidizing agent.
   C) reduced.
   D) oxidized.
   E) hydrolyzed.

11) Large numbers of ribosomes are present in cells that specialize in producing which of the following molecules?
   A) glycogen
   B) cellulose
   C) nucleic acids
   D) proteins
   E) lipids

12) Proteins that are involved in the regulation of the cell cycle, and that show fluctuations in concentration during the cell cycle, are called
   A) kinases.
   B) cyclins.
   C) ATPases.
   D) proton pumps.
   E) kinetochores.
13) Which of the following represents the $\Delta G$ of the reaction in Figure 8.1?
   A) a
   B) b
   C) c
   D) d
   E) e

14) Which of the following represents the activation energy required for a noncatalyzed reaction in Figure 8.1?
   A) a
   B) b
   C) c
   D) d
   E) e

15) According to the induced fit hypothesis of enzyme catalysis, which of the following is correct?
   A) The binding of the substrate depends on the shape of the active site.
   B) A competitive inhibitor can outcompete the substrate for the active site.
   C) The active site creates a microenvironment ideal for the reaction.
   D) The binding of the substrate changes the shape of the enzyme's active site.
   E) Some enzymes change their structure when activators bind to the enzyme.
16) Which of the following is one of the ways that the membranes of winter wheat are able to remain fluid when it is extremely cold?
   A) by decreasing the number of hydrophobic proteins in the membrane
   B) by increasing the percentage of cholesterol molecules in the membrane
   C) by using active transport
   D) by increasing the percentage of unsaturated phospholipids in the membrane
   E) by cotransport of glucose and hydrogen

17) One function of both alcohol fermentation and lactic acid fermentation is to
   A) reduce FAD$^+$ to FADH$_2$.
   B) oxidize NADH to NAD$^+$.
   C) reduce FADH$_2$ to FAD$^+$.
   D) reduce NAD$^+$ to NADH.
   E) do none of the above.

18) Where do the enzymatic reactions of the Calvin cycle take place?
   A) thylakoid membranes
   B) stroma of the chloroplast
   C) thylakoid space
   D) cytosol around the chloroplast
   E) matrix of the mitochondria

19) Which of the following intermediary metabolites enters the citric acid cycle and is formed, in part, by the removal of a carbon (CO$_2$) from one molecule of pyruvate?
   A) glyceraldehydes–3–phosphate
   B) citrate
   C) lactate
   D) acetyl CoA
   E) oxaloacetate

20) In addition to ATP, what are the end products of glycolysis?
   A) CO$_2$ and NADH
   B) H$_2$O, FADH$_2$, and citrate
   C) CO$_2$ and pyruvate
   D) NADH and pyruvate
   E) CO$_2$ and H$_2$O

21) Which metabolic pathway is common to both fermentation and cellular respiration of a glucose molecule?
   A) reduction of pyruvate to lactate
   B) the citric acid cycle
   C) glycolysis
   D) synthesis of acetyl CoA from pyruvate
   E) the electron transport chain
22) Which of the following is a protein maintained at constant levels throughout the cell cycle that requires cyclin to become catalytically active?
   A) Cdk
   B) MPF
   C) protein kinase
   D) cyclin
   E) PDGF

23) What wavelength of light in the figure is most effective in driving photosynthesis?
   A) 575 mm
   B) 625 mm
   C) 730 mm
   D) 420 mm
   E) 475 mm

![Figure 10.1](image)

24) A protein that spans the phospholipid bilayer one or more times is
   A) a peripheral protein.
   B) an integrin.
   C) a transmembrane protein.
   D) a glycoprotein.
   E) an integral protein.

25) Most CO₂ from catabolism is released during
   A) oxidative phosphorylation.
   B) electron transport.
   C) lactate fermentation.
   D) the citric acid cycle.
   E) glycolysis.
26) Which of the following statements describes the results of this reaction?
\[ C_6H_{12}O_6 + 6 \, O_2 \rightarrow 6 \, CO_2 + 6 \, H_2O + \text{Energy} \]
A) \( C_6H_{12}O_6 \) is oxidized and \( O_2 \) is reduced.
B) \( C_6H_{12}O_6 \) is reduced and \( CO_2 \) is oxidized.
C) \( O_2 \) is oxidized and \( H_2O \) is reduced.
D) \( CO_2 \) is reduced and \( O_2 \) is oxidized.
E) \( O_2 \) is reduced and \( CO_2 \) is oxidized.

27) What is the primary function of the Calvin cycle?
A) use ATP to release carbon dioxide
B) use NADPH to release carbon dioxide
C) split water and release oxygen
D) transport RuBP out of the chloroplast
E) synthesize simple sugars from carbon dioxide

28) Movement of vesicles within the cell depends on what cellular structures?
A) centrioles and motor proteins
B) actin filaments and ribosomes
C) actin filaments and motor proteins
D) microtubules and motor proteins
E) actin filaments and microtubules

29) The light reactions of photosynthesis supply the Calvin cycle with
A) \( H_2O \) and NADPH.
B) ATP and NADPH.
C) sugar and \( O_2 \).
D) light energy.
E) \( CO_2 \) and ATP.

30) Why do neurons and some other specialized cells divide infrequently?
A) They show a drop in MPF concentration.
B) They no longer have active nuclei.
C) They have been shunted into \( G_0 \).
D) They can no longer bind Cdk to cyclin.
E) They no longer carry receptors for signal molecules.

31) According to the fluid mosaic model of cell membranes, which of the following is a true statement about membrane phospholipids?
A) They occur in an uninterrupted bilayer, with membrane proteins restricted to the surface of the membrane.
B) They frequently flip–flop from one side of the membrane to the other.
C) They can move laterally along the plane of the membrane.
D) They are free to depart from the membrane and dissolve in the surrounding solution.
E) They have hydrophilic tails in the interior of the membrane.
32) Which type of organelle or structure is primarily involved in the synthesis of oils, phospholipids, and steroids?
   A) ribosome
   B) smooth endoplasmic reticulum
   C) lysosome
   D) contractile vacuole
   E) mitochondrion

33) A primary objective of cell fractionation is to
   A) determine the size of various organelles.
   B) separate the major organelles so that their particular functions can be determined.
   C) sort cells based on their size and weight.
   D) view the structure of cell membranes.
   E) separate lipid–soluble from water–soluble molecules.

34) Which statement best supports the hypothesis that glycolysis is an ancient metabolic pathway that originated before the last universal common ancestor of life on Earth?
   A) Glycolysis is found in all eukaryotic cells.
   B) Ancient prokaryotic cells, the most primitive of cells, made extensive use of glycolysis long before oxygen was present in Earth's atmosphere.
   C) Glycolysis is widespread and is found in the domains Bacteria, Archaea, and Eukarya.
   D) The enzymes of glycolysis are found in the cytosol rather than in a membrane–enclosed organelle.
   E) Glycolysis neither uses nor needs O₂.

35) Density–dependent inhibition is explained by which of the following?
   A) As cells become more numerous, the protein kinases they produce begin to compete with each other, such that the proteins produced by one cell essentially cancel those produced by its neighbor.
   B) As cells become more numerous, more and more of them enter the S phase of the cell cycle.
   C) As cells become more numerous, the cell surface proteins of one cell contact the adjoining cells and they stop dividing.
   D) As cells become more numerous, they begin to squeeze against each other, restricting their size and ability to produce control factors.
   E) As cells become more numerous, the level of waste products increases, eventually slowing down metabolism.

36) What is the term for metabolic pathways that release stored energy by breaking down complex molecules?
   A) thermodynamic pathways
   B) anabolic pathways
   C) bioenergetic pathways
   D) fermentation pathways
   E) catabolic pathways
37) Thylakoids, DNA, and ribosomes are all components found in
   A) vacuoles.
   B) nuclei.
   C) mitochondria.
   D) chloroplasts.
   E) lysosomes.

38) During which phase of mitosis do the chromatids become chromosomes?
   A) telophase
   B) cytokinesis
   C) prophase
   D) anaphase
   E) metaphase

39) Which of the following processes includes all others?
   A) transport of an ion down its electrochemical gradient
   B) facilitated diffusion
   C) diffusion of a solute across a membrane
   D) passive transport
   E) osmosis

40) Which of the following statements best describes the relationship between photosynthesis and respiration?
   A) ATP molecules are produced in photosynthesis and used up in respiration.
   B) Respiration runs the biochemical pathways of photosynthesis in reverse.
   C) Photosynthesis stores energy in complex organic molecules, whereas respiration releases it.
   D) Photosynthesis occurs only in plants and respiration occurs only in animals.
   E) Respiration is anabolic and photosynthesis is catabolic.

41) Which of the following does not occur during mitosis?
   A) separation of the spindle poles
   B) condensation of the chromosomes
   C) replication of the DNA
   D) spindle formation
   E) separation of sister chromatids
42) Which of the following best describes how chromosomes move toward the poles of the spindle during mitosis?
   A) Motor proteins of the kinetochores move the chromosomes along the spindle microtubules.
   B) Nonkinetochore spindle fibers serve to push chromosomes in the direction of the poles.
   C) The chromosomes are "reeled in" by the contraction of spindle microtubules.
   D) The chromosomes are "reeled in" by the contraction of spindle microtubules, and motor proteins of the kinetochores move the chromosomes along the spindle microtubules.
   E) The chromosomes are "reeled in" by the contraction of spindle microtubules, motor proteins of the kinetochores move the chromosomes along the spindle microtubules, and nonkinetochore spindle fibers serve to push chromosomes in the direction of the poles.

43) Which of the following types of molecules are the major structural components of the cell membrane?
   A) glycoproteins and cholesterol
   B) phospholipids and proteins
   C) nucleic acids and proteins
   D) proteins and cellulose
   E) phospholipids and cellulose

44) Living organisms increase in complexity as they grow, resulting in a decrease in the entropy of an organism. How does this relate to the second law of thermodynamics?
   A) Living organisms do not obey the second law of thermodynamics, which states that entropy must increase with time.
   B) Living organisms do not follow the laws of thermodynamics.
   C) Life obeys the second law of thermodynamics because the decrease in entropy as the organism grows is exactly balanced by an increase in the entropy of the universe.
   D) As a consequence of growing, organisms cause a greater increase in entropy in their environment than the decrease in entropy associated with their growth.
   E) Living organisms are able to transform energy into entropy.

45) Which organelle is the primary site of ATP synthesis in eukaryotic cells?
   A) lysosome
   B) mitochondrion
   C) Golgi apparatus
   D) vacuole
   E) peroxisome

46) The ATP made during fermentation is generated by which of the following?
   A) substrate–level phosphorylation
   B) chemiosmosis
   C) aerobic respiration
   D) the electron transport chain
   E) oxidative phosphorylation
47) During aerobic respiration, electrons travel downhill in which sequence?
   A) food → citric acid cycle → ATP → NAD+
   B) glucose → pyruvate → ATP → oxygen
   C) food → NADH → electron transport chain → oxygen
   D) food → glycolysis → citric acid cycle → NADH → ATP
   E) glucose → ATP → electron transport chain → NADH

48) Photosynthesis is not responsible for
   A) oxygen in the atmosphere.
   B) the ozone layer.
   C) fossil fuels.
   D) most of the organic carbon on Earth's surface.
   E) atmospheric CO₂.

49) A cell with a predominance of free ribosomes is most likely
   A) constructing an extensive cell wall or extracellular matrix.
   B) producing primarily cytoplasmic proteins.
   C) enlarging its vacuole.
   D) producing primarily proteins for secretion.
   E) digesting large food particles.

50) What is the voltage across a membrane called?
   A) electrochemical gradient
   B) chemical gradient
   C) membrane potential
   D) water potential
   E) osmotic potential

51) Which of the following is true of metabolism in its entirety in all organisms?
   A) Metabolism depends on a constant supply of energy from food.
   B) Metabolism depends on an organism's adequate hydration.
   C) Metabolism manages the increase of entropy in an organism.
   D) Metabolism uses all of an organism's resources.
   E) Metabolism consists of all the energy transformation reactions in an organism.

52) How is photosynthesis similar in C₄ plants and CAM plants?
   A) In both cases, rubisco is not used to fix carbon initially.
   B) In both cases, only photosystem I is used.
   C) Both types of plants make sugar without the Calvin cycle.
   D) In both cases, thylakoids are not involved in photosynthesis.
   E) Both types of plants make most of their sugar in the dark.

53) Which of the following is present in a prokaryotic cell?
   A) mitochondrion
   B) nuclear envelope
   C) chloroplast
   D) ribosome
   E) ER
54) One difference between cancer cells and normal cells is that cancer cells
   A) are always in the M phase of the cell cycle.
   B) cannot function properly because they are affected by density-dependent inhibition.
   C) are arrested at the S phase of the cell cycle.
   D) are unable to synthesize DNA.
   E) continue to divide even when they are tightly packed together.

55) What is the most likely pathway taken by a newly synthesized protein that will be secreted by a cell?
   A) nucleus → ER → Golgi
   B) Golgi → ER → lysosome
   C) ER → Golgi → vesicles that fuse with plasma membrane
   D) ER → lysosomes → vesicles that fuse with plasma membrane
   E) ER → Golgi → nucleus

56) In a liver cell detoxifying alcohol and some other poisons, the enzymes of the peroxisome remove hydrogen from these molecules and
   A) transfer the hydrogen to oxygen molecules to generate hydrogen peroxide.
   B) combine the hydrogen with water molecules to generate hydrogen peroxide.
   C) transfer the hydrogen to the mitochondria.
   D) use the hydrogen to break down hydrogen peroxide.

57) Which of the following describe(s) cyclin–dependent kinase (Cdk)?
   A) Cdk is present throughout the cell cycle.
   B) Cdk is present throughout the cell cycle and is an enzyme that attaches phosphate groups to other proteins.
   C) Cdk is an enzyme that attaches phosphate groups to other proteins.
   D) Cdk is inactive, or "turned off," in the presence of cyclin and it is present throughout the cell cycle.
   E) Cdk is inactive, or "turned off," in the presence of cyclin.

58) Choose the pair of terms that correctly completes this sentence: Catabolism is to anabolism as _____ is to _____.
   A) exergonic; spontaneous
   B) work; energy
   C) entropy; enthalpy
   D) free energy; entropy
   E) exergonic; endergonic

59) Which of the following occurs in the cytosol of a eukaryotic cell?
   A) fermentation and chemiosmosis
   B) oxidative phosphorylation
   C) citric acid cycle
   D) oxidation of pyruvate to acetyl CoA
   E) glycolysis and fermentation
60) Which of the following are directly associated with photosystem I?
A) extraction of hydrogen electrons from the splitting of water
B) generation of molecular oxygen
C) passing electrons to the thylakoid membrane electron transport chain
D) harvesting of light energy by ATP
E) receiving electrons from the thylakoid membrane electron transport chain

61) Which of the following statements regarding enzymes is true?
A) Enzymes increase the rate of a reaction by reducing the rate of reverse reactions.
B) Enzymes change the equilibrium point of the reactions they catalyze.
C) Enzymes increase the rate of a reaction by lowering the activation energy barrier.
D) Enzymes make the rate of a reaction independent of substrate concentrations.
E) Enzymes increase the rate of a reaction by making the reaction more exergonic.

62) Which of the following is the smallest closed system?
A) an ecosystem
B) an organism
C) the universe
D) a cell
E) Earth

63) When you have a severe fever, what grave consequence may occur if the fever is not controlled?
A) removal of amine groups from your proteins
B) destruction of your enzymes' primary structure
C) change in the tertiary structure of your enzymes
D) removal of the amino acids in active sites of your enzymes
E) binding of your enzymes to inappropriate substrates

64) Which of the following sequences correctly represents the flow of electrons during photosynthesis?
A) NADPH → chlorophyll → Calvin cycle
B) NADPH → O₂ → CO₂
C) H₂O → NADPH → Calvin cycle
D) NADPH → electron transport chain → O₂
E) H₂O → photosystem I → photosystem II

65) The primary role of oxygen in cellular respiration is to
A) yield energy in the form of ATP as it is passed down the respiratory chain.
B) act as an acceptor for electrons and hydrogen, forming water.
C) combine with lactate, forming pyruvate.
D) combine with carbon, forming CO₂.
E) catalyze the reactions of glycolysis.
MULTIPLE CHOICE

1) ANS: B TOP: Concept 8.2 MSC: Knowledge/Comprehension
BNK: Chapter 8—An Introduction to Metabolism

2) ANS: D TOP: Concept 7.1 MSC: Knowledge/Comprehension
BNK: Chapter 7—Membrane Structure and Function

3) ANS: C TOP: Concept 7.1 MSC: Knowledge/Comprehension
BNK: Chapter 7—Membrane Structure and Function

4) ANS: A TOP: Concept 7.1 MSC: Knowledge/Comprehension
BNK: Chapter 7—Membrane Structure and Function

5) ANS: C TOP: Concept 8.1 MSC: Synthesis/Evaluation
BNK: Chapter 8—An Introduction to Metabolism

6) ANS: A TOP: Concept 7.4 MSC: Application/Analysis
BNK: Chapter 7—Membrane Structure and Function

7) ANS: E TOP: Concept 9.4 MSC: Knowledge/Comprehension
BNK: Chapter 9—Cellular Respiration and Fermentation

8) ANS: E TOP: End-of-Chapter Questions MSC: Knowledge/Comprehension
BNK: Chapter 9—Cellular Respiration and Fermentation

9) ANS: A TOP: Concept 6.1 MSC: Synthesis/Evaluation
BNK: Chapter 6—A Tour of the Cell

10) ANS: D TOP: Concept 9.1 MSC: Knowledge/Comprehension
BNK: Chapter 9—Cellular Respiration and Fermentation

11) ANS: D TOP: Concept 6.3 MSC: Knowledge/Comprehension
BNK: Chapter 6—A Tour of the Cell

12) ANS: B TOP: Concept 12.3 MSC: Knowledge/Comprehension
BNK: Chapter 12—The Cell Cycle

13) ANS: D TOP: Concept 8.4 MSC: Knowledge/Comprehension
BNK: Chapter 8—An Introduction to Metabolism

14) ANS: C TOP: Concept 8.4 MSC: Knowledge/Comprehension
BNK: Chapter 8—An Introduction to Metabolism

15) ANS: D TOP: Concept 8.4 MSC: Knowledge/Comprehension
BNK: Chapter 8—An Introduction to Metabolism

16) ANS: D TOP: Concept 7.1 MSC: Knowledge/Comprehension
BNK: Chapter 7—Membrane Structure and Function

17) ANS: B TOP: Concept 9.5 MSC: Application/Analysis
BNK: Chapter 9—Cellular Respiration and Fermentation

18) ANS: B TOP: Concept 10.3 MSC: Knowledge/Comprehension
BNK: Chapter 10—Photosynthesis

19) ANS: D TOP: Concept 9.3 MSC: Knowledge/Comprehension
BNK: Chapter 9—Cellular Respiration and Fermentation
20) ANS: D  TOP: Concept 9.2  MSC: Knowledge/Comprehension  
BNK: Chapter 9—Cellular Respiration and Fermentation

21) ANS: C  TOP: End-of-Chapter Questions  MSC: Knowledge/Comprehension  
BNK: Chapter 9—Cellular Respiration and Fermentation

22) ANS: A  TOP: Concept 12.3  MSC: Knowledge/Comprehension  
BNK: Chapter 12—The Cell Cycle

23) ANS: D  TOP: Concept 10.2  MSC: Application/Analysis  
BNK: Chapter 10—Photosynthesis

24) ANS: C  TOP: Concept 7.1  MSC: Knowledge/Comprehension  
BNK: Chapter 7—Membrane Structure and Function

25) ANS: D  TOP: End-of-Chapter Questions  MSC: Application/Analysis  
BNK: Chapter 9—Cellular Respiration and Fermentation

26) ANS: A  TOP: Concept 9.1  MSC: Knowledge/Comprehension  
BNK: Chapter 9—Cellular Respiration and Fermentation

27) ANS: E  TOP: Concept 10.3  MSC: Knowledge/Comprehension  
BNK: Chapter 10—Photosynthesis

28) ANS: D  TOP: Concept 6.6  MSC: Knowledge/Comprehension  
BNK: Chapter 6—A Tour of the Cell

29) ANS: B  TOP: End-of-Chapter Questions  MSC: Knowledge/Comprehension  
BNK: Chapter 10—Photosynthesis

30) ANS: C  TOP: Concept 12.3  MSC: Knowledge/Comprehension  
BNK: Chapter 12—The Cell Cycle

31) ANS: C  TOP: Concept 7.1  MSC: Knowledge/Comprehension  
BNK: Chapter 7—Membrane Structure and Function

32) ANS: B  TOP: Concept 6.4  MSC: Knowledge/Comprehension  
BNK: Chapter 6—A Tour of the Cell

33) ANS: B  TOP: Concept 6.1  MSC: Knowledge/Comprehension  
BNK: Chapter 6—A Tour of the Cell

34) ANS: C  TOP: Concept 9.5  MSC: Synthesis/Evaluation  
BNK: Chapter 9—Cellular Respiration and Fermentation

35) ANS: C  TOP: Concept 12.3  MSC: Knowledge/Comprehension  
BNK: Chapter 12—The Cell Cycle

36) ANS: E  TOP: Concept 9.1  MSC: Knowledge/Comprehension  
BNK: Chapter 9—Cellular Respiration and Fermentation

37) ANS: D  TOP: Concept 6.5  MSC: Knowledge/Comprehension  
BNK: Chapter 6—A Tour of the Cell

38) ANS: A  TOP: Concept 12.2  MSC: Knowledge/Comprehension  
BNK: Chapter 12—The Cell Cycle

39) ANS: D  TOP: End-of-Chapter Questions  MSC: Application/Analysis  
BNK: Chapter 7—Membrane Structure and Function

40) ANS: C  TOP: Concept 10.2  MSC: Knowledge/Comprehension  
BNK: Chapter 10—Photosynthesis

41) ANS: C  TOP: End-of-Chapter Questions  MSC: Knowledge/Comprehension  
BNK: Chapter 12—The Cell Cycle
42) ANS: D TOP: Concept 12.2 MSC: Knowledge/Comprehension
BNK: Chapter 12—The Cell Cycle

43) ANS: B TOP: Concept 7.1 MSC: Knowledge/Comprehension
BNK: Chapter 7—Membrane Structure and Function

44) ANS: D TOP: Concept 8.1 MSC: Synthesis/Evaluation
BNK: Chapter 8—An Introduction to Metabolism

45) ANS: B TOP: Concept 6.5 MSC: Knowledge/Comprehension
BNK: Chapter 6—A Tour of the Cell

46) ANS: A TOP: Concept 9.5 MSC: Knowledge/Comprehension
BNK: Chapter 9—Cellular Respiration and Fermentation

47) ANS: C TOP: Concept 9.3 MSC: Application/Analysis
BNK: Chapter 9—Cellular Respiration and Fermentation

48) ANS: C TOP: Concept 10.1 MSC: Knowledge/Comprehension
BNK: Chapter 10—Photosynthesis

49) ANS: B TOP: Concept 6.3 | Concept 6.4 MSC: Application/Analysis
BNK: Chapter 6—A Tour of the Cell

50) ANS: C TOP: Concept 7.4 MSC: Knowledge/Comprehension
BNK: Chapter 7—Membrane Structure and Function

51) ANS: E TOP: Concept 8.1| Concept 8.5 MSC: Synthesis/Evaluation
BNK: Chapter 8—An Introduction to Metabolism

52) ANS: A TOP: End–of–Chapter Questions MSC: Knowledge/Comprehension
BNK: Chapter 10—Photosynthesis

53) ANS: D TOP: End–of–Chapter Questions MSC: Knowledge/Comprehension
BNK: Chapter 6—A Tour of the Cell

54) ANS: E TOP: End–of–Chapter Questions MSC: Knowledge/Comprehension
BNK: Chapter 12—The Cell Cycle

55) ANS: C TOP: End–of–Chapter Questions MSC: Application/Analysis
BNK: Chapter 6—A Tour of the Cell

56) ANS: A TOP: Concept 6.5 MSC: Application/Analysis
BNK: Chapter 6—A Tour of the Cell

57) ANS: B TOP: Concept 12.3 MSC: Knowledge/Comprehension
BNK: Chapter 12—The Cell Cycle

58) ANS: E TOP: End–of–Chapter Questions MSC: Knowledge/Comprehension
BNK: Chapter 8—An Introduction to Metabolism

59) ANS: E TOP: Concept 9.5 MSC: Knowledge/Comprehension
BNK: Chapter 9—Cellular Respiration and Fermentation

60) ANS: E TOP: Concept 10.2 MSC: Knowledge/Comprehension
BNK: Chapter 10—Photosynthesis

61) ANS: C TOP: Concept 8.4 MSC: Knowledge/Comprehension
BNK: Chapter 8—An Introduction to Metabolism

62) ANS: C TOP: Concept 8.1 MSC: Knowledge/Comprehension
BNK: Chapter 8—An Introduction to Metabolism

63) ANS: C TOP: Concept 8.4 MSC: Application/Analysis
BNK: Chapter 8—An Introduction to Metabolism
64) ANS: C  TOP: End-of-Chapter Questions  MSC: Knowledge/Comprehension  
BNK: Chapter 10—Photosynthesis

65) ANS: B  TOP: Concept 9.4  MSC: Knowledge/Comprehension  
BNK: Chapter 9—Cellular Respiration and Fermentation