

Test Bank for Plants and Society 8th Levetin

Plants and Society, 8e (Levetin)
Chapter 2 The Plant Cell

- 1) The biological term, "*cell*" came about through the study of _____ cells.
- A) tomato
 - B) wood
 - C) bone
 - D) cork
 - E) blood

Answer: D

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- 2) Which of the following is *not* a statement of the *Cell Theory*?
- A) All cells arise from preexisting cells.
 - B) All cells contain the hereditary material, DNA.
 - C) All organisms are made up of cells.
 - D) The cell is the basic unit of life.
 - E) All of the above are correct statements about the *Cell Theory*.

Answer: B

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- 3) Who among the scientists listed below was *not* directly involved in the development of the *Cell Theory*?
- A) Hooke
 - B) Schleiden
 - C) Schwann
 - D) Virchow
 - E) All of these men were involved in the development of the Cell Theory.

Answer: A

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4) The *Cell Theory* is categorized as which of the following?

- A) an educated guess
- B) a hypothesis that is in need of testing
- C) a speculative idea
- D) untested but quite probable
- E) an explanation accepted as a major principle of biology

Answer: E

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5) The primary cell wall of a plant _____.

- A) consists of cellulose and lignin
- B) forms inside of the secondary cell wall
- C) consists primarily of cellulose
- D) gives wood its characteristic flexibility
- E) is described by more than one of these characteristics

Answer: C

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6) Which of the following is found *only* in a plant cell?

- A) Nucleus
- B) Mitochondria
- C) Endoplasmic reticulum
- D) Chloroplasts
- E) Ribosomes

Answer: D

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7) Which of the following statements about lignin is *not* correct?

- A) Lignin is indigestible by all organisms.
- B) In trees, lignin is more abundant in softwood species than hardwood species.
- C) Lignin protects the plant from pathogens.
- D) Lignin is found in secondary cell walls.
- E) Lignin is not found in primary cell walls.

Answer: A

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8) Movement of materials from one plant cell to another is accomplished through which of the following?

- A) the cytosol
- B) the middle lamella
- C) microtubules
- D) plasmodesmata
- E) the cytoskeleton

Answer: D

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9) Which of the following serves as the "cement" that glues plant cells together?

- A) cytosol
- B) lignin
- C) cellulose
- D) the cytoskeleton
- E) pectin

Answer: E

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10) If you could travel from the *inside of one plant cell into an adjacent plant cell*, in what order would you find the following plant cell structures listed below?

- A) cytoplasm, plasma membrane, cell wall, middle lamella
- B) plasma membrane, cytoplasm, middle lamella, cell wall
- C) cytoplasm, plasma membrane, middle lamella, cell wall
- D) cytoplasm, middle lamella, plasma membrane, cell wall
- E) None of the above are correct.

Answer: A

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11) Microtubules and microfilaments comprise the structure of which of the following?

- A) cell wall
- B) plasmodesmata
- C) plasma membrane
- D) middle lamella
- E) cytoskeleton

Answer: E

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12) A plant *plasma membrane* is made up of _____ and _____.

- A) cellulose; lignin
- B) phospholipids; carbohydrates
- C) phospholipids; proteins
- D) cellulose; cholesterol
- E) phospholipids; cholesterol

Answer: C

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13) Which of the following statements is correct?

- A) The plasma membrane is selectively permeable (differentially permeable).
- B) The movement of water across the membrane is called facilitated diffusion.
- C) Osmosis is a form of dialysis.
- D) Diffusion and dialysis are usually the same process.
- E) None of the above are correct.

Answer: A

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14) If the protoplast of plant cell A is hypertonic to the protoplast of adjacent plant cell B. Which way will water flow?

- A) From A to B
- B) From B to A
- C) Equally from B to A and A to B
- D) There will be no flow of water whatsoever
- E) None of the above are correct.

Answer: B

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15) When a plant cell is placed in a *hypotonic solution*, the cell becomes _____.

- A) hypertonic
- B) plasmolyzed
- C) turgid
- D) osmotic
- E) flaccid

Answer: C

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- 16) The free movement of water across a membrane is called _____.
A) active transport
B) simple diffusion
C) plasmolysis
D) osmosis
E) dialysis

Answer: D

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- 17) Of these three items - concentration gradient, energy, membrane proteins - which two are needed for active transport to take place?
A) only a concentration gradient
B) all three are needed for active transport to take place
C) a concentration gradient and energy
D) a concentration gradient and membrane proteins
E) energy and membrane proteins

Answer: E

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- 18) In drought conditions when soils are dry for long periods of time, plants cells become _____.
A) hypertonic
B) plasmolyzed
C) turgid
D) osmotic
E) hydrated

Answer: B

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- 19) _____ is(are) necessary for diffusion to take place.
A) A cell membrane
B) Membrane proteins
C) Energy
D) A concentration gradient
E) More than one of the above are required.

Answer: D

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20) Which of the following pigments is most abundant in chloroplasts?

- A) carotene
- B) xanthophyll
- C) melanin
- D) chlorophyll
- E) tannins

Answer: D

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21) Which of the following statements is correct?

- A) Chloroplasts, leucoplasts, and chromoplasts are collectively called *plastids*.
- B) Amyloplasts are filled with plant oils.
- C) Mitochondria provides a location for photosynthesis to take place.
- D) Stroma holds adjacent plant cells together.
- E) Neither chloroplasts nor mitochondria are viewed as endosymbionts.

Answer: A

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22) Plant pigments are specifically located within which of the following?

- A) thylakoid membranes.
- B) stroma
- C) plasma membranes
- D) nuclei
- E) golgi apparatus

Answer: A

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23) Which of the following is *not* correct?

- A) During cellular respiration, glucose is chemically broken down to carbon dioxide, water, and ATP.
- B) The inner membrane of mitochondria has numerous infoldings called *cristae*.
- C) The matrix of mitochondria contains enzymes used in cellular respiration.
- D) In some cells, the central vacuole takes up 90 percent of the cell volume.
- E) Microbodies include peroxisomes, glyoxysomes, and ribosomes.

Answer: E

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24) Which of the following is *not* found within the nucleus?

- A) chromatin
- B) nucleolus
- C) DNA
- D) ribosomes
- E) RNA

Answer: D

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25) Which of the following terms is most closely associated with *grana*?

- A) leucoplasts
- B) stroma
- C) thylakoids
- D) vacuoles
- E) plastids

Answer: C

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26) Carotenoids are found in which of the following?

- A) leucoplasts
- B) amyloplasts
- C) chloroplasts
- D) chromoplasts
- E) More than one of the above are correct.

Answer: D

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27) Which of the following animals produces carotenoids?

- A) pea aphids
- B) flamingos
- C) chickens
- D) butterflies
- E) None of the above are correct—carotenoids are only produced by plants.

Answer: A

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28) The mitochondrial equivalent to grana is(are) _____.

- A) the matrix
- B) cristae
- C) stroma
- D) plasma membranes
- E) ribosomes

Answer: B

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29) What features in common with bacteria led scientists to conclude that chloroplasts and mitochondria evolved from bacteria?

- A) Their DNA is similar to the DNA of bacteria.
- B) Their ribosomes are similar to those of bacteria.
- C) Cell division in both is like bacterial cell division.
- D) The chemical composition of their inner membranes is similar to those of bacteria.
- E) Chloroplasts and mitochondria share all of these bacteria-like features.

Answer: E

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30) Bacterial endosymbionts of sap-sucking insects provide needed _____ to their hosts.

- A) DNA
- B) sugars
- C) amino acids
- D) fats
- E) oils

Answer: C

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31) Anthocyanin is found in which of the following organelles?

- A) central vacuole
- B) chromoplast
- C) chloroplast
- D) leucoplast
- E) endoplasmic reticulum

Answer: A

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32) Regulating metabolism and controlling cellular reproduction by destruction of proteins is accomplished by which of the following?

- A) peroxisomes
- B) proteasomes
- C) glyoxysomes
- D) chromosomes
- E) tannosomes

Answer: B

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33) The storage, modification, and packaging of proteins is accomplished by the _____.

- A) endoplasmic reticulum
- B) mitochondria
- C) proteasomes
- D) Golgi apparatus
- E) central vacuole

Answer: D

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34) Most specifically, ribosomes are produced in the _____.

- A) chloroplast
- B) nucleus
- C) nucleolus
- D) central vacuole
- E) rough endoplasmic reticulum

Answer: C

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35) Ribosomes are the sites of the synthesis of _____.

- A) proteins
- B) lipids
- C) carbohydrates
- D) nucleic acids
- E) fats and oils

Answer: A

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36) The plastic ends of shoelaces that help prevent the shoelace from unraveling is called an aglet. What is the equivalent structure to an aglet on a chromosome?

- A) centromere
- B) chromatid
- C) chromatin
- D) nucleotide
- E) telomere

Answer: E

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37) Which phase of mitosis appears to be the most opposite of prophase?

- A) anaphase
- B) metaphase
- C) telophase
- D) cytokinesis
- E) None of the above are correct.

Answer: C

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38) Which of the following is correct?

- A) Chromosomes are always duplicated during prophase.
- B) All cells must go through interphase after telophase.
- C) Cytokinesis is the division of duplicated chromosomes.
- D) Mitosis is the same as cell division.
- E) The *Cell Cycle* typically includes interphase, mitosis, and cytokinesis.

Answer: E

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39) In which phase of mitosis do chromatids separate?

- A) metaphase
- B) prophase
- C) anaphase
- D) telophase
- E) interphase

Answer: C

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40) *Phragmoplasts* are most closely associated with which of the following?

- A) prophase
- B) metaphase
- C) anaphase
- D) telophase
- E) cytokinesis

Answer: E

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41) The phragmoplast eventually becomes the _____.

- A) nucleus
- B) cell wall
- C) plasma membrane
- D) middle lamella
- E) None of the above are correct.

Answer: B

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42) If a plant cell is placed in a *hypertonic solution*, so much water enters the protoplast that the cell becomes turgid.

Answer: FALSE

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Gradable: automatic

43) The fluid mosaic model is the currently accepted explanation of membrane structure.

Answer: TRUE

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Gradable: automatic

44) Proteins in the plasma membrane can reside on the outer or inner surface of the plasma membrane or extend completely through the plasma membrane.

Answer: TRUE

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Gradable: automatic

45) Active transport of substances into a cell always requires the expenditure of energy by the cell, typically in the form of ATP.

Answer: TRUE

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Gradable: automatic

46) Spindle fibers—composed of microtubules—stretch from the poles to the kinetochore of each chromatid.

Answer: TRUE

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Gradable: automatic

47) The quantity of water entering a cell in an isotonic solution is equal to the amount of water exiting.

Answer: TRUE

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Gradable: automatic

48) The cells of a wilted plant have lost so much water that they become *plasmolyzed*.

Answer: TRUE

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Gradable: automatic

49) The *Endosymbiont Theory* postulates that some membrane-bound organelles of eukaryotic cells, such as chloroplasts and mitochondria, were once free-living bacteria.

Answer: TRUE

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50) If *vincristine*—a drug that disrupts microtubules—is applied to dividing cells, chromosomes will not form.

Answer: FALSE

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Gradable: automatic

51) According to the Cell Theory, DNA is the genetic material in all cells.

Answer: FALSE

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Gradable: automatic

52) The cell is the basic unit of life.

Answer: TRUE

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Gradable: automatic

53) Cytokinesis—the division of the cytoplasm—separates the two identical daughter nuclei and their associated cytoplasm—into two cells.

Answer: TRUE

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Gradable: automatic

54) Cell division enables plants to grow, repair wounds, and regenerate lost cells. Cell division can even lead to the production of new, genetically identical individuals, or *clones*.

Answer: TRUE

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55) Most plant cells spend the majority of the time in prophase.

Answer: FALSE

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56) *Tannosomes* are newly discovered organelles containing tannins, common to woody plants such as oak trees.

Answer: TRUE

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