

Multiple Choice

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

- _____ 1. To observe a small, living organism, a scientist might use a(an)
a. electronic balance. c. compound light microscope.
b. TEM. d. electron microscope.
- _____ 2. A compound light microscope
a. is necessary to study biology at the chemical level.
b. is required for most experiments.
c. can magnify objects up to about 1000 times.
d. is an essential tool for producing three-dimensional images.
- _____ 3. An instrument that allows light to pass through the specimen and uses two lenses to form an image is a(an)
a. compound light microscope. c. TEM.
b. electron microscope. d. SEM.
- _____ 4. Who was one of the first people to identify and see cork cells?
a. Anton van Leeuwenhoek c. Matthias Schleiden
b. Robert Hooke d. Rudolf Virchow
- _____ 5. The work of Schleiden and Schwann can be summarized by saying that
a. all plants are made of cells.
b. all animals are made of cells.
c. plants and animals have specialized cells.
d. all plants and animals are made of cells.
- _____ 6. Which of the following is NOT a principle of the cell theory?
a. Cells are the basic units of life.
b. All living things are made of cells.
c. Very few cells reproduce.
d. All cells are produced by existing cells.
- _____ 7. The cell theory applies to
a. bacteria. c. multicellular organisms.
b. plants and animals. d. all of the above
- _____ 8. Which type(s) of microscopes can produce three-dimensional images of cells?
a. transmission electron microscopes c. both A and B
b. scanning electron microscopes d. neither A nor B
- _____ 9. Prokaryotes lack
a. cytoplasm. c. a nucleus.
b. a cell membrane. d. genetic material.
- _____ 10. Which of the following contain a nucleus?
a. prokaryotes c. eukaryotes
b. bacteria d. organelles
- _____ 11. Eukaryotes usually contain
a. a nucleus. c. genetic material.
b. specialized organelles. d. all of the above
- _____ 12. Which of the following organisms are prokaryotes?
a. plants c. bacteria
b. animals d. all of the above
- _____ 13. Which of the following is a function of the nucleus?
a. stores DNA
b. controls most of the cell's processes
c. contains the information needed to make proteins
d. all of the above
- _____ 14. Which of the following is NOT found in the nucleus?
a. cytoplasm c. chromatin
b. nucleolus d. DNA

- _____ 15. Which of the following statements explains why the nucleus is important to cells?
- Only eukaryotes have nuclei.
 - Only prokaryotes have nuclei.
 - The nucleus contains coded instructions for making proteins.
 - The nucleus is surrounded by a nuclear envelope.
- _____ 16. Which of the following structures is found in the cytoplasm?
- nucleolus
 - ribosome
 - chromatin
 - cell wall
- _____ 17. Which organelle breaks down food into molecules the cell can use?
- Golgi apparatus
 - lysosome
 - endoplasmic reticulum
 - mitochondrion
- _____ 18. Which structure makes proteins using coded instructions that come from the nucleus?
- Golgi apparatus
 - mitochondrion
 - vacuole
 - ribosome
- _____ 19. Which organelle converts the chemical energy stored in food into compounds that are more convenient for the cell to use?
- chloroplast
 - Golgi apparatus
 - endoplasmic reticulum
 - mitochondrion
- _____ 20. Which organelles help provide cells with energy?
- mitochondria and chloroplasts
 - rough endoplasmic reticulum
 - smooth endoplasmic reticulum
 - Golgi apparatus and ribosomes
- _____ 21. Which organelle would you expect to find in plant cells but not animal cells?
- mitochondrion
 - ribosome
 - chloroplast
 - smooth endoplasmic reticulum
- _____ 22. Which structures carry out cell movement?
- cytoplasm and ribosomes
 - nucleolus and nucleus
 - microtubules and microfilaments
 - chromosomes
- _____ 23. Which of the following is NOT a function of the cytoskeleton?
- helps the cell maintain its shape
 - helps the cell move
 - prevents chromosomes from separating
 - helps organelles within the cell move
- _____ 24. The main function of the cell wall is to
- support and protect the cell.
 - store DNA.
 - direct the activities of the cell.
 - help the cell move.
- _____ 25. Unlike the cell membrane, the cell wall is
- found in all organisms.
 - composed of a lipid bilayer.
 - a flexible barrier.
 - usually made of tough fibers.
- _____ 26. You will NOT find a cell wall in which of these kinds of organisms?
- plants
 - animals
 - fungi
 - all of the above
- _____ 27. Which of the following structures serves as the cell's boundary from its environment?
- mitochondrion
 - cell membrane
 - chloroplast
 - channel proteins
- _____ 28. Which of the following is a function of the cell membrane?
- breaks down lipids, carbohydrates, and proteins from foods
 - stores water, salt, proteins, and carbohydrates
 - keeps the cell wall in place
 - regulates which materials enter and leave the cell
- _____ 29. The cell membrane contains channels and pumps that help move materials from one side to the other. What are these channels and pumps made of?
- carbohydrates
 - lipids
 - bilipids
 - proteins

- ___ 30. Diffusion is the movement of molecules from
- an area of low concentration to an area of high concentration.
 - an area of high concentration to an area of low concentration.
 - an area of equilibrium to an area of high concentration.
 - all of the above
- ___ 31. Diffusion occurs because
- molecules constantly move and collide with each other.
 - the concentration of a solution is never the same throughout a solution.
 - the concentration of a solution is always the same throughout a solution.
 - molecules never move or collide with each other.
- ___ 32. When the concentration of molecules on both sides of a membrane is the same, the molecules will
- move across the membrane to the outside of the cell.
 - stop moving across the membrane.
 - move across the membrane in both directions.
 - move across the membrane to the inside of the cell.
- ___ 33. Which means of particle transport requires input of energy from the cell?
- diffusion
 - osmosis
 - facilitated diffusion
 - active transport
- ___ 34. The diffusion of water across a selectively permeable membrane is called
- osmotic pressure.
 - osmosis.
 - facilitated diffusion.
 - active transport.
- ___ 35. An animal cell that is surrounded by fresh water will burst because the osmotic pressure causes
- water to move into the cell.
 - water to move out of the cell.
 - solutes to move into the cell.
 - solutes to move out of the cell.

True/False

- ___ 36. Ribosomes stud the surface of rough endoplasmic reticulum.
- ___ 37. Many membrane proteins are made by the smooth endoplasmic reticulum.
- ___ 38. The main function of the cell wall is to provide support and protection.
- ___ 39. Water, carbon dioxide, oxygen, and some other substances can pass through the cell wall.
- ___ 40. The nuclear envelope regulates which substances enter and leave a cell.
- ___ 41. Once equilibrium is reached, roughly equal numbers of molecules move in either direction across a semipermeable membrane, and there is no further change in concentration on either side of the membrane.
- ___ 42. A red blood cell placed in pure water will shrink.