

Study Guide for Chapter 2**Multiple Choice**

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

- _____ 1. What is the total magnification of a microscope with two lenses when one lens has a magnification of 15, and the other lens has a magnification of 30?
- 15
 - 30
 - 45
 - 450
- _____ 2. How does magnification occur in an electron microscope?
- An electron beam creates an image.
 - An electron beam makes the object become larger.
 - Light is changed into electrons by a convex lens.
 - Light is reflected by an electron beam.
- _____ 3. Which of the following statements is part of the cell theory?
- Only plants are composed of cells.
 - All cells are produced from other cells.
 - Cells can be produced from nonliving matter.
 - Cells are one of several basic units of structure and function in living things.
- _____ 4. Which of the following statements is NOT part of the cell theory?
- Cells are the basic unit of structure and function in living things.
 - All cells are produced from other cells.
 - Only animals are composed of cells.
 - All living things are composed of cells.
- _____ 5. How does the lens of a light microscope work?
- Each concave lens bends light to make the object appear larger.
 - Each convex lens bends light to make the object appear larger.
 - Each convex lens bends light to make the object become larger.
 - The reflection of each concave lens makes the object appear larger.
- _____ 6. What does the term *resolution* refer to?
- how sharp an image is
 - how big an image can be
 - how many lenses a microscope uses
 - how much light is needed to see an image
- _____ 7. What is the function of a cell membrane?
- to support the cell
 - to perform different functions in each cell
 - to control what enters and leaves the cell
 - to form a hard outer covering for the cell
- _____ 8. Which organelle is the control center of a cell?
- mitochondrion
 - ribosome
 - nucleus
 - chloroplast

- ___ 9. Cells in many-celled organisms
- all look the same.
 - all have the same structure.
 - are often quite different from each other.
 - are the same size in every part of the organism.
- ___ 10. Specialized cells are found only in
- animals.
 - single-celled organisms.
 - bacteria.
 - many-celled organisms.
- ___ 11. What is the function of a cell wall?
- to protect and support the cell
 - to perform different functions in each cell
 - to prevent water from passing through it
 - to prevent oxygen from entering the cell
- ___ 12. Which organelles store food and other materials needed by the cell?
- mitochondria
 - chloroplasts
 - ribosomes
 - vacuoles
- ___ 13. Which organelles release chemicals that break down large food particles into smaller ones?
- endoplasmic reticulum
 - Golgi bodies
 - lysosomes
 - vacuoles
- ___ 14. The invention of the microscope made it possible for people to discover
- plants.
 - skin.
 - animals.
 - cells.
- ___ 15. Which of the following is NOT a characteristic that all living things share?
- a cellular organization
 - using energy
 - movement
 - reproduction
- ___ 16. A change in an organism's surroundings that causes it to react is called
- a response.
 - a stimulus.
 - energy.
 - development.
- ___ 17. Which of the following do all living things need to survive?
- water
 - oxygen
 - sunlight
 - carbon dioxide

18. Homeostasis refers to an organism's ability to
- maintain stable internal conditions.
 - compete for living space.
 - dissolve chemicals.
 - obtain energy.
19. What is taxonomy?
- the scientific study of how living things are classified
 - the name of Aristotle's classification system
 - the process used by geologists to classify rocks
 - the process of observing an organism's behavior
20. Why do scientists organize living things into groups?
- so they can find them in the wild more easily
 - so that the organisms are easier to study
 - so they can make sense of the variety of rocks on Earth
 - so products from living things can be easily found in groceries
21. An organism's scientific name consists of
- its class name and its family name.
 - its kingdom name and its phylum name.
 - its genus name and its species name.
 - its phylum name and its species name.
22. The more classification levels that two organisms share,
- the closer together on Earth they live.
 - the easier it is to tell them apart.
 - the more characteristics they have in common.
 - the more distantly related they are.
23. One characteristic used to place organisms into kingdoms is
- how they move.
 - where they live.
 - their ability to make food.
 - their ability to reproduce.
24. Which group of organisms includes only multicellular heterotrophs?
- protists
 - bacteria
 - plants
 - animals
25. The experiments of Redi and Pasteur helped to demonstrate that
- species gradually change over time.
 - living things do not arise from nonliving material.
 - organisms can be placed in groups based on their similarities.
 - the chemicals of life could have arisen on early Earth.
26. A plant grows toward the light. The plant's action is an example of
- reproduction.
 - a response.
 - a stimulus.
 - development.

- ___ 27. Spontaneous generation is a mistaken idea because living things
- exhibit binomial nomenclature.
 - are produced only by living things.
 - do not reproduce.
 - maintain homeostasis.
- ___ 28. The source of energy for most autotrophs is
- water.
 - the sun.
 - heterotrophs.
 - other autotrophs.
- ___ 29. Which domain(s) include(s) only prokaryotes?
- Bacteria and Archaea
 - Bacteria only
 - Archaea only
 - Eukarya only
- ___ 30. Which kingdoms include both unicellular and multicellular organisms?
- fungi and plants
 - fungi and protists
 - protists and animals
 - protists and plants

Modified True/False

Indicate whether the sentence or statement is true or false. If false, change the identified word or phrase to make the sentence or statement true.

- ___ 31. A microscope is an instrument that makes distant objects look larger. _____
- ___ 32. Organelles that use energy from sunlight to produce food are called mitochondria.

- ___ 33. The cell theory states that cells are produced from nonliving cells. _____
- ___ 34. You can't see the cells in your body because most of them are very small. _____
- ___ 35. Electron microscopes use a beam of light to produce a magnified image. _____
- ___ 36. Growth is the process of change that occurs during an organism's life to produce a more complex organism.

- ___ 37. In the name *Acer rubrum*, the word *rubrum* designates the species. _____
- ___ 38. Each genus of organisms is divided into classes. _____
- ___ 39. Mushrooms, molds, and mildew are members of the fungi kingdom. _____
- ___ 40. Archaea and Bacteria are two domains of eukaryotes. _____

Completion

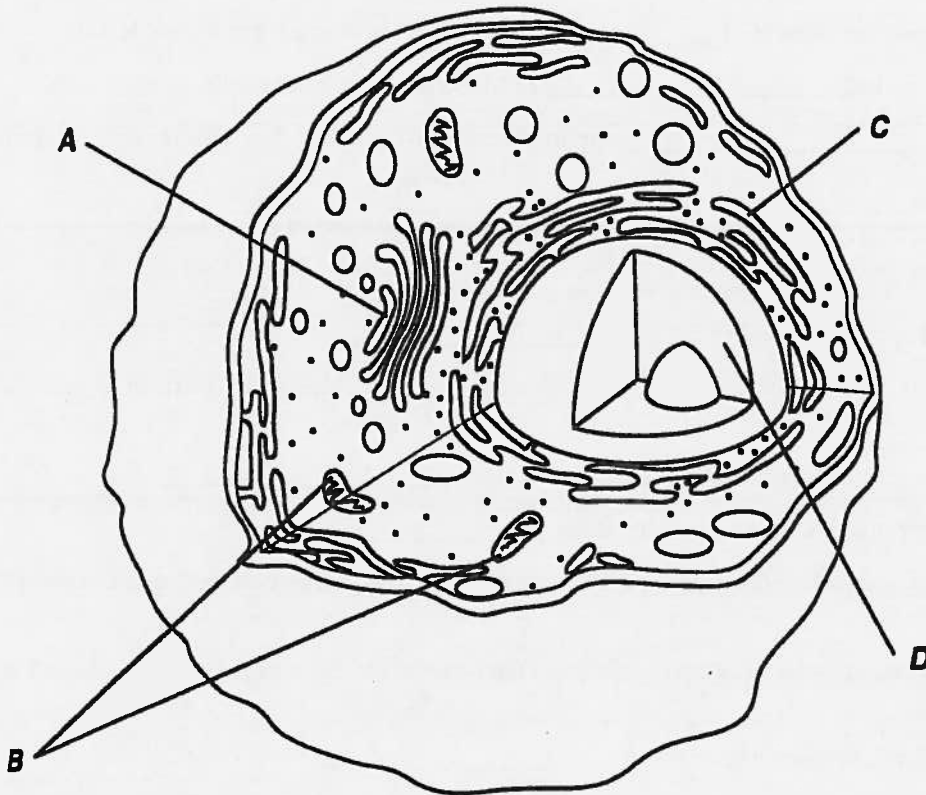
Complete each sentence or statement.

41. A light microscope that has two or more lenses is called a(n) _____ microscope.

42. A microscope allowed Hooke to see "tiny rectangular rooms," which he called _____.
43. Cells are the basic units of structure and _____ in living things.
44. According to the cell theory, all organisms are made of _____.
45. The sharpness of an image produced by a microscope is called _____.
46. A lens that is thicker in the center than at the edges is called a(n) _____ lens.
47. The nucleus of a cell has thin strands of _____ that contain genetic material.
48. Small grainlike bodies called _____ produce proteins inside cells.
49. Organelles known as _____ contain chemicals that break down food particles and old cell parts.
50. A(n) _____ organism is a living thing that is composed of many cells.
51. An organism reacts to a stimulus with a(n) _____.
52. Organisms that make their own food are called _____.
53. An organism's ability to maintain stable internal conditions despite changes in its surroundings is called _____.
54. The process of grouping things based on similarities is called _____.
55. The first word in an organism's scientific name is its _____.
56. _____ developed a naming system that grouped organisms on the basis of their observable features.
57. In the modern classification system used by biologists, the broadest level of organization is called a(n) _____.
58. Each genus of organisms contains one or more _____.
59. An owl and a bat share the same kingdom and phylum; an owl and a robin share the same kingdom, phylum, and class. The owl and _____ have more characteristics in common.
60. The _____ kingdom is the only kingdom of eukaryotes that contains both autotrophs and heterotrophs and both unicellular and multicellular organisms.

Short Answer

Use the diagram to answer each question.

Cell Structures

61. Name two structures that are not found in the cell shown here but that are found in plant cells.
62. Structure A is a Golgi body. Describe its function.
63. Identify the structures labeled B and describe their function.
64. Identify structure C and describe its function.
65. Identify the large round structure labeled D and describe its function.
66. Is the cell shown a plant cell? Explain your reasoning.

Use the diagram to answer each question.

Table of Classification Labels

Classification Level	Aardwolf	Gray Wolf	Coyote	Lion	Blue Whale
Kingdom	Animalia	Animalia	Animalia	Animalia	Animalia
Phylum	Chordata	Chordata	Chordata	Chordata	Chordata
Class	Mammalia	Mammalia	Mammalia	Mammalia	Mammalia
Order	Carnivora	Carnivora	Carnivora	Carnivora	Cetacea
Family	Hyaenidae	Canidae	Canidae	Felidae	Balenopteridae
Genus	<i>Proteles</i>	<i>Canis</i>	<i>Canis</i>	<i>Panthera</i>	<i>Balaenoptera</i>
Species	<i>Proteles cristatus</i>	<i>Canis lupus</i>	<i>Canis latrans</i>	<i>Panthera leo</i>	<i>Balaenoptera musculus</i>

67. What classification groups do all of the organisms in the table have in common?
68. In what two ways are the organisms in the table similar to organisms in the plant kingdom?
69. Which of the organisms in the table is least similar to the others? Explain.
70. Which of the organisms in the table is (are) most similar to a tiger (*Panthera tigris*)? Explain.
71. Based on their kingdoms, what are the shared characteristics of the organisms in the table?
72. Which two species in this table are most similar to each other?

Essay

73. Describe the functions of the nuclear envelope, chromatin, and nucleolus.
74. Use the three points of the cell theory to explain how humans and bacteria are similar.
75. Contrast mitochondria and chloroplasts.
76. How is a cell membrane like a window screen?
77. How do organisms differ in the ways they obtain their energy source, or food?
78. Use an example to explain why the common names of organisms are sometimes confusing. How can using scientific names help avoid the confusion?
79. A person tells you that two organisms belong to the same family but to different classes. Can that information be correct? Explain.
80. Why is the protist kingdom sometimes called the "odds and ends" kingdom?

