

Roland-Story Biology Chapter 20 Test Review

True/False

Indicate whether the sentence or statement is true or false.

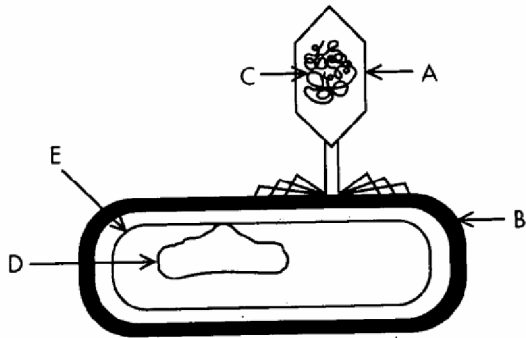
- _____ 1. Although viruses do not consist of cells, biologists consider them to be living because they are capable of reproduction.
- _____ 2. A virus can only reproduce by controlling a cell.
- _____ 3. Smallpox is caused by bacteria.
- _____ 4. Some viruses have a membranous envelope surrounding their protein coat, and the envelope helps the viruses gain entry into host cells.
- _____ 5. Viruses consist of RNA or DNA surrounded by a coat of protein.
- _____ 6. The lytic cycle is a cycle of viral infection, replication, and cell destruction.
- _____ 7. During the lysogenic cycle, the viral genome replicates and the host cell is destroyed.
- _____ 8. HIV initially infects cells of the nervous system.
- _____ 9. An HIV-infected individual can feel healthy and still spread the virus to others.
- _____ 10. Bacteria lack nuclei and therefore also lack genetic material.
- _____ 11. Bacterial cells have membrane-bound organelles and chromosomes.
- _____ 12. Bacterial cells are usually much larger than eukaryotic cells.
- _____ 13. Although there are some bacteria that are heterotrophic, the vast majority are autotrophic.
- _____ 14. Photosynthetic bacteria are present in leguminous plants and convert atmospheric nitrogen into a form that is usable by the plants.
- _____ 15. *Escherichia coli* is a eukaryotic cell with a rigid cell wall made of peptidoglycan.
- _____ 16. Tuberculosis is a disease of the respiratory tract caused by a virus.
- _____ 17. Certain antibiotics have become ineffective against certain strains of bacteria. These bacteria have developed a resistance, which may be passed on from one generation of bacteria to the next.
- _____ 18. Genetically engineered bacteria are used to produce drugs and other chemicals that benefit humans.

Multiple Choice

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

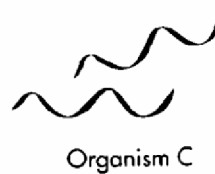
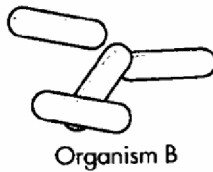
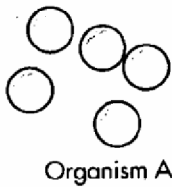
- _____ 19. We know viruses are not alive because
 - a. they are not cellular.
 - b. they cannot make proteins.
 - c. they cannot use energy.
 - d. All of the above
- _____ 20. The study of viruses is a part of biology because
 - a. they belong to the kingdom Monera.
 - b. they are about to become extinct.
 - c. they are living organisms.
 - d. they are active inside living cells.
- _____ 21. The tobacco mosaic virus
 - a. is able to be crystallized.
 - b. causes disease in tobacco plants.
 - c. is smaller than a bacterium.
 - d. All of the above

- ____ 22. Viruses
- are cellular organisms.
 - reproduce only in living cells.
 - have nuclei and organelles.
 - are surrounded by a polysaccharide coat.
- ____ 23. A viral disease that causes painful swelling of a salivary gland is
- mumps.
 - AIDS.
 - polio.
 - measles.
- ____ 24. Viruses are
- photosynthetic.
 - chemosynthetic.
 - parasitic.
 - All of the above
- ____ 25. A typical virus consists of
- a protein coat and a cytoplasm core.
 - a carbohydrate coat and a nucleic acid core.
 - a protein coat and a nucleic acid core.
 - a polysaccharide coat and a nucleic acid core.
- ____ 26. Biologists now know that viruses
- are the smallest organisms.
 - consist of a protein surrounded by a nucleic acid coat.
 - contain RNA or DNA in a protein coat.
 - all form the same crystalline shape.



- ____ 27. Refer to the illustration above. Which structure represents RNA?
- structure B
 - structure C
 - structure D
 - structure E
- ____ 28. A membranous envelope surrounding some viruses may be composed of
- lipids.
 - proteins.
 - glycoproteins.
 - All of the above
- ____ 29. The capsid of a virus is the
- protective outer coat.
 - cell membrane.
 - nucleus.
 - cell wall and membrane complex.
- ____ 30. All viruses have
- cytoplasm.
 - ribosomes.
 - mitochondria.
 - None of the above

- _____ 31. An animal virus enters its host cell by
- being injected into the cell.
 - penetrating a rip in the cell wall.
 - punching a hole in the cell membrane.
 - endocytosis across the cell membrane.
- _____ 32. The cycle of viral infection, replication, and cell destruction is called the
- lysogenic cycle.
 - metabolic cycle.
 - lytic cycle.
 - None of the above
- _____ 33. A pathogen is an agent that is
- beneficial to humans.
 - harmful only to plants.
 - harmful to living organisms.
 - nearly extinct.
- _____ 34. viruses : host cells::
- photosynthetic bacteria : chemosynthetic bacteria
 - bacteria : viruses
 - antibiotics : bacteria
 - cyanobacteria : chlorophyll
- _____ 35. HIV can be transmitted
- through sexual contact.
 - through the sharing of nonsterile needles.
 - to infants during pregnancy or through breast milk.
 - All of the above
- _____ 36. It is important to distinguish between Gram-positive and Gram-negative bacteria in diagnosing a bacterial infection because
- Gram-negative and Gram-positive bacteria differ in their response to different antibiotics.
 - Gram-positive bacteria never cause fatal diseases.
 - Gram-positive bacteria destroy antibiotics, preventing them from working.
 - Gram-positive bacteria do not respond to many antibiotics.
- _____ 37. The chromosomes of bacteria
- contain numerous types of organelles.
 - are divided into compartments.
 - vary in number, depending on the species of bacteria.
 - contain a single circular piece of DNA.
- _____ 38. One difference between the cells in a human body and bacterial cells is that bacterial cells have
- an outer cell wall made up of lipids.
 - an outer cell wall made up of polysaccharides and proteins.
 - no DNA.
 - no ribosomes.
- _____ 39. Structures found in eukaryotic cells but *not* in a bacterial cells are
- nuclei.
 - linear chromosomes.
 - membrane-bound organelles.
 - All of the above



- ___ 40. Refer to the illustration above. Which of the diagrams has a shape like the *Bacillus* bacterial genus?
- Organism A
 - Organism B
 - Organism C
 - None of the above
- ___ 41. Refer to the illustration above. The shape represented by Organism A applies to the bacterial genus
- Streptococcus*, which causes strep throat.
 - Leptospira*, which can cause urinary tract infections in humans.
 - Bacillus*, which produces antibiotics.
 - Penicillium*, which produces penicillin.
- ___ 42. Refer to the illustration above. The shape represented by Organism C is called
- coccus.
 - spirillum.
 - bacillus.
 - filamentous.
- ___ 43. Which of the following might be found in the cytoplasm of a bacterial cell?
- chloroplasts
 - Golgi bodies
 - mitochondria
 - None of the above
- ___ 44. Bacterial cells have
- a cell wall only.
 - a cell membrane only.
 - both a cell membrane and an outer cell wall.
 - a cell wall inside their cell membrane.
- ___ 45. Bacterial endospores
- occur where there is plenty of available food.
 - allow certain species to survive harsh environmental conditions.
 - are similar to human tumors.
 - can cause growth abnormalities in plants.
- ___ 46. Bacteria can be classified according to their
- type of cell walls.
 - methods of obtaining energy.
 - Gram-staining characteristics.
 - All of the above
- ___ 47. photosynthetic bacteria : sunlight::
- chemotrophic bacteria : dead organisms
 - chemoautotrophic bacteria : inorganic molecules
 - photosynthesis : nitrification
 - heterotrophic bacteria : photosynthesis
- ___ 48. Nitrogen-fixing bacteria
- repair nitrogen-damaged legume roots.
 - damage the environment by using atmospheric oxygen to produce toxic nitrogen compounds.
 - convert atmospheric nitrogen into ammonia.
 - convert ammonia in the soil into nitrogen gas.
- ___ 49. Cell organelles that *Escherichia coli* and other bacteria have in common with eukaryotes are
- chloroplasts.
 - mitochondria.
 - nuclei.
 - ribosomes.

- ____ 50. Bacterial cells such as *Escherichia coli* transfer pieces of genetic material in a process called
- binary fission.
 - mitosis.
 - conjugation.
 - sexual reproduction.
- ____ 51. *Escherichia coli* is an example of a bacterium that has short, thin, hairlike projections called
- pili.
 - cilia.
 - cocci.
 - ribosomes.
- ____ 52. Bacteria that cause botulism may survive in canned food for a long time because
- the can was left open.
 - some cans may contain viruses that protect the bacteria.
 - the bacteria may form endospores.
 - sterilized cans do not have enough oxygen to harm the bacteria.
- ____ 53. Alexander Fleming, a British bacteriologist, is credited with the discovery of
- photosynthetic bacteria.
 - antibodies.
 - tuberculosis.
 - penicillin.
- ____ 54. Antibiotics
- include penicillin, tetracycline, and streptomycin.
 - may prevent bacteria from making new cell walls.
 - are effective treatments for bacterial diseases.
 - All of the above
- ____ 55. Antibiotics are ineffective against viral infections because
- viruses are protected inside their host cells.
 - viruses have enzymes that inactivate the antibiotics.
 - antibiotics interfere with metabolic processes that viruses do not perform.
 - viral protein coats block the antibiotics from entering the virus.
- ____ 56. Cholera is usually transmitted by
- insects.
 - sexual contact.
 - contaminated water.
 - airborne water droplets.
- ____ 57. A bacterial disease carried from rodents to humans by fleas is
- tuberculosis.
 - bubonic plague.
 - cholera.
 - Lyme disease.
- ____ 58. Lyme disease : ticks::
- tuberculosis : food and feces
 - cholera : human tubercles
 - typhus : lice
 - bubonic plague : fleas
- ____ 59. Mining companies harvest copper or uranium by using
- photosynthetic bacteria.
 - heterotrophic bacteria.
 - cyanobacteria.
 - chemoautotrophic bacteria.

Completion

Complete each sentence or statement.

60. Segments of nucleic acids contained in a protein coat are _____.
61. A disease of tobacco plants in which growth is stunted and leaves are blotchy is caused by the _____ virus.
62. Bacterial viruses with a polyhedral head attached to a helical tail are _____.
63. The protein coat of a virus is called a(n) _____.
64. All viruses reproduce by taking over the reproductive machinery of a(n) _____.

65. Microscopic, nucleic acid-containing particles that invade cells of organisms in order to reproduce, and often destroy the cells in the process, are called _____.
66. An enzyme called _____ manufactures DNA that is complementary to a virus's RNA.
67. The virus that causes AIDS is called _____.
68. The cell walls of eubacteria are composed of _____, a network of polysaccharide molecules that are linked together with chains of amino acids.
69. Structurally, bacteria have one of two types of _____ that can be distinguished by the Gram stain.
70. The procedure used to distinguish between two types of bacterial cell wall structures is called _____.
71. Protective coverings that some bacteria may form under harsh conditions are _____.
72. Spiral bacteria are called _____.
73. Round bacteria are called _____.
74. Rod-shaped bacteria are called _____.
75. Bacteria that obtain their energy by removing electrons from inorganic molecules, rather than obtaining energy from the sun, are called _____ bacteria.
76. Plants that possess nitrogen-fixing bacteria in swellings on their roots are called _____.
77. A species of bacteria that lives in the intestines of many mammals is _____.
78. The process in which ammonia is oxidized into nitrate, a form of nitrogen commonly used by plants, is called _____.
79. A disease of the respiratory tract caused by the bacterium *Mycobacterium tuberculosis* is _____.
80. A(n) _____ is a substance that can be obtained from bacteria or fungi and can be used as a drug to fight pathogenic bacteria.
81. Mining companies use _____ bacteria to harvest copper or uranium.

Essay

82. A new disease has suddenly appeared, and scientists are trying to determine whether the disease agent is a virus or a bacterium. They collect the following information:
1. The disease can be transmitted through the air.
 2. The disease agent is too small to be seen under a compound microscope.
 3. There are no known antibiotics that are effective against the disease.
 4. The genetic material of the disease agent is DNA.
 5. The disease agent cannot be cultured using any known culture medium.
- Is the disease agent most likely a bacterium or a virus? Explain your answer.
83. Viruses are not considered to be living organisms, but they are still studied as part of biology. Explain.
84. Explain why viruses are not considered to be living.
85. Antibiotics are generally effective against bacterial infections but cannot be used to treat viral infections. Why is this the case?