

OpenStax Microbiology Test Bank

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Chapter 1: An Invisible World

* = Correct answer

Multiple Choice

1. Which of the following is true of the microbial world?
 - A. All microbes are harmful.
 - B. Humans could survive without microbes.
 - C. Many microbes are helpful.*
 - D. Most microbes are pathogenic.

Difficulty: Easy

ASM Standard: 23, 24

2. Which of the following is when humans first suspected the existence of microbes?
 - A. during the Industrial Revolution
 - B. in prehistoric times*
 - C. in the last century
 - D. within the last 500 years

Difficulty: Easy

ASM Standard: 23

3. Which individual first observed unicellular organisms, which he called "animalcules," using a microscope he developed?
 - A. Robert Koch
 - B. Louis Pasteur
 - C. Thucydides
 - D. Antonie van Leeuwenhoek*

Difficulty: Easy

ASM Standard: 6

4. To reduce the risk of open flame from Bunsen burners, microbiologists are increasingly using which of the following devices for easy, rapid benchtop sterilization of small pieces of equipment?
 - A. autoclaves
 - B. ethylene oxide
 - C. incubators
 - D. microincinerators*

Difficulty: Easy

ASM Standard: 36

5. The Swedish botanist known for having developed an important biological classification system is which of the following people?
- A. Ernst Haeckel
 - B. Carolus Linnaeus*
 - C. Louis Pasteur
 - D. Robert Whittaker

Difficulty: Easy

ASM Standard: N/A

6. Which kingdom was the only one found in Empire Prokaryota?
- A. Animalia
 - B. Fungi
 - C. Monera*
 - D. Protista

Difficulty: Easy

ASM Standard: N/A

7. Which are the three currently accepted domains?
- A. Archaea, Bacteria, and Eukarya*
 - B. Archaea, Prokaryota, and Eukaryota
 - C. Bacteria, Fungi, and Protista
 - D. Bacteria, Prokaryota, and Eukarya

Difficulty: Easy

ASM Standard: N/A

8. Which two taxonomic units are typically used to identify an organism when using binomial nomenclature?
- A. domain and kingdom
 - B. genus and family
 - C. genus and species*
 - D. phylum and class

Difficulty: Easy

ASM Standard: N/A

9. Which of the following is not true about the process of fermentation?
- A. It can help preserve foods, preventing spoilage.
 - B. It converts sugars to organic acids, alcohols, and/or gases such as carbon dioxide.
 - C. It is carried out exclusively by unicellular eukaryotes such as yeast.*
 - D. It is used to make foods such as cheese and bread.

Difficulty: Moderate

ASM Standard: 11, 23, 26

10. The Romans may have reduced their risk of waterborne infectious diseases by using which of the following?
- A. a variety of pharmaceutical products
 - B. aqueducts and a sewer system*
 - C. prophylactic antibiotics
 - D. quarantine of people with leprosy

Difficulty: Moderate
ASM Standard: 23

11. For which of the following is Thucydides known?
- A. developing an effective sewer system in ancient Greece, helping to reduce levels of disease in cities
 - B. observing microbes, using a microscope, for the first time, even distinguishing between bacteria and fungi
 - C. proposing that disease was caused by microorganisms
 - D. realizing that people who had been infected by the Athenian plague had immunity to reinfection*

Difficulty: Moderate
ASM Standard: 23, 31

12. Ernst Haeckel proposed a classification system consisting of which of the following subgroups?
- A. five kingdoms
 - B. four kingdoms*
 - C. two domains and three kingdoms
 - D. two domains and five kingdoms

Difficulty: Moderate
ASM Standard: N/A

13. Viruses not included in phylogenetic trees for which of the following reasons?
- A. It is too difficult to observe their characteristics.
 - B. They are acellular and nonliving.*
 - C. They do not have any genes, which prevents genetic analysis.
 - D. They lack a nucleus.

Difficulty: Moderate
ASM Standard: 5

14. Which is the best description of the primary purpose of a phylogeny?
- A. Phylogenies show all the alternative names for each species.
 - B. Phylogenies show all the common names for each species.
 - C. Phylogenies show evolutionary relatedness between organisms.*

D. Phylogenies show interactions between species in a shared habitat.

Difficulty: Moderate

ASM Standard: 5

15. Current phylogenetic analyses include which of the following?
- A. information from a range of sources, including morphological, genetic, and biochemical data*
 - B. information on visible similarities only
 - C. information regarding how to classify organisms on the basis of external morphological characteristics and visible behaviors
 - D. varied morphological and structural characteristics, with preference for leaving historical classifications to prevent confusion

Difficulty: Moderate

ASM Standard: 5

16. Diatoms are classified within which of the following domains?
- A. Archaea
 - B. Bacteria
 - C. Eukarya*
 - D. Prokaryota

Difficulty: Moderate

ASM Standard: N/A

17. Horizontal gene transfer involves which of the following?
- A. any transfer of genes in a laboratory setting
 - B. the transfer of genes from a virus to a bacterium or vice versa but not any other form of gene transfer
 - C. the transfer of genes from one individual to another, including from one species to another, but not from parent to offspring*
 - D. the transfer of genes from parent to offspring

Difficulty: Moderate

ASM Standard: 2, 4

18. Bacteria are generally identified to species by using which of the following?
- A. a combination of genetic, biochemical, and microscopic approaches*
 - B. a combination of microscopic and physiological approaches, but not genetics
 - C. primarily characteristics such as motility that can be visualized using microscopy
 - D. primarily morphological characteristics of individual cells

Difficulty: Moderate

ASM Standard: 34, 36

19. For taxonomic classification of microbes, serological tests typically are used to do which of the following?
- A. determine complete genome sequences for microbes
 - B. identify proteins on the basis of their reaction with specific antibodies*
 - C. run analyses to identify whether particular genes are present
 - D. visualize microbial external morphology

Difficulty: Moderate

ASM Standard: 34, 36

20. Which of the following is true of bacterial strains?
- A. They are closely related subtypes within a bacterial species that may or may not have similar properties.*
 - B. They are informal bacterial groupings used for medical distinctions but not recognized for classification purposes.
 - C. They are more distantly related to each other than are members of a single bacterial species.
 - D. They are very similar bacteria with almost identical properties.

Difficulty: Moderate

ASM Standard: 5

21. *Bergey's Manual of Systematic Bacteriology* is used primarily as which of the following?
- A. a guide to bacterial shapes
 - B. a historical account of changes in classification techniques
 - C. a list and characterization of all known medically relevant microbes
 - D. a reference for bacterial classification*

Difficulty: Moderate

ASM Standard: 34

22. Which of the following indicates how bacteria and viruses typically compare in size?
- A. Bacteria are indistinguishable from viruses.
 - B. Bacteria are much larger than viruses.*
 - C. Bacteria are much smaller than viruses.
 - D. Bacteria are similar in size to viruses.

Difficulty: Easy

ASM Standard: N/A

23. Viruses are classified as which of the following?
- A. Archaea
 - B. Bacteria
 - C. Eukarya
 - D. distinct from the three-domain system*

Difficulty: Moderate
ASM Standard: 4

24. Which of the following is not a curved bacterial shape?
- A. bacillus*
 - B. spirillum
 - C. spirochete
 - D. vibrio

Difficulty: Easy
ASM Standard: 34

25. Based just on the name, which of the following groups of bacteria contains entirely species that consume organic compounds for food?
- A. cyanobacteria
 - B. green nonsulfur bacteria
 - C. green sulfur bacteria
 - D. nonphotosynthetic bacteria*

Difficulty: Moderate
ASM Standard: 11, 13, 20

26. Chitin cell walls are characteristic of which taxonomic group?
- A. algae
 - B. archaea
 - C. bacteria
 - D. fungi*

Difficulty: Moderate
ASM Standard: 20

27. Yeasts are which of the following?
- A. a type of algae
 - B. a type of protist
 - C. any unicellular microbe
 - D. unicellular fungi*

Difficulty: Moderate
ASM Standard: 20

28. The cell walls of archaeans often contain which of the following substances?
- A. cellulose
 - B. chitin
 - C. peptidoglycan
 - D. pseudopeptidoglycan*