

**MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.**

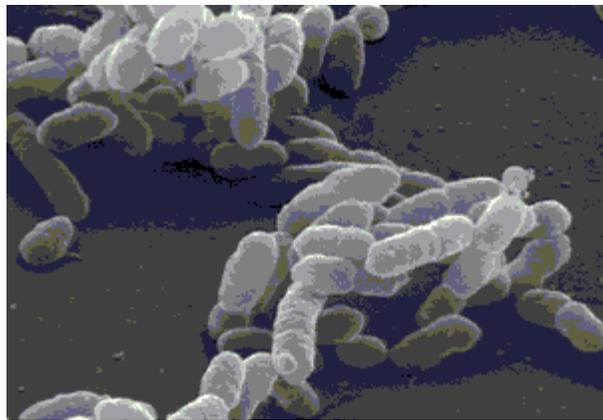
- 1) Microorganisms are involved in each of the following processes EXCEPT 1) \_\_\_\_\_
  - A) food production.
  - B) smog production.
  - C) O<sub>2</sub> production.
  - D) decomposition of organic material.
  - E) infection.
  
- 2) Each of the following organisms would be considered a microbe EXCEPT 2) \_\_\_\_\_
  - A) bacterium.
  - B) yeast.
  - C) protozoan.
  - D) virus.
  - E) mushroom.
  
- 3) The term used to describe a disease-causing microorganism is 3) \_\_\_\_\_
  - A) infection.
  - B) bacterium.
  - C) pathogen.
  - D) microbe.
  - E) virus.
  
- 4) Common commercial benefits of microorganisms include synthesis of 4) \_\_\_\_\_
  - A) insulin.
  - B) antibiotics.
  - C) aspirin.
  - D) antibiotics and aspirin.
  - E) antibiotics and insulin.
  
- 5) Commercial utilization of microbial products has become increasingly popular due to their environmentally friendly nature. Removal of these products from the environment typically utilizes 5) \_\_\_\_\_
  - A) enzymes.
  - B) organic solvents.
  - C) organic acids.
  - D) soap.
  - E) alcohol.
  
- 6) The formal system for classifying and naming organisms was developed by 6) \_\_\_\_\_
  - A) Aristotle.
  - B) Robert Koch.
  - C) Ignaz Semmelweis.
  - D) Carolus Linnaeus.
  - E) Louis Pasteur.

7) In the name *Staphylococcus aureus*, *aureus* is the \_\_\_\_\_  
A) kingdom.  
B) genus.  
C) family name.  
D) domain name.  
E) specific name.

8) A prokaryotic cell may possess each of the following cellular components EXCEPT \_\_\_\_\_  
A) ribosomes.  
B) a cell membrane.  
C) a nucleus.  
D) a cell wall.  
E) flagella.

9) Which of the following is NOT associated with viruses? \_\_\_\_\_  
A) envelope  
B) capsid  
C) nucleic acid  
D) spikes  
E) organelles

Figure 1.1



10) The bacterial shape of the cells in Figure 1.1 would best be described as \_\_\_\_\_  
A) coccus.                      B) columnar.                      C) spiral.                      D) bacillus.                      E) ovoid.

11) Protozoan motility structures include \_\_\_\_\_  
A) pseudopods.  
B) cilia.  
C) flagella.  
D) cilia and pseudopods only.  
E) cilia, flagella, and pseudopods.

12) Viruses are not considered living organisms because they \_\_\_\_\_  
A) can only be visualized using an electron microscope.  
B) are ubiquitous in nature.  
C) typically associated with disease.  
D) are structurally very simple.  
E) cannot reproduce by themselves.

- 13) The infectious agent that causes AIDS is a 13) \_\_\_\_\_  
A) protozoan.  
B) mold.  
C) bacterium.  
D) virus.  
E) yeast.
- 14) Which of the following is NOT a domain in the three-domain system? 14) \_\_\_\_\_  
A) archaea                      B) eukarya                      C) animalia                      D) bacteria
- 15) Classification of organisms into three domains is based on 15) \_\_\_\_\_  
A) cellular proteins.  
B) the presence of a cell wall.  
C) nutritional requirements.  
D) cellular organization.  
E) the number of cells in the organism.
- 16) Archaea differ from bacteria in that archaea 16) \_\_\_\_\_  
A) use organic compounds for food.  
B) reproduce by binary fission.  
C) have diverse cell wall compositions.  
D) lack nuclei.  
E) are prokaryotic.
- 17) Who is credited with first observing cells? 17) \_\_\_\_\_  
A) Carolus Linnaeus  
B) Robert Hooke  
C) Anton van Leeuwenhoek  
D) Robert Koch  
E) Louis Pasteur
- 18) Who is credited with first observing microorganisms? 18) \_\_\_\_\_  
A) Robert Koch  
B) Robert Hooke  
C) Louis Pasteur  
D) Carolus Linnaeus  
E) Anton van Leeuwenhoek
- 19) Biogenesis refers to the 19) \_\_\_\_\_  
A) development of life forms from preexisting life forms.  
B) spontaneous generation of organisms from nonliving matter.  
C) germ theory of disease.  
D) development of aseptic technique.
- 20) If you were setting up an experiment to disprove spontaneous generation in a liquid medium, 20) \_\_\_\_\_  
which of the following would be essential to the experiment?  
A) adding carbon dioxide to the liquid  
B) adding antibiotics to the liquid  
C) starting with a liquid that contains microorganisms  
D) supplying the liquid with nutrients  
E) using a sterile liquid and eliminating exposure to microorganisms

- 21) The arguments supporting spontaneous generation were finally disproved by \_\_\_\_\_ 21) \_\_\_\_\_  
A) John Needham.  
B) Francesco Redi.  
C) Lazzaro Spallanzani.  
D) Louis Pasteur.  
E) Rudolf Virchow.
- 22) Regarding Louis Pasteur's experiments with the S-neck flask, which of the following statements is TRUE? \_\_\_\_\_ 22) \_\_\_\_\_  
A) The possibility of contamination was removed.  
B) All preexisting microorganisms were killed.  
C) Air exchange was involved.  
D) A food source was provided.  
E) All of the answers are correct.
- 23) The microbial process of converting sugars to alcohol is known as \_\_\_\_\_ 23) \_\_\_\_\_  
A) tyndallization.  
B) fermentation.  
C) pasteurization.  
D) lyophilization.  
E) alcoholism.
- 24) Proof that a microbe could cause disease was provided by \_\_\_\_\_ 24) \_\_\_\_\_  
A) Lister.  
B) Semmelweis.  
C) Pasteur.  
D) Wasserman.  
E) Koch.
- 25) The use of phenol (carbolic acid) as a wound disinfectant was first practiced by \_\_\_\_\_ 25) \_\_\_\_\_  
A) Holmes.  
B) Koch.  
C) Semmelweis.  
D) Pasteur.  
E) Lister.
- 26) Mycology is the study of \_\_\_\_\_ 26) \_\_\_\_\_  
A) molds.  
B) mushrooms.  
C) mycoplasma.  
D) protozoa.  
E) molds, yeast, and mushrooms.
- 27) The first step for directly linking a microbe to a specific disease according to Koch's postulates is to \_\_\_\_\_ 27) \_\_\_\_\_  
A) culture the blood or other body fluid from a diseased animal using nutrient medium.  
B) inject a sample of blood or other body fluid from a diseased animal into a healthy animal.  
C) isolate microbes from the blood of healthy animals.  
D) compare the blood of a sick animal to blood obtained from a healthy animal.  
E) obtain a sample of blood or other body fluid from a diseased animal.

- 28) In which of the following situations would Koch's postulates be utilized? 28) \_\_\_\_\_  
 A) whenever the scientific method is used to investigate a microbiological problem  
 B) determination of the cause of cancer in a patient  
 C) formulation of a vaccine against a new pathogen in a genetic engineering lab  
 D) development of a new antibiotic in a pharmaceutical lab  
 E) determination of the cause of a patient's illness in a hospital microbiology lab
- 29) Robert Koch identified the cause of 29) \_\_\_\_\_  
 A) diphtheria.  
 B) anthrax.  
 C) tuberculosis.  
 D) AIDS.  
 E) smallpox.
- 30) \_\_\_\_\_ is the physician first associated with vaccination. 30) \_\_\_\_\_  
 A) Lister                      B) Pasteur                      C) Jenner                      D) Koch                      E) Escherich
- 31) Which of the following findings was essential for Edward Jenner's vaccination process? 31) \_\_\_\_\_  
 A) Pathogenic microorganisms infect all humans and animals in the same manner.  
 B) Disease is caused by viruses.  
 C) Someone who recovers from a disease will not acquire that disease again.  
 D) A weakened microorganism will not cause disease.  
 E) Exposure to a milder disease form may produce immunity.
- 32) Antibiotics are produced by 32) \_\_\_\_\_  
 A) viruses.  
 B) protozoa.  
 C) fungi.  
 D) bacteria.  
 E) bacteria and fungi.
- 33) The first antibiotic to be utilized was 33) \_\_\_\_\_  
 A) salvarsan.  
 B) quinine.  
 C) penicillin.  
 D) sulfonamides.  
 E) vancomycin.
- 34) Who was the first scientist to pursue a "magic bullet" that could be used to treat infectious disease? 34) \_\_\_\_\_  
 A) Lister  
 B) Jenner  
 C) Pasteur  
 D) Ehrlich  
 E) Semmelweis
- 35) Fungal infections are studied by 35) \_\_\_\_\_  
 A) bacteriologists.  
 B) virologists.  
 C) herpetologists.  
 D) parasitologists.  
 E) mycologists.

- 36) Vaccinations are available for all of the following diseases EXCEPT 36) \_\_\_\_\_
- A) mumps.
  - B) rubella.
  - C) strep throat.
  - D) hepatitis B.
  - E) measles.
- 37) Recombinant DNA refers to the 37) \_\_\_\_\_
- A) interaction between human and bacterial cells.
  - B) DNA resulting when bacterial genes are inserted in an animal genome.
  - C) synthesis of proteins from genes.
  - D) study of the function of genes.
  - E) study of bacterial ribosomes.
- 38) Molecular biology is the study of 38) \_\_\_\_\_
- A) DNA synthesis.
  - B) RNA replication.
  - C) enzyme function.
  - D) the structure and function of macromolecules essential to life.
  - E) protein synthesis.
- 39) Microorganisms are essential to our life. Each of the following is an example of a beneficial function of microorganisms EXCEPT 39) \_\_\_\_\_
- A) increased morbidity.
  - B) bioremediation.
  - C) agriculture.
  - D) alternative fuel production.
  - E) gene therapy.
- 40) The major food producers for other living organisms is/are 40) \_\_\_\_\_
- A) higher plants.
  - B) cyanobacteria.
  - C) algae.
  - D) higher plants and algae.
  - E) higher plants, cyanobacteria, and algae.
- 41) Gene therapy is currently used to treat all of the following diseases EXCEPT 41) \_\_\_\_\_
- A) cystic fibrosis.
  - B) severe combined immunodeficiency disease (SCID).
  - C) LDL-receptor deficiency.
  - D) Duchenne's muscular dystrophy.
  - E) colon cancer.
- 42) Recombinant DNA technology has become an increasingly important part of our life. It is used for all of the following EXCEPT 42) \_\_\_\_\_
- A) increasing the nutritional value of food.
  - B) drug production.
  - C) enhancing food longevity.
  - D) synthesis of water.
  - E) vaccine production.

43) Normal microbiota are typically found in and on all the following body locations EXCEPT the \_\_\_\_\_  
A) mouth.  
B) blood.  
C) upper respiratory system.  
D) colon.  
E) skin.

44) Which of the following statements about biofilms is FALSE? \_\_\_\_\_  
A) Biofilms on medical devices cause infections.  
B) Biofilms in pipes can block the flow of water.  
C) Compared to free-living bacteria, biofilms are more sensitive to antibiotics.  
D) Biofilms in your body protect mucous membranes from harmful microbes.  
E) Biofilms on rocks provide food for animal life.

45) Development of emerging infectious disease can be a result of all of the following EXCEPT \_\_\_\_\_  
A) use of genetically modified foods.  
B) modern transportation.  
C) overuse of antibiotics.  
D) changes in the environment.  
E) microbial mutation.

**TRUE/FALSE. Write 'T' if the statement is true and 'F' if the statement is false.**

46) Infectious disease is almost totally eradicated in our world. \_\_\_\_\_

47) A student has obtained a sample of pond water for study. Using the high-power lens, he observes several cells with nuclei. He can conclude that the cells are NOT bacteria. \_\_\_\_\_

48) The process of pasteurization to reduce food spoilage utilizes high heat to kill all bacteria present. \_\_\_\_\_

49) Anton van Leeuwenhoek was the first microbiologist to use a microscope to examine environmental samples for the presence of microorganisms. \_\_\_\_\_

50) Spontaneous generation refers to living cells arising only from other living cells. \_\_\_\_\_

51) Microbes are associated with life-sustaining benefits as well as life-threatening diseases. \_\_\_\_\_

52) All cells possess a cell wall. \_\_\_\_\_

53) Some viruses can contain both DNA and RNA. \_\_\_\_\_

54) Bovine spongiform encephalitis (BSE, or "mad cow disease") is caused by a virus. \_\_\_\_\_

55) All pathogens known to infect humans have been identified at this point in time. \_\_\_\_\_

**ESSAY. Write your answer in the space provided or on a separate sheet of paper.**

56) What is an emerging disease, and what are some of the sources for these "new" infectious diseases?

57) Compare and contrast prokaryotic and eukaryotic cells.

58) What was the function and importance of S-necked flasks in Louis Pasteur's experiments in disproving spontaneous generation?

59) Explain the germ theory of disease and discuss why this theory is essential to the treatment of infectious disease

## Answer Key

Testname: UNTITLED1

- 1) B
- 2) E
- 3) C
- 4) E
- 5) A
- 6) D
- 7) E
- 8) C
- 9) E
- 10) D
- 11) E
- 12) E
- 13) D
- 14) C
- 15) D
- 16) C
- 17) B
- 18) E
- 19) A
- 20) E
- 21) D
- 22) E
- 23) B
- 24) E
- 25) E
- 26) E
- 27) E
- 28) E
- 29) B
- 30) C
- 31) E
- 32) E
- 33) C
- 34) D
- 35) E
- 36) C
- 37) B
- 38) D
- 39) A
- 40) E
- 41) E
- 42) D
- 43) B
- 44) C
- 45) A
- 46) FALSE
- 47) TRUE
- 48) FALSE
- 49) TRUE
- 50) FALSE

## Answer Key

Testname: UNTITLED1

- 51) TRUE
- 52) FALSE
- 53) FALSE
- 54) FALSE
- 55) FALSE
- 56)
- 57)
- 58)
- 59)