

1.

Award: 10.00 points

Microorganisms are best defined as organisms that _____.

- ☐ cause human disease
- ☒ are too small to be seen with the unaided eye
- ☐ are infectious particles
- ☐ can only be found growing in laboratories
- ☐ lack a cell nucleus

References

Multiple Choice Section: 01.01

2.

Award: 10.00 points

Which of the following are not considered microorganisms?

- ☒ Mosquitoes
- ☐ Viruses
- ☐ Protozoa
- ☐ Bacteria
- ☐ Fungi

References

Multiple Choice Section: 01.01

3.

Award: 10.00 points

Helminths are _____.

- ☐ infectious particles
- ☐ protozoa
- ☐ bacteria
- ☐ molds
- ☒ parasitic worms

References

Multiple Choice Section: 01.01

4.

Award: 10.00 points

Among these types of microorganisms, the _____ are noncellular.

- ☐ helminths
- ☐ protozoans
- ☒ viruses
- ☐ bacteria

References

Multiple Choice Section: 01.01 Section: 01.05

5.

Award: 10.00 points

Studies of the immune response to an infection caused by microorganisms would be performed by a/an _____.

- ☒ immunologist
- ☐ epidemiologist
- ☐ hypersensitivity specialist
- ☐ geomicrobiologist

References

Multiple Choice Section: 01.01

6.

Award: 10.00 points

Which of the following pairs of career descriptions and work tasks is not correctly matched?

- ☒ Industrial microbiologist -- manipulate bacterial strains to be less pathogenic
- ☐ Medical microbiologist -- identify the cause of a bladder infection at a hospital lab
- ☐ Public health microbiologist -- track the incidence of AIDS in a population
- ☐ Agricultural microbiologist -- identify bacterial causes of crop disease

References

Multiple Choice Section: 01.01

7.

Award: 10.00 points

A scientist who studies the influence of microbes in the formation of caves is called a/an _____.

- ☐ astrobiologist
- ☐ immunologist
- ☐ epidemiologist
- ☐ geomicrobiologist

References

Multiple Choice Section: 01.01

8.

Award: 10.00 points

Astrobiology is considered a sub-discipline of microbiology because _____.

- ☐ all extraterrestrials known are microbial
- ☐ life elsewhere in the universe is likely to be microbial
- ☐ only microbes can reproduce under the extreme conditions in outer space
- ☐ microbes are known to exist on other planets

References

Multiple Choice Section: 01.01

9.

Award: 10.00 points

Which of the following does not indicate microbe involvement in energy and nutrient flow?

- ☐ Thermal hot springs warmed by heat from earth's interior
- ☐ Decomposition of dead matter and wastes
- ☐ Digestion of complex carbohydrates in animal diets
- ☐ Formation of greenhouse gases, CO₂ and methane

References

Multiple Choice Section: 01.02

10.

Award: 10.00 points

The microorganisms that recycle nutrients by breaking down dead matter and wastes are called _____.

- ☐ pathogens
- ☐ eukaryotes
- ☐ decomposers
- ☐ fermenters
- ☐ prokaryotes

References

Multiple Choice Section: 01.02

11.

Award: 10.00 points

The majority of oxygen in earth's atmosphere is a product of photosynthesis by _____.

- ☐ agricultural lands
- ☒ microorganisms
- ☐ rain forests
- ☐ green plants

References

Multiple Choice Section: 01.02

12.

Award: 10.00 points

The three cell types discussed, eukaryotes, archaea, and bacteria, all derived from _____.

- ☐ cells with a true nucleus
- ☒ a common ancestral cell
- ☐ archaea
- ☐ photosynthetic bacteria

References

Multiple Choice Section: 01.02

13.

Award: 10.00 points

The first cells appeared about _____ billion years ago.

- ☐ 5
- ☒ 4
- ☐ 3.5
- ☐ 2
- ☐ 1

References

Multiple Choice Section: 01.02

14.

Award: 10.00 points

A hypothesis must be tested many times before it can be considered a theory.

- ☒ True
- ☐ False

References

True / False Section: 01.02 Section: 01.06

15.

Award: 10.00 points

Which area of biology states that living things undergo gradual structural and functional changes over long periods of time?

- ☐ Phylogeny
- ☒ Evolution
- ☐ Genetics
- ☐ Morphology
- ☐ Transformation

References

Multiple Choice Section: 01.02

16.

Award: 10.00 points

When humans manipulate the genes of microorganisms, the process is called _____.

- ☐ bioremediation
- ☐ taxonomy
- ☐ epidemiology
- ☒ genetic engineering
- ☐ immunology

References

Multiple Choice Section: 01.03

17.

Award: 10.00 points

Which activity is an example of biotechnology?

- ☐ Egyptians using moldy bread on wounds
- ☐ Bacteria in the soil secreting an antibiotic to kill competitors
- ☐ Public health officials monitoring diseases in a community
- ☐ A microbiologist using the microscope to view bacteria
- ☒ *Escherichia coli* producing human insulin

References

Multiple Choice Section: 01.03

18.

Award: 10.00 points

Which of the following is a traditional human use of microorganisms?

- ☐ Treating water and sewage
- ☐ Mass-producing antibiotics
- ☒ Baking bread
- ☐ Cleaning up oil spills

References

Multiple Choice Section: 01.03

19.

Award: 10.00 points

Using microbes to detoxify a site contaminated with heavy metals is an example of _____.

- ☐ biotechnology
- ☐ immunology
- ☐ decomposition
- ☐ epidemiology
- ☒ bioremediation

References

Multiple Choice Section: 01.03

20.

Award: 10.00 points

Disease-causing microorganisms are called _____.

- ☐ decomposers
- ☐ fermenters
- ☐ eukaryotes
- ☐ bacteria
- ☒ pathogens

References

Multiple Choice Section: 01.04

21.

Award: 10.00 points

The number one worldwide infectious diseases are _____.

- ☐ AIDS-related diseases
- ☐ diarrheal diseases
- ☒ respiratory diseases
- ☐ measles and other rash diseases
- ☐ malaria and other protozoan diseases

References

Multiple Choice Section: 01.04

22.

Award: 10.00 points

Many chronic medical conditions have been found to be associated with microbial agents.

- ☒ True
- ☐ False

References

True / False Section: 01.04

23. Award: 10.00 points

The incidence of deaths from communicable disease is _____ in the United States compared to the entire world.

- ☒ less
- ☐ greater
- ☐ about the same

References

Multiple Choice Section: 01.04

24. Award: 10.00 points

In which way are bacteria and eukaryotes the same?

- ☐ Contain membrane-bound organelles
- ☐ Contain a nucleus to hold DNA
- ☒ Possess a cell membrane
- ☐ Always have a cell wall for rigidity

References

Multiple Choice Section: 01.05

25.

Award: 10.00 points

In which way are archaea and eukaryotes the same?

- ☐ Possess RNA instead of DNA
- ☐ Contain mitochondria for energy production
- ☒ Have similar ssu rRNA sequences
- ☐ Contain membrane-bound organelles

References

Multiple Choice Section: 01.05

26.

Award: 10.00 points

All bacteria and archaea are microorganisms, but only some eukaryotes are microorganisms.

- ☒ True
- ☐ False

References

True / False Section: 01.05

27.

Award: 10.00 points

Which of the following is a unique characteristic of viruses that distinguishes them from the other major groups of microorganisms?

- ☒ Lack cell structure
- ☐ Cannot be seen without a microscope
- ☐ Cause human disease
- ☐ Lack a nucleus
- ☐ Contain genetic material

References

Multiple Choice Section: 01.05

28.

Award: 10.00 points

Which group of microorganisms is composed only of hereditary material wrapped in a protein covering?

- ☐ Parasites
- ☐ Bacteria
- ☐ Fungi
- ☐ Yeasts
- ☒ Viruses

References

Multiple Choice Section: 01.05

29.

Award: 10.00 points

Eukaryotic cells are larger than bacterial or archaeal cells; all cells are larger than macromolecules. Where do viruses fit on this scale?

- ☐ Viruses are smaller than eukaryotic cells, but larger than bacterial or archaeal cells.
- ☐ Viruses are larger than eukaryotic cells.
- ☐ Viruses are smaller than macromolecules.
- ☒ Viruses are smaller than bacterial or archaeal cells, but larger than macromolecules.

References

Multiple Choice Section: 01.05

30.

Award: 10.00 points

In general, eukaryotic cells are about _____ times larger than bacterial or archaeal cells.

- ☐ 2
- ☒ 10
- ☐ 50
- ☐ 1000

References

Multiple Choice Section: 01.05

31.

Award: 10.00 points

Archaeal cells are about _____ bacterial cells.

- ☐ ten times larger than
- ☐ ten times smaller than
- ☐ the same size as

References

Multiple Choice Section: 01.05

32.

Award: 10.00 points

Which of the following historical microbiologists is incorrectly paired with his contribution to the science?

- ☐ Joseph Lister: promoted disinfecting hands and air prior to surgery
- ☐ Francesco Redi: tested spontaneous generation with meat exposed to the air or covered with cloth
- ☐ Antonie van Leeuwenhoek: made and used quality magnifying lenses to observe and record microorganisms
- ☐ Louis Pasteur: demonstrated that anthrax was caused by a bacterium

References

Multiple Choice Section: 01.06

33. Award: 10.00 points

In the experiments constructed by Pasteur to disprove spontaneous generation, swan-necked flasks were used. Why was this shape of flask used in this experiment?

- ☐ Because the glass necks were stretched out, the heat used to sterilize the medium inside of the flask could not kill the bacteria in the neck.
- ☐ The shape of the glass neck allowed the bacteria into the flask and then into the media, but air could not enter.
- ☐ These flask shapes were the easiest and cheapest to produce.
- ☐ The glass necks needed to be open to the air, yet constructed so that bacteria would settle in the lowest part of the neck.

References

Multiple Choice Section: 01.06

34. Award: 10.00 points

Koch's postulates are criteria used to establish that _____.

- ☐ a specific microbe is the cause of a specific disease
- ☐ microbes are found on dust particles
- ☐ microbes can be used to clean up toxic spills
- ☐ life forms can only arise from preexisting life forms
- ☐ a specific microbe should be classified in a specific kingdom

References

Multiple Choice Section: 01.06

35.

Award: 10.00 points

Which of the following is NOT a recent discovery that has had a huge impact on the understanding of microbiology?

- ☐ Restriction enzymes
- ☐ PCR technique
- ☐ Human microbiome project
- ☐ Small RNAs
- ☐ All are significant discoveries.

Refer to the text and read about the recent discoveries that have had a huge impact on the understanding of microbiology.

References

Multiple Choice Section: 01.06

36.

Award: 10.00 points

The sum total of all the microbes in a certain environment is termed the _____.

- ☐ microbial niche
- ☐ domain
- ☐ biofilm
- ☐ phylogeny
- ☐ microbiome

References

Multiple Choice Section: 01.06

37.

Award: 10.00 points

Which of the following is not a process in the scientific method?

- ☐ Development of a theory
- ☐ Systematic observation
- ☐ Formulation of a hypothesis
- ☐ Belief in a preconceived idea
- ☐ Laboratory experimentation

References

Multiple Choice Section: 01.06

38.

Award: 10.00 points

Experimentation _____.

- ☐ is the first step in the scientific method
- ☐ provides a means to gather objective data
- ☐ provides a means to gather subjective data
- ☐ is designed to refute an hypothesis
- ☐ is designed to support an hypothesis

References

Multiple Choice Section: 01.06

39.

Award: 10.00 points

The scientific method includes all of the following except _____.

- ☒ publication
- ☐ experimentation
- ☐ observation
- ☐ hypothesis

References

Multiple Choice Section: 01.06

40.

Award: 10.00 points

The scientific method involves formulating a tentative explanation, called the hypothesis, to account for what has been observed or measured.

- ☒ True
- ☐ False

References

True / False Section: 01.06

41.

Award: 10.00 points

Caring for patients infected with a new virus requires safety precautions for medical personnel. Choosing appropriate procedures is an example of a/an _____ process.

- ☐ pathogenic
- ☒ deductive
- ☐ hypothetical
- ☐ inductive

References

Multiple Choice Section: 01.06

42.

Award: 10.00 points

Sterile is best described as _____.

- ☐ absence of spores
- ☐ pathogen-free
- ☐ pasteurized
- ☒ absence of any life forms and viral particles
- ☐ homogenized

References

Multiple Choice Section: 01.06

43.

Award: 10.00 points

Taxonomy does not involve _____.

- ☒ a common name
- ☐ identification
- ☐ nomenclature
- ☐ classification

References

Multiple Choice Section: 01.07

44.

Award: 10.00 points

Which scientific field is involved in the identification, classification, and naming of organisms?

- ☐ Pathology
- ☒ Taxonomy
- ☐ Epidemiology
- ☐ Nomenclature
- ☐ Phylogeny

References

Multiple Choice Section: 01.07

45.

Award: 10.00 points

The orderly arrangement of organisms into a hierarchy of taxa is called _____.

- ☒ classification
- ☐ identification
- ☐ nomenclature
- ☐ experimentation
- ☐ biotechnology

References

Multiple Choice Section: 01.07

46.

Award: 10.00 points

Members of the same species share many more characteristics compared to those shared by members of the same kingdom.

- ☒ True
- ☐ False

References

True / False Section: 01.07

47.

Award: 10.00 points

Which of the following is a taxon that contains all the other taxa listed?

- ☒ Kingdom
- ☐ Family
- ☐ Genus
- ☐ Species
- ☐ Phylum

References

Multiple Choice Section: 01.07

48.

Award: 10.00 points

The smallest and most significant taxon is a _____.

- ☐ kingdom
- ☒ species
- ☐ phylum
- ☐ family
- ☐ genus

References

Multiple Choice Section: 01.07

49.

Award: 10.00 points

Select the correct descending taxonomic hierarchy (left to right).

- ☐ Kingdom, domain, phylum
- ☒ Family, genus, species
- ☐ Genus, species, family
- ☐ Class, phylum, order
- ☐ Family, order, class

References

Multiple Choice Section: 01.07

50.

Award: 10.00 points

A recently-developed mnemonic for remembering the taxonomic levels from Domain to Species is "Dumb Kids Prefer Candy Over Fancy Green Salad." The word "candy" here is a reminder of the taxonomic level of _____.

- ☐ colony
- ☒ class
- ☐ chain
- ☐ category
- ☐ culture

References

Multiple Choice Section: 01.06

51.

Award: 10.00 points

Which of the following is a scientific name?

- ☐ Anthrax
- ☐ Streptobacilli
- ☒ *Streptococcus pyogenes*
- ☐ Gram-positive streptococcus

References

Multiple Choice Section: 01.07

52.

Award: 10.00 points

When assigning a scientific name to an organism, _____.

- ☐ both genus and species names are capitalized
- ☒ both genus and species names are italicized or underlined
- ☐ the species name is capitalized
- ☐ the species name is placed first
- ☐ the species name can be abbreviated

References

Multiple Choice Section: 01.07

53.

Award: 10.00 points

Which scientific name is written correctly?

- ☐ staphylococcus aureus
- ☐ Staphylococcus Aureus
- ☐ S. aureus
- ☒ *Staphylococcus aureus*
- ☐ Staphylococcus aureus

References

Multiple Choice Section: 01.07

54.

Award: 10.00 points

The names of the three proposed domains are: Bacteria, Protista, and Eukarya.

- ☐ True
- ☒ False

References

True / False Section: 01.07

55.

Award: 10.00 points

A diagram of the three domains (Bacteria, Archaea, Eukarya) proceeding from the Last Common Ancestor would show Archaea _____.

- ☐ branching off the Domain Bacteria
- ☐ as the original cells from which the others derived
- ☐ branching off the Domain Eukarya

References

Multiple Choice Section: 01.07

56.

Award: 10.00 points

Analysis of the small subunit rRNAs from all organisms in the three current domains suggests that _____.

- ☐ the eukaryotes arose from prokaryotes
- ☐ the Archaea are more closely related to bacteria than eukaryotes
- ☐ bacteria, archaea, and eukaryotes are not related
- ☐ all modern and extinct organisms on earth arose from a common ancestor

Refer to "Systems of Presenting a Universal Tree of Life" for a discussion of the ssu rRNAs and their role in taxonomy.

References

Multiple Choice Section: 01.07

57.

Award: 10.00 points

The study of evolutionary relationships among organisms is called _____.

- ☐ recombinant DNA
- ☐ taxonomy
- ☒ phylogeny
- ☐ genetics
- ☐ biotechnology

References

Multiple Choice

Section: 01.02

Section: 01.07

58.

Award: 10.00 points

A scientist studying the sequence of nucleotides in the rRNA of a bacterial species is working on _____.

- ☐ recombinant DNA
- ☐ bioremediation
- ☐ nomenclature
- ☐ determining if that species is the cause of a new disease
- ☒ determining evolutionary relatedness

References

Multiple Choice

Section: 01.07

59.

Award: 10.00 points

Trees of life that illustrate the phylogenetic relationships of all organisms were traditionally based on _____; newer methods for determining phylogeny rely on _____.

- ☐ nucleic acid sequences; morphology
- ☐ nucleic acid sequences; microbiomes
- ☐ morphology; nutritional requirements
- ☐ morphology; virology
- ☐ morphology; nucleic acid sequences

References

Multiple Choice Section: 01.07