

**MULTIPLE CHOICE**

1. In the sixteenth century a father-and-son team, by the name of \_\_\_\_\_, produced a compound microscope consisting of a simple tube with lenses at each end.
- van Leeuwenhoek
  - Semmelweis
  - Janssen
  - Hooke

ANS: C                      REF: p. 3

2. “Animalcules” were first described by
- Robert Hooke.
  - Antony van Leeuwenhoek.
  - Hans Janssen.
  - John Needham.

ANS: B                      REF: p. 3

3. *Micrographia*, a publication illustrating insects, sponges, as well as plant cells, was published by
- Robert Hooke.
  - Antony van Leeuwenhoek.
  - Hans Janssen.
  - John Needham.

ANS: A                      REF: p. 3

4. Low-power microscopes designed for observing fairly large objects such as insects or worms are
- electron microscopes.
  - dark-field microscopes.
  - fluorescence microscopes.
  - stereomicroscopes.

ANS: D                      REF: p. 5

5. A microscope that provides a three-dimensional image of a specimen is a
- dark-field microscope.
  - transmission electron microscope.
  - bright-field microscope.
  - scanning electron microscope.

ANS: D                      REF: p. 7

6. The tool of choice to observe living microorganisms is the
- bright-field microscope.
  - phase-contrast microscope.

- c. fluorescence microscope.
- d. electron microscope.

ANS: B                      REF: p. 6

7. Which scientist is most responsible for ending the controversy about spontaneous generation?
- a. John Needham
  - b. Joseph Lister
  - c. Louis Pasteur
  - d. Robert Koch

ANS: C                      REF: p. 8

8. Fossils of prokaryotes go back \_\_\_\_\_ billion years.
- a. 4.0 to 5.0
  - b. 3.5 to 4.0
  - c. 2.5 to 3.0
  - d. 2.2 to 2.7

ANS: B                      REF: p. 9

9. Molds belong to which of the following groups of eukaryotic organisms?
- a. Protozoans
  - b. Archaea
  - c. Fungi
  - d. Algae

ANS: C                      REF: p. 11

10. The correct descending order of taxonomic categories is
- a. species, domain, phylum, kingdom, order, division, class, genus.
  - b. domain, kingdom, phylum, class, family, order, genus, species.
  - c. domain, kingdom, phylum, class, order, family, genus, species.
  - d. kingdom, domain, phylum, order, class, family, genus, species.

ANS: C                      REF: p. 10

11. Complex communities of microorganisms on surfaces are called
- a. colonies.
  - b. biofilms.
  - c. biospheres.
  - d. flora.

ANS: B                      REF: p. 12

12. A relationship between organisms in which the waste product of one provides nutrients for another is called
- a. mutualism.
  - b. competition.
  - c. synergism.
  - d. commensalism.

ANS: D                      REF: p. 12

13. Which of the following sites of the human body does not have a normal flora?
- Intestine
  - Skin
  - Vagina
  - Blood

ANS: D                      REF: p. 12

14. Which of the following lack nucleic acids?
- Archaea
  - Viruses
  - Prions
  - Bacteria

ANS: C                      REF: p. 11

15. The binominal system of nomenclature was originally developed by
- Pasteur.
  - Linnaeus.
  - Martini.
  - Jenner.

ANS: B                      REF: p. 11

16. Which of the following scientists performed the first vaccination against smallpox?
- Pasteur
  - Jenner
  - Semmelweis
  - Koch

ANS: B                      REF: p. 9

17. Which of the following diseases is generally caused by contaminated food?
- Mumps
  - Shigellosis
  - Legionellosis
  - Tuberculosis

ANS: B                      REF: p. 13

18. Which of the following diseases is transmitted via aerosols?
- Psittacosis
  - Shigellosis
  - Leptospirosis
  - Giardiasis

ANS: A                      REF: p. 14

19. Which of the following organisms is used in the production of cheese?
- Propionibacterium shermanii*
  - Acetobacter aceti*
  - Giardia*

d. *Fusobacterium*

ANS: A REF: p. 14

20. Which of the following scientists discovered the antibiotic properties of *Penicillium*?
- Alexander Fleming
  - Louis Pasteur
  - Joseph Lister
  - Edward Jenner

ANS: A REF: p. 15

## COMPLETION

1. In a compound light microscope the lens closest to the eye is the \_\_\_\_\_ lens.

ANS: ocular

REF: p. 3

2. The total magnification of an object viewed with a compound microscope with an ocular lens of  $\times 10$  and an objective lens of  $\times 40$  is  $\times$  \_\_\_\_\_.

ANS: 400

REF: p. 4

3. Another term for spontaneous generation is \_\_\_\_\_.

ANS: abiogenesis

REF: p. 7

4. Microorganisms of various species are often organized into complex communities on a surface and are called \_\_\_\_\_.

ANS: biofilms

REF: p. 12

5. All bacteria are \_\_\_\_\_ cells.

ANS: prokaryotic

REF: p. 10

6. Cells that contain a nucleus are \_\_\_\_\_ cells.

ANS: eukaryotic

REF: p. 10

7. The taxonomic resource for information on bacteria is \_\_\_\_\_.

ANS: *Bergey's Manual of Systematic Bacteriology*

REF: p. 11

8. A relationship in which two organisms benefit is referred to as \_\_\_\_\_.

ANS: mutualism

REF: p. 12

9. The proteins implicated in spongiform encephalopathy are \_\_\_\_\_.

ANS: prions

REF: p. 11

10. The cleanup of various industrial wastes by living organisms is referred to as \_\_\_\_\_.

ANS: bioremediation

REF: p. 15

## MATCHING

Match the description below with the correct item from this list.

- N R I G B C M  
U S N T O
- Observing insects
  - Three-dimensional images
  - Cytoplasmic streaming
  - Fluorescent dye
  - Ultrathin sectioned specimens

- Scanning electron microscope
- Phase-contrast microscope
- Transmission electron microscope
- Stereomicroscope

- ANS: B                      REF: p. 7
- ANS: C                      REF: p. 6
- ANS: E                      REF: p. 7
- ANS: A                      REF: p. 5

Match the description below to the correct name from this list.

- Robert Koch
- Edward Jenner
- Louis Pasteur
- John Needham
- Joseph Lister
- Antony van Leeuwenhoek

5. Animalcules
6. Vaccination
7. Aseptic technique
8. Germ theory of disease

- |           |                  |
|-----------|------------------|
| 5. ANS: F | REF: p. 7   p. 8 |
| 6. ANS: B | REF: p. 9        |
| 7. ANS: E | REF: p. 9        |
| 8. ANS: C | REF: p. 8        |

**Chapter 02: Chemistry of Life**  
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**MULTIPLE CHOICE**

1. The atomic number equals the number of
- protons.
  - neutrons.
  - electrons.
  - protons and neutrons.

ANS: A                      REF: p. 20

2. The atomic weight is equal to the sum of
- neutrons.
  - protons and neutrons.
  - neutrons and electrons.
  - electrons.

ANS: B                      REF: p. 20

3. The smallest units of matter are
- molecules.
  - atoms.
  - protons.
  - compounds.

ANS: B                      REF: p. 20

4. Protons are
- located in the shells.
  - part of the atomic nucleus.
  - negatively charged.
  - uncharged particles.

ANS: B                      REF: p. 20

5. Particles of an atom located in the outermost shell and available for chemical bonding are called
- valence electrons.
  - isotopes.
  - excess electrons.
  - neutrons.

ANS: A                      REF: p. 21

6. Isotopes are atoms with
- the same number of electrons and protons.
  - different numbers of protons and electrons.
  - the same numbers of protons but a different number of neutrons.
  - different numbers of electrons.

ANS: C                      REF: p. 21

7. A chemical bond in which electrons are equally shared is a(n)
- ionic bond.
  - polar covalent bond.
  - nonpolar covalent bond.
  - hydrogen bond.

ANS: C                      REF: p. 23

8. The transfer of electrons in a chemical bond represents a(n)
- ionic bond.
  - polar covalent bond.
  - nonpolar covalent bond.
  - hydrogen bond.

ANS: A                      REF: p. 24

9. The bond of oxygen and hydrogen between water molecules is a(n)
- ionic bond.
  - polar covalent bond.
  - nonpolar covalent bond.
  - hydrogen bond.

ANS: D                      REF: p. 24

10. The isotope deuterium has
- one proton.
  - one proton and one neutron.
  - one proton and two neutrons.
  - one proton and three neutrons.

ANS: B                      REF: p. 21

11. After filling the first shell, the outermost shell of an atom can hold up to \_\_\_\_\_ electrons.
- 2
  - 6
  - 8
  - 10

ANS: C                      REF: p. 23

12. The bond between sodium and chlorine atoms in sodium chloride is a(n)
- hydrogen bond.
  - ionic bond.
  - polar covalent bond.
  - nonpolar covalent bond.

ANS: B                      REF: p. 24

13. Sucrose is composed of