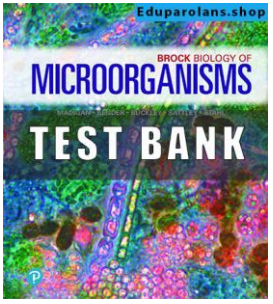

Test Bank For Brock Biology of Microorganisms 16th Edition By Michael T. Madigan

Brock Biology of Microorganisms, 16e (Madigan et al.)
Chapter 1 The Microbial World

1.1 Multiple Choice Questions

1) Which of the following statements is FALSE?
A) Microbial cells can exist as single cells.
B) Microbial cells carry out their life processes of growth independently.
C) Microbial cells include both bacteria and viruses.
D) Microbial cells are surrounded by a plasma membrane.

2) Which of the following statements is correct?
A) Microorganisms are significant contributors to the total biomass on Earth.
B) Microorganisms represent a much smaller amount of Earth's biomass than plants.
C) Microorganisms represent a much smaller amount of Earth's biomass than animals.
D) Microorganisms are significant in number, but not in overall biomass.

3) Differential selection and reproduction of phenotypes occurs during a process called
A) cellular differentiation.
B) evolution.
C) growth.
D) transformation.

4) In what/which domain(s) of life is/are microorganisms represented?
A) Archaea
B) Bacteria
C) Eukarya
D) Archaea, Bacteria, and Eukarya

5) Biological catalysts involved in the acceleration of the rate of chemical reactions are called
A) catalytic converters.
B) growth agents.
C) evolutionary molecules.
D) enzymes.

6) Regarding early life on Earth
A) microbial life existed for billions of years before plant and animal life.
B) microbial life existed long before animals but has been around for about the same amount of time as plants.
C) microbial life, plant life, and animal life all appeared at about the same time.
D) it is impossible to determine which type of life first appeared.

7) The person who described the “wee animalcules” was
A) Robert Hooke.
B) Antoni van Leeuwenhoek.
C) Louis Pasteur.
D) Ferdinand Cohn.

Chapter Section: 1.5

8) Walther Hesse and_____pioneered the use of agar as a solidifying agent.
A) Louis Pasteur
B) Ferdinand Cohn
C) Robert Koch
D) Sergei Winogradsky

0

9) Which of the following is/are characteristic of all cellular organisms?
A) communication
B) evolution
C) motility
D) communication, evolution, and motility

10) Deduce why viruses are excluded from the ribosomal RNA—based tree of life.
A) Some viruses contain multiple strands of RNA.
B) Their genetic elements cannot be sequenced.
C) They can infect other organisms, which complicates the genetic comparisons.
D) They lack ribosomal RNA (rRNA).

3
11) Louis Pasteur developed the vaccine(s) for
A) anthrax only.
B) fowl cholera only.
C) rabies only.
D) anthrax, fowl cholera, and rabies.

Chapter Section: 1.9

12) The discovery of antibiotics and other important chemicals led to the field of
A) industrial microbiology.
B) agricultural microbiology.
C) marine microbiology.
D) aquatic microbiology.

13) Microbial sterilization is used to
A) decrease the possibility of contaminants growing in a culture.
B) kill bacteria but not necessarily viruses or other microbes.
C) kill all microbes in or on objects.
D) clean a work area.

Chapter Section: 1.9

14) Transparent double-sided dishes used for growing microbes are most commonly called
A) Petri dishes.
B) baker dishes.
C) sterilization plates.
D) culture medium plates.

0

15) Microbes playing a role in nitrogen fixation in plants live in_____, while those playing a role in the digestive tract of certain herbivores live in_____.
A) rumens / nodules
B) nodules / rumens
C) nodules / fortrans
D) fortrans / rumens

16) Which of the following is NOT an accomplishment of Louis Pasteur?
A) determined that the alcohol-making process was mediated by microbial fermentation and thus refuted the theory of spontaneous generation
B) developed enrichment culture techniques
C) developed heat sterilization techniques that involved the creation of a specialized swan-necked flask
D) developed the first rabies vaccine and treated thousands of individuals

Chapter Section: 1.9

17) The theory of spontaneous generation was refuted by the work of
A) Louis Pasteur.
B) Robert Koch.
C) Robert Hooke.
D) Antoni van Leeuwenhoek.

Chapter Section: 1.9

18) A Pasteur flask has a(n)
A) swan neck to prevent particulate matter from getting into the main body of the flask.
B) double neck so two substances may be added at the same time.
C) secondary opening at the base to allow for drainage.
D) inverted upper edge to prevent spillage while swirling.

Chapter Section: 1.9

19) Predict how Pasteur's conclusions on spontaneous generation with swan flasks would have changed if he worked with and maintained the flasks in a sterile laminar flow hood.
A) Sterilization of the swan flask solutions would not have been necessary to reject spontaneous generation. If he did sterilize the flasks, the spontaneous generation hypothesis would have been supported.
B) His incubation times would not have been sufficient to refute spontaneous generation.
C) Pasteur's flasks never would have putrefied, and the experiment would not have refuted spontaneous generation.
D) Viruses would have still been present, and his conclusion would have been unchanged.

Chapter Section: 1.9

20) A pure culture
A) is sterile.
B) is a population of identical cells.
C) is made of a clearly defined chemical medium.
D) contains one microbial cell.

Chapter Section: 1.9
21) Martinus Beijerinck was the first to isolate
A) green algae.
B) certain nitrogen-fixing root nodule bacteria.
C) certain sulfate-reducing bacteria.
D) green algae, certain nitrogen-fixing root nodule bacteria, and certain sulfate-reducing bacteria.

1

22) Chemolithotrophy involves
A) oxidation of organic compounds.
B) oxidation of inorganic compounds.
C) reduction of organic compounds.
D) metabolic autotrophy.

1

23) Developments in the fields of immunology and medical microbiology were practical extensions of the work of
A) Sergei Winogradsky.
B) Antoni van Leeuwenhoek.
C) Joseph Lister.
D) Robert Koch.

0

24) Microbial control in wastewaters would most logically be a part of
A) microbial genetics.
B) aquatic microbiology.
C) medical microbiology.
D) bacterial energetics.

25) Robert Koch contributed to the field of microbiology by being the first person to
A) develop the tuberculin test only.
B) formulate four postulates for definitively linking a specific microorganism to a specific disease only.
C) use agar as a solidifying agent in growth media only.
D) develop the tuberculin test, formulate four postulates for definitively linking a specific microorganism to a specific disease, and use agar as a solidifying agent in growth media.

Chapter Section: 1.9
26) *Mycobacterium tuberculosis* is very difficult to stain because of the
A) presence of ribosomes in the cytoplasm.
B) location of the DNA within the cell.
C) large amounts of a waxlike lipids present in its cell wall.
D) lack of a cell wall.

0

27) Louis Pasteur's most famous success was his work on
A) *Mycobacterium tuberculosis*.
B) the rabies vaccine.
C) optical isomers.
D) cultivation of *coli*.

Chapter Section: 1.9

28) Microorganisms play key roles in the cycling of important nutrients in plant nutrition, particularly those of
A) carbon only.
B) nitrogen only.
C) sulfur only.
D) carbon, nitrogen, and sulfur.

29) Microbial ecology is the study of
A) microbial processes in the rhizosphere that benefit plant growth.
B) the diversity and activities of microorganisms.
C) the grouping and classifying of microorganisms.
D) microorganisms in their natural environments.

30) The structure that confers structural strength on the cell is known as the
A) cytoplasmic membrane.
B) cell wall.
C) ribosome.
D) cytoplasm.

31) A microbial cell's membrane is considered_____, because its internal constituents are maintained within the cell. However, it also imports and exports other molecules in response to its environment.
A) differential
B) microselective
C) rigid
D) semipermeable

32) Some microorganisms can undergo_____in which various cell types can become specialized and arise from one parent cell type.
A) differentiation
B) genetic exchange
C) maturation
D) mutagensis

33) Cyanobacteria and purple sulfur bacteria both obtain energy from light. However, only the_____are capable of releasing _____.
A) cyanobacteria / organic compounds
B) cyanobacteria / oxygen
C) purple bacteria / organic compounds
D) purple bacteria / oxygen

34) The process whereby microorganisms are used to help clean up pollution created by human activities is known as
A) bioaugmentation.
B) biodegradation.
C) bioengineering.
D) bioremediation.

35) Robert Koch received the 1905 Nobel Prize in Physiology or Medicine for
A) developing a smallpox vaccination.
B) identifying *Mycobacterium tuberculosis* as the causative agent of tuberculosis.
C) making an effective rabies vaccine.
D) developing a smallpox vaccination, identifying *Mycobacterium tuberculosis* as the causative agent of tuberculosis, and making an effective rabies vaccine.

0

36) *Bacillus anthracis* deficient in its ability to differentiate would not be able to
A) chemotax towards growth substrates.
B) create vesicles.
C) form endospores.
D) grow without additional supplemented nutrients.

0

37) Microbial biochemistry most specifically involves the discovery of microbial_____and the_____they perform.
A) organelles / diffusion
B) enzymes / organelles
C) reactions / enzymes
D) biomolecules / functions

38) Microbial cells first evolved on Earth approximately _____ billion years ago.
A) 1.6 to 1.8
B) 3.8 to 4.3
C) 5.4 to 5.6
D) 7.0 to 7.2

39) The disease anthrax is caused by the pathogenic bacterium _____, which produces heat-resistant structures known as _____.
A) *Azotobacter chroococcum* / endospores
B) *Azotobacter chroococcum* / plasmids
C) *Bacillus anthracis* / endospores