

Biology: Life on Earth with Physiology, 9e (Audesirk)
Chapter 1 An Introduction to Life on Earth

1.1 Multiple-Choice Questions

1) All of the following are scientific principles that underlie scientific inquiry EXCEPT:

- A) natural causality.
- B) uniformity in space and time.
- C) natural selection.
- D) common perception.

Answer: C

Diff: 1

Section: 1.1

Skill: Knowledge/Comprehension

2) An example of natural causality is:

- A) that mice arise from discarded garbage.
- B) that maggots appear spontaneously on rotting meat.
- C) that epilepsy is a disease of the brain.
- D) the existence of elves.

Answer: C

Diff: 1

Section: 1.1

Skill: Application/Analysis

3) Science cannot answer certain moral questions because:

- A) scientists are not able to study human behavior.
- B) scientists cannot express moral values.
- C) moral values differ among individuals.
- D) morality requires deductive reasoning.
- E) there aren't enough variables.

Answer: C

Diff: 2

Section: 1.1

Skill: Application/Analysis

4) Which of the following is FALSE about scientific theories?

- A) They have been thoroughly tested.
- B) They are developed by inductive reasoning.
- C) They are used to support observations using deductive reasoning.
- D) They can be either supported or modified by new observations.
- E) They are firmly established and cannot be refuted.

Answer: E

Diff: 1

Section: 1.1

Skill: Knowledge/Comprehension

5) Which of these is NOT scientific?

- A) A study determines differences in the species composition in two parks.
- B) People are immunized with different vaccines to determine their relative effectiveness against the flu virus.
- C) NASA sends tadpoles up in the space shuttle to see how gravity affects their development.
- D) Consumers are asked which tomato variety produces the best-tasting spaghetti sauce.
- E) A company uses different advertising methods for a product to determine which one produces the most sales.

Answer: D

Diff: 3

Section: 1.1

Skill: Application/Analysis

6) The scientific method includes all of the following EXCEPT:

- A) experimentation.
- B) a testable theory.
- C) an observation.
- D) a hypothesis
- E) conclusions.

Answer: B

Diff: 2

Section: 1.1

Skill: Knowledge/Comprehension

7) We use the scientific method every day. Imagine that your car doesn't start one morning before school. Which of these is a reasonable *hypothesis* regarding the problem?

- A) I'm going to be late.
- B) I'm out of gas.
- C) I should check whether the lights were left on and drained the battery.
- D) I should change the battery or the starter.
- E) I should add a quart of oil.

Answer: B

Diff: 2

Section: 1.1

Skill: Application/Analysis

8) A scientific theory:

- A) is a general explanation for natural phenomena.
- B) is an educated guess.
- C) is less reliable than a hypothesis.
- D) will never be changed.

Answer: A

Diff: 2

Section: 1.1

Skill: Knowledge/Comprehension

9) A scientific explanation that is tentative and requires more investigation is called a(n):

- A) theory.
- B) fact.
- C) control.
- D) hypothesis.
- E) observation.

Answer: D

Diff: 2

Section: 1.1

Skill: Knowledge/Comprehension

10) A carefully formulated scientific explanation that is based on extensive observations and is in accord with scientific principles is called a:

- A) hypothesis.
- B) theory.
- C) fact.
- D) control.
- E) postulate.

Answer: B

Diff: 2

Section: 1.1

Skill: Knowledge/Comprehension

11) All the following are features of the scientific method EXCEPT:

- A) hypothesis formulation.
- B) observation and experimentation.
- C) supernatural causes.
- D) inductive and deductive reasoning.
- E) formulation of conclusions.

Answer: C

Diff: 2

Section: 1.1

Skill: Knowledge/Comprehension

12) Suppose you are testing a treatment for AIDS patients and find that 75% respond very well whereas 25% show no improvement or decline in health. You should:

- A) conclude that you have proven the effectiveness of the drug.
- B) conclude that only 75% of AIDS patients should be treated.
- C) review the results, modify the drug or the dosage, and repeat the experiment.
- D) discontinue experimentation with this treatment because 25% of patients did not improve.
- E) begin work on developing a new drug.

Answer: C

Diff: 3

Section: 1.1

Skill: Application/Analysis

13) Alexander Fleming observed a colony of mold that inhibited the growth of nearby bacteria. Which of the following was his hypothesis?

- A) The mold used all of the nutrients so that the bacteria couldn't grow.
- B) The mold produced a substance that killed nearby bacteria.
- C) The bacteria changed their DNA when growing near the mold.
- D) The mold was dead.

Answer: B

Diff: 2

Section: 1.1

Skill: Synthesis/Evaluation

14) Imagine that 1 milliliter of an experimental drug diluted in a saline solution is injected into 20 pregnant mice to determine possible side effects. Which of the following is a suitable control for this experiment?

- A) 20 male mice injected with 1 milliliter of saline
- B) 20 male mice injected with 1 milliliter of the drug
- C) 20 pregnant mice injected with 2 milliliters of the drug
- D) 20 nonpregnant mice injected with 1 milliliter of the drug
- E) 20 pregnant mice injected with 1 milliliter of saline

Answer: E

Diff: 2

Section: 1.1

Skill: Application/Analysis

15) Which of the following statements is a hypothesis rather than a theory?

- A) Matter is composed of atoms.
- B) Living things are made of cells.
- C) Modern organisms descended from preexisting life-forms.
- D) Female birds prefer to mate with male birds that have longer tails.

Answer: D

Diff: 2

Section: 1.1

Skill: Application/Analysis

16) Which of the following is true regarding faith-based assertions and scientific theories?

- A) Both faith-based assertions and scientific theories can be proven.
- B) Any and all faith-based assertions can be disproven, but scientific theories cannot.
- C) Any and all scientific theories can be disproven, but faith-based assertions cannot.
- D) Scientific theories are not modifiable, but faith-based assertions are.
- E) Faith-based assertions can become scientific theories.

Answer: C

Diff: 1

Section: 1.1

Skill: Knowledge/Comprehension

17) Which is the correct sequence of increasing organization?

- A) molecule, cell, organelle, organ
- B) organelle, tissue, cell, organ
- C) atom, molecule, tissue, cell
- D) organ, tissue, cell, molecule
- E) cell, tissue, organ, organ system

Answer: E

Diff: 1

Section: 1.1

Skill: Knowledge/Comprehension

18) Which of the following levels of organization is the most inclusive (that is, includes the most life-forms)?

- A) organ system
- B) population
- C) biosphere
- D) community
- E) ecosystem

Answer: C

Diff: 1

Section: 1.1

Skill: Knowledge/Comprehension

19) The smallest units that still retain the characteristics of an element are called:

- A) molecules.
- B) cells.
- C) atoms.
- D) tissues.
- E) organic molecules.

Answer: C

Diff: 1

Section: 1.1

Skill: Knowledge/Comprehension

20) Which of the following is an example of deductive reasoning?

- A) All objects on Earth will fall down when dropped, and none will "fall up."
- B) Living objects are composed of cells.
- C) Atoms make up molecules, which make up cells, which make up tissues.
- D) If a new species of bacteria is discovered, it will be made up of organic molecules.

Answer: D

Diff: 1

Section: 1.1

Skill: Application/Analysis

21) The experiments of Francesco Redi:

- A) disproved that maggots and flies were related.
- B) disproved the idea of spontaneous generation.
- C) disproved the scientific method.
- D) used the scientific method to prove the idea of spontaneous generation.
- E) determined that flies come from maggots.

Answer: B

Diff: 2

Section: 1.1

Skill: Knowledge/Comprehension

22) Francesco Redi designed an experiment to test the notion of spontaneous generation. He left the first jar of meat open to the air and covered the second jar. The first jar would be called the _____ jar.

- A) experimental
- B) control
- C) conclusive
- D) hypothetical

Answer: B

Diff: 2

Section: 1.1

Skill: Application/Analysis

23) To test the effect of vitamin D on growth, two groups of rats were raised under identical conditions and fed the same diet. One of the groups received daily injections of vitamin D. The other group received injections of saline, which did not contain vitamin D. All the rats were weighed weekly for 2 months. In this experiment, the control was the:

- A) group receiving vitamin D.
- B) group receiving saline.
- C) average weight gain of the rats.
- D) 2-month period of time.

Answer: B

Diff: 2

Section: 1.1

Skill: Application/Analysis

24) Evolution is sometimes described as the change from preexisting life-forms to modern-day organisms. What actually changes, in every case of evolution, is the:

- A) rate of reproduction.
- B) ability of organisms to respond to external stimuli.
- C) energy and nutritional demands of the organism.
- D) genetic makeup of the species.
- E) species' physical appearance

Answer: D

Diff: 2

Section: 1.2

Skill: Synthesis/Evaluation

25) All of the following are important to the theory of evolution EXCEPT:

- A) environmental change.
- B) variation in traits within a population.
- C) mutations.
- D) inheritance of traits.
- E) changes in individuals within their lifetimes.

Answer: E

Diff: 2

Section: 1.2

Skill: Knowledge/Comprehension

26) Which is NOT an example of evolution?

- A) the development of antibiotic-resistant bacteria
- B) flightless birds living on islands without predators
- C) annual changes in the flu virus
- D) a dog learning how to open the cabinet where its food is kept
- E) the 2- to 3-year effectiveness of most commercial pesticides

Answer: D

Diff: 3

Section: 1.2

Skill: Application/Analysis

27) Mutation is essential for:

- A) survival.
- B) natural selection.
- C) sexual reproduction.
- D) growth and development.
- E) sperm and egg formation.

Answer: B

Diff: 2

Section: 1.2

Skill: Application/Analysis

28) A mutation is a:

- A) physical deformity.
- B) change in the DNA sequence.
- C) dose of radiation.
- D) defective egg or sperm cell.

Answer: B

Diff: 1

Section: 1.2

Skill: Knowledge/Comprehension

29) In a word, "evolution" means:

- A) selection.
- B) improvement.
- C) nature.
- D) change.

Answer: D

Diff: 1

Section: 1.2

Skill: Application/Analysis

30) The concept of evolution is based on:

- A) any type of genetic variation within a population.
- B) inheritance of variations by offspring of parents with the variations.
- C) survival and successful reproduction in organisms with favorable variations.
- D) all genetic variation in a population being equally successful in the same environment.

Answer: C

Diff: 2

Section: 1.2

Skill: Knowledge/Comprehension

31) All of the following are examples of adaptations EXCEPT:

- A) mice learning a maze to get food.
- B) larger teeth in beavers for gnawing wood.
- C) different beak shapes for birds that eat seeds or insects.
- D) insects that resemble twigs.
- E) flower coloration that attracts pollinators.

Answer: A

Diff: 2

Section: 1.2

Skill: Application/Analysis

32) Suppose an organism has an enzyme that repairs DNA errors. The result is a decrease in mutations. This trait would definitely influence the organism's ability to:

- A) obtain energy.
- B) evolve.
- C) move.
- D) maintain homeostasis.

Answer: B

Diff: 3

Section: 1.2

Skill: Application/Analysis

33) The variation among individuals, on which natural selection acts, is:

- A) physical training and exercise.
- B) genetic differences.
- C) random occurrences in the lifetimes of individuals.
- D) nutritional differences.

Answer: B

Diff: 1

Section: 1.2

Skill: Application/Analysis

34) Chromosomes are made of:

- A) cells.
- B) proteins.
- C) organelles.
- D) deoxyribonucleic acid.

Answer: D

Diff: 1

Section: 1.2

Skill: Knowledge/Comprehension

35) A change in the genetic makeup of a species over time is called:

- A) adaptation.
- B) evolution.
- C) mutation.
- D) natural causality.

Answer: B

Diff: 2

Section: 1.2

Skill: Knowledge/Comprehension

36) Adaptations include all of the following EXCEPT:

- A) innate migratory behavior of young birds born in the Arctic.
- B) reduced heart rate and oxygen consumption in seals that dive deep for long periods of time.
- C) larger body size in male gorillas, which fight over females.
- D) enlarged leg muscles in horses, in response to pulling heavy wagon loads.

Answer: D

Diff: 1

Section: 1.2

Skill: Synthesis/Evaluation

37) Dinosaurs are not alive today because they:

- A) could not evolve in response to a changing environment.
- B) evolved adaptations that were detrimental in their constant, unchanging environment.
- C) did not evolve fast enough to keep up with rapid environmental change.
- D) did not possess the genetic material that beneficial mutations act on.

Answer: C

Diff: 1

Section: 1.2

Skill: Application/Analysis

38) Which of the following is/are characteristic of living organisms?

- A) ability to produce energy
- B) eat other organisms
- C) maintenance of homeostasis
- D) have a nucleus
- E) have membrane bound organelles

Answer: C

Diff: 2

Section: 1.3

Skill: Knowledge/Comprehension

39) All of the following are true of all living organisms EXCEPT that they:

- A) are made of cells.
- B) can grow.
- C) can reproduce themselves.
- D) respond to stimuli.
- E) possess either DNA or RNA.

Answer: E

Diff: 2

Section: 1.3

Skill: Knowledge/Comprehension

40) After you drink a glass of acidic lemonade, your body's pH does not change. This is an example of how humans and other organisms:

- A) maintain homeostasis.
- B) maintain cellular organization.
- C) evolve in response to the environment.
- D) are immune to weak acids.

Answer: A

Diff: 2

Section: 1.3

Skill: Application/Analysis

41) Humans born without sweat glands usually do not survive. Why not?

- A) Sweating is an important mechanism for maintaining temperature homeostasis.
- B) Sweat glands create openings in the skin where gas exchange occurs.
- C) Sweating is an important way of ridding the body of excess water.
- D) Sweating is important for eliminating impurities from the body.

Answer: A

Diff: 2

Section: 1.3

Skill: Application/Analysis

42) An organism's ability to maintain its internal stability when the external environment changes is called:

- A) natural selection.
- B) mutation.
- C) responsiveness.
- D) metabolism.
- E) homeostasis.

Answer: E

Diff: 1

Section: 1.3

Skill: Knowledge/Comprehension

43) You observe a plant on your windowsill that is growing at an angle toward the outside. This is an example of a living thing:

- A) maintaining homeostasis.
- B) responding to stimuli.
- C) reproducing.
- D) evolving.

Answer: B

Diff: 1

Section: 1.3

Skill: Application/Analysis

44) Using its antennae, the male moth finds female moths by following a trail of airborne chemicals, called pheromones, upwind from the female producing them. This is an example of how living things:

- A) acquire nutrients.
- B) grow.
- C) reproduce.
- D) respond to stimuli.
- E) maintain homeostasis.

Answer: D

Diff: 2

Section: 1.3

Skill: Application/Analysis

45) A typical animal is characterized by all of the following EXCEPT:

- A) being composed of prokaryotic cells.
- B) ingestion of organic matter to acquire nutrients.
- C) the potential to grow and reproduce.
- D) the innate ability to maintain homeostasis.

Answer: A

Diff: 2

Section: 1.4

Skill: Application/Analysis

46) Why do heterotrophs require "food" for survival?

- A) Food is an alternative source of energy for heterotrophs when sunlight is unavailable.
- B) Food provides the organic chemicals needed by heterotrophs.
- C) Food provides at least half of the water required by heterotrophs.
- D) Heterotrophs cannot photosynthesize without the chemicals provided by food.

Answer: B

Diff: 2

Section: 1.4

Skill: Synthesis/Evaluation

47) The main difference between an autotroph and a heterotroph is:

- A) how they reproduce.
- B) how they respond to stimuli.
- C) their ability to move.
- D) how they obtain energy.

Answer: D

Diff: 1

Section: 1.4

Skill: Knowledge/Comprehension

For the following question(s), choose the characteristic of a living organism that best corresponds to each statement. Selections may be used once, more than once, or not at all.

- A. Growth
- B. Reproduction
- C. Homeostasis
- D. Evolution
- E. Response to stimuli

48) A sunflower follows the sun as it move across the sky during the day.

Answer: E

Diff: 2

Section: 1.3

Skill: Application/Analysis

49) A puppy is born weighing 5 pounds and eventually becomes a 75-pound golden retriever.

Answer: A

Diff: 2

Section: 1.3

Skill: Application/Analysis

50) At the beginning of the week a plant is 3 inches tall, and at the end of the week it is 4 inches tall.

Answer: A

Diff: 2

Section: 1.3

Skill: Application/Analysis

51) A paramecium moves from direct light toward the dark.

Answer: E

Diff: 2

Section: 1.3

Skill: Application/Analysis

52) A bacterium divides into two bacteria that are identical to, but smaller than, the original bacterium.

Answer: B

Diff: 2

Section: 1.3

Skill: Application/Analysis

53) Over time the average neck length of giraffes has increased. Only those giraffes with longer necks survived by eating the leaves high up on the trees, and they were able to reproduce and pass those long neck genes on to the next generation.

Answer: D

Diff: 2

Section: 1.3

Skill: Application/Analysis

54) Of the following levels of organization, Archaea have:

A) atoms only.

B) molecules only.

C) organs only.

D) atoms and molecules.

E) atoms, molecules, and organs.

Answer: D

Diff: 2

Section: 1.4

Skill: Application/Analysis

55) In evolutionary terms, which of the following cells is considered to be the most primitive?

- A) eukaryote
- B) prokaryote
- C) autotroph
- D) heterotroph

Answer: B

Diff: 2

Section: 1.4

Skill: Knowledge/Comprehension

56) In which kingdom does a multicellular, eukaryotic, photosynthetic organism belong?

- A) Protists
- B) Fungi
- C) Plantae
- D) Animalia

Answer: C

Diff: 2

Section: 1.4

Skill: Knowledge/Comprehension

57) A basic difference between a prokaryotic cell and a eukaryotic cell is that the prokaryotic cell:

- A) possesses membrane-bound organelles.
- B) lacks DNA.
- C) lacks a nucleus.
- D) is considerably larger.
- E) is structurally more complex.

Answer: C

Diff: 2

Section: 1.4

Skill: Knowledge/Comprehension

58) The Bacteria and Eukarya domains are distinguished by:

- A) all members of Bacteria being single-celled and all members of Eukarya being multicellular.
- B) all Bacteria getting nutrients via absorption and all Eukarya by photosynthesis.
- C) the fact that only Eukarya have the ability to grow and reproduce.
- D) in Bacteria, the absence or presence of organelles, such as a nucleus.

Answer: D

Diff: 2

Section: 1.4

Skill: Knowledge/Comprehension

59) Which group has prokaryotic individuals?

- A) Protist Kingdoms
- B) Kingdom Fungi
- C) Kingdom Plantae
- D) Kingdom Animalia
- E) Domain Archaea

Answer: E

Diff: 2

Section: 1.4

Skill: Knowledge/Comprehension

60) Which kingdom possesses unicellular animal-like species and unicellular plantlike species?

- A) Fungi
- B) Animalia
- C) Protist Kingdoms
- D) Plantae

Answer: C

Diff: 2

Section: 1.4

Skill: Knowledge/Comprehension

61) A cell that lacks organelles is a(n):

- A) member of the Kingdom Plantae.
- B) animal cell.
- C) prokaryotic cell.
- D) eukaryotic cell.

Answer: C

Diff: 2

Section: 1.4

Skill: Knowledge/Comprehension

1.2 True/False Questions

1) Natural laws are the same regardless of when or where one is. True or False?

Answer: TRUE

Diff: 1

Section: 1.1

Skill: Knowledge/Comprehension

2) Scientific experimentation generally leads to more questions. True or False?

Answer: TRUE

Diff: 1

Section: 1.1

Skill: Knowledge/Comprehension

3) A good experiment should include as many variables as possible at the same time. True or False?

Answer: FALSE

Diff: 2

Section: 1.1

Skill: Application/Analysis

4) A hypothesis is always an "If...then" statement. True or False?

Answer: FALSE

Diff: 2

Section: 1.1

Skill: Application/Analysis

5) Variation among organisms is due to adaptation. True or False?

Answer: FALSE

Diff: 2

Section: 1.2

Skill: Knowledge/Comprehension

6) Adaptations aid in the survival and reproduction of an organism in a particular environment. True or False?

Answer: TRUE

Diff: 1

Section: 1.2

Skill: Knowledge/Comprehension

7) The energy that sustains nearly all life ultimately comes from sunlight. True or False?

Answer: TRUE

Diff: 1

Section: 1.3

Skill: Knowledge/Comprehension

8) Photosynthetic bacteria are examples of autotrophs. True or False?

Answer: TRUE

Diff: 2

Section: 1.4

Skill: Knowledge/Comprehension

9) Prokaryotic cells are distinguishable from eukaryotic cells by having a nucleus. True or False?

Answer: FALSE

Diff: 1

Section: 1.4

Skill: Knowledge/Comprehension

10) Biodiversity is the total number of organisms in an ecosystem. True or False?

Answer: FALSE

Diff: 1

Section: 1.4

Skill: Knowledge/Comprehension

1.3 Fill-in-the-Blank Questions

1) All scientific study begins with observations and the formation of testable _____.

Answer: hypotheses

Diff: 2

Section: 1.1

Skill: Application/Analysis

2) The collective group of all individuals of similar, interbreeding organisms that exist in the world is defined as a(n) _____.

Answer: species

Diff: 1

Section: 1.1

Skill: Knowledge/Comprehension

3) A subgroup of similar, interbreeding individuals that exist in a given geographic area is a(n) _____.

Answer: population

Diff: 1

Section: 1.1

Skill: Knowledge/Comprehension

4) The smallest unit of life is the _____.

Answer: cell

Diff: 1

Section: 1.1

Skill: Knowledge/Comprehension

5) Errors or changes in the DNA "blueprint" of an organism are called _____.

Answer: mutations

Diff: 2

Section: 1.2

Skill: Knowledge/Comprehension

6) The three natural processes that underlie evolution are _____.

Answer: genetic variation, inheritance, and natural selection

Diff: 1

Section: 1.2

Skill: Knowledge/Comprehension

7) Single-celled organisms that lack a nucleus belong to the domains _____ and _____.

Answer: Archaea; Bacteria

Diff: 2

Section: 1.4

Skill: Knowledge/Comprehension

8) Cells that contain a nucleus are _____, and cells without a nucleus are _____.

Answer: eukaryotes; prokaryotes

Diff: 2

Section: 1.4

Skill: Knowledge/Comprehension

9) Photosynthetic plants are considered "self-feeders," or _____, and animals that cannot photosynthesize are "other feeders," or _____.

Answer: autotrophs; heterotrophs

Diff: 2

Section: 1.4

Skill: Knowledge/Comprehension

1.4 Short Answer Questions

1) Consider the observation that people taking Drug X for headaches also seem to have low blood pressure. Design a simple experiment based on this observation, and include a hypothesis statement and your actual experimental design for the study.

Answer: Answers should include a controlled variable, repetition, and a hypothesis statement.

Diff: 3

Section: 1.1

Skill: Application/Analysis

2) What molecule stores all the hereditary information of an organism?

Answer: DNA

Diff: 1

Section: 1.2

Skill: Knowledge/Comprehension

3) Evolution is based on adaptations that aid in the survival and reproduction of a species. List three different adaptations.

Answer: There are many correct answers. Some acceptable answers are: roots of plants that help land plants gain water, fleshy fish fins that allow for movement across a surface, and wings of eagles that aid in hunting.

Diff: 3

Section: 1.2

Skill: Application/Analysis

4) Imagine that in 2020 you are the top biologist at a research station studying biodiversity in Costa Rica. A young scientist brings you a sample from a previously unexplored site. She asks you to look at the sample and determine whether it indeed contains microscopic, living organisms. As you begin your investigations, you must first decide what characteristics distinguish life from nonlife. How would you differentiate a living organism from nonliving matter (including viruses and prions)?

Answer: Answers should describe several characteristics of a living organism.

Diff: 2

Section: 1.3

Skill: Application/Analysis

5) Define biodiversity.

Answer: The number of species in a given geographic region.

Diff: 1

Section: 1.3

Skill: Knowledge/Comprehension

6) List four characteristics of living things, and give an example to illustrate each.

Answer: There are many correct answers. Some acceptable answers are: Living things are both complex and organized (cells have organelles with specific organization); Living things respond to stimuli (plants grow toward light); Living things maintain homeostasis (the human body maintains its body temperature); Living things acquire and use energy (plants use photosynthesis); Living things grow (animals grow during their lifetime); Living things reproduce (organisms produce offspring); Living things have the capacity to evolve (bacteria have evolved antibiotic resistance).

Diff: 2

Section: 1.3

Skill: Application/Analysis

7) Describe at least two cellular-level differences between a photosynthetic prokaryote and a plant.

Answer: The prokaryote does not have any membrane-bound organelles (including a nucleus), but the plant (being a eukaryote) does. The prokaryote is unicellular, whereas the plant is multicellular.

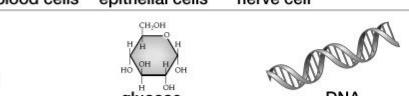
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Section: 1.4

Skill: Application/Analysis

1.5 Art Questions

1) Which of the following is NOT a part of the community shown in this figure?

Biosphere	That part of Earth inhabited by living organisms; includes both the living and nonliving components	 Earth's surface
Ecosystem	A community together with its nonliving surroundings	 snake, antelope, hawk, bushes, grass, rocks, stream
Community	Two or more populations of different species living and interacting in the same area	 snake, antelope, hawk, bushes, grass
Species	Very similar, potentially interbreeding organisms	 herd of pronghorn antelope
Population	Members of one species inhabiting the same area	 herd of pronghorn antelope
Multicellular organism	An individual living thing composed of many cells	 pronghorn antelope
Organ system	Two or more organs working together in the execution of a specific bodily function	 the digestive system
Organ	A structure usually composed of several tissue types that form a functional unit	 the stomach
Tissue	A group of similar cells that perform a specific function	 epithelial tissue
Cell	The smallest unit of life	 red blood cells epithelial cells nerve cell
Molecule	A combination of atoms	 water glucose DNA
Atom	The smallest particle of an element that retains the properties of that element	 hydrogen carbon nitrogen oxygen

A) pronghorn antelope

B) stream

C) snake

D) grass

E) hawk

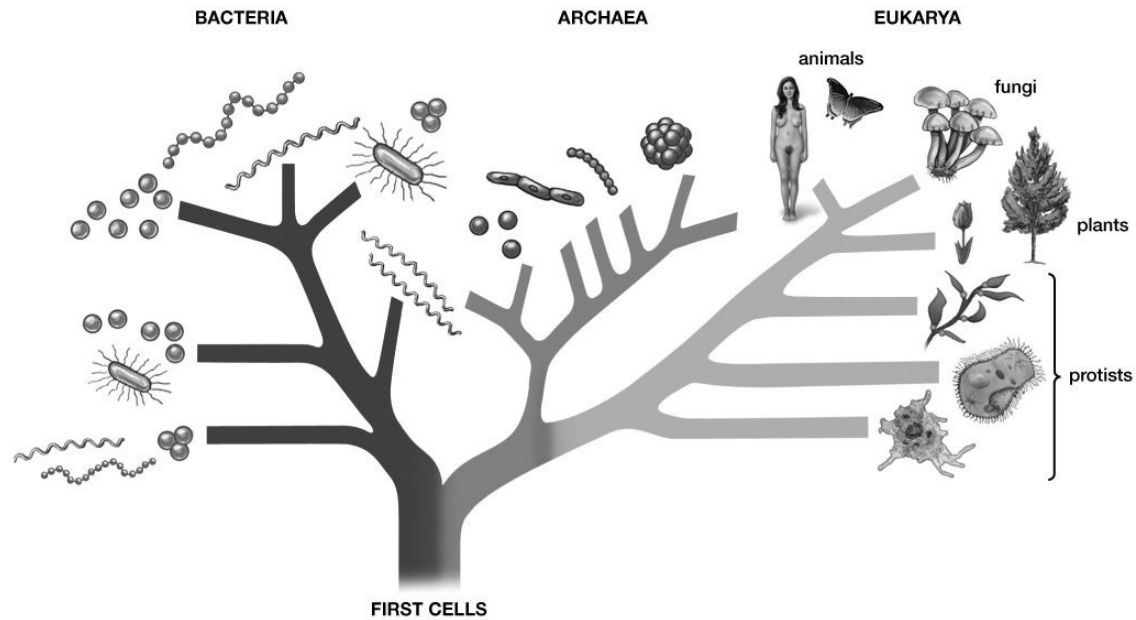
Answer: B

Diff: 1

Section: 1.1

Skill: Application/Analysis

2) The "first cells" shown at the bottom of this illustration most likely refer to:



A) prokaryotes.

B) animals.

C) plants.

D) fungi.

E) protists.

Answer: A

Diff: 1

Section: 1.1

Skill: Application/Analysis

1.6 Scenario Questions

1) A 57-year-old woman was admitted to a hospital with an infected toe, and the infection was spreading rapidly. The damage was being caused by an unknown microorganism that could not be cultured in the lab. Doctors observed that antibiotics, which kill only prokaryotes, were ineffective. They suspected that the microbe was a fungus, so they tried the drug Amphotericin, which targets the ergosterols in fungal cells. Because animal cells contain cholesterol, not ergosterols, they are unaffected by the drug. Shortly after receiving Amphotericin, the patient improved, her infection ceased, and she was released from the hospital.

In this scenario, what was the hypothesis?

- A) The infection will spread rapidly.
- B) Antibiotics will not kill the microbe because it is a fungal species.
- C) If the infection is caused by an animal, then Amphotericin will cure the patient.
- D) A microbe that lacks cholesterol is causing the infection.
- E) Why didn't the antibiotics kill the microbe that caused the infection?

Answer: B

Diff: 3

Section: 1.1

Skill: Application/Analysis

2) Suppose that a meteorite crashes into Earth and a sample of it is taken to a local research lab for analysis. Embedded several inches within the rocky structure, a microscopic cluster of dormant, spore-like structures is found. The scientists culture some of this material in a standard microbiological nutrient broth, and they are surprised to find many single-celled "organisms" moving around, growing, and reproducing in the broth. The "organisms" behave the same in both daylight and dark conditions, do not require oxygen, and persist under a wide range of temperatures and pH levels. They stop moving, growing, and reproducing, however, when fewer nutrients are available in the medium.

In this scenario, the "organisms" most closely resemble a(n):

- A) autotrophic species of Eukarya.
- B) photosynthetic species of Bacteria.
- C) heterotrophic species of Archaea.
- D) nonliving virus.
- E) heterotrophic species of Eukarya.

Answer: C

Diff: 2

Section: 1.4

Skill: Application/Analysis