

Biology, 13e (Mader)
Chapter 1 A View of Life

1) A university biology department wishes to hire a scientist to work on the relationships among the wolves, moose, trees, and physical features on an island. If you were charged with writing the job description, you should title the position

- A) population geneticist.
- B) molecular biologist.
- C) ecosystem ecologist.
- D) organismal physiologist.
- E) island zoologist.

Answer: C

Explanation: An ecosystem ecologist studies the interactions and relationships that occur among groups of species and their physical environment.

Section: 01.01

Topic: Ecology

Bloom's: 1. Remember

Learning Outcome: 01.01.01 Distinguish among the levels of biological organization.

Accessibility: Keyboard Navigation

2) Which of the following terms best describes a conceptual scheme in science that is strongly supported, has not yet been found incorrect, and is based on the results of many observations?

- A) a scientific model
- B) an experiment
- C) descriptive research
- D) a scientific theory or principle
- E) experimental results

Answer: D

Explanation: A scientific theory or principle is a conceptual scheme in science that is strongly supported, has not yet been found incorrect, and is based on the results of many observations.

Section: 01.03

Topic: Process of Science

Bloom's: 2. Understand

Learning Outcome: 01.03.02 Distinguish between a theory and a hypothesis.

Accessibility: Keyboard Navigation

3) Choose the correct order of classification from most inclusive to most exclusive.

- A) Domain-Kingdom-Phylum-Class-Order-Family-Genus-Species
- B) Kingdom-Domain-Class-Phylum-Order-Family-Genus-Species
- C) Kingdom-Domain-Class-Phylum-Order-Genus-Species-Family
- D) Kingdom-Class-Phylum-Domain-Genus-Order-Family-Species

Answer: A

Explanation: The correct order of classification from most inclusive to most exclusive is: Domain-Kingdom-Phylum-Class-Order-Family-Genus-Species.

Section: 01.02

Topic: Evolution

Bloom's: 1. Remember

Learning Outcome: 01.02.02 Distinguish among the three domains of life.

Accessibility: Keyboard Navigation

4) Due to human activities, more carbon dioxide is being released into the atmosphere than is being removed. What happens to this extra carbon dioxide? Select all that apply.

- A) Some of the carbon dioxide stays in the atmosphere which causes surface temperature to rise.
- B) Approximately half of the extraneous carbon dioxide is being expelled into deep space.
- C) Much of the extraneous carbon dioxide is dissolved into the oceans where it is causing acidification.
- D) Trees and other plants have increased their rates of photosynthesis and are effectively removing most of the extraneous carbon dioxide.

Answer: A, C

The additional carbon dioxide that is released into the atmosphere either stays in the atmosphere and acts as a greenhouse gas or it is dissolved into the oceans where it causes acidification and coral bleaching.

Section: 01.04

Topic: Challenges Facing Science

Bloom's: 1. Remember

Learning Outcome: 01.04.02 Summarize the major challenges facing science and society.

Accessibility: Keyboard Navigation

5) Which listing correctly indicates a sequence of increasing biological organization?

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

Answer: D

Explanation: The correct sequence of increasing biological organization is: atom, molecule, organelle, cell.

Section: 01.01

Topic: General

Bloom's: 2. Understand

Learning Outcome: 01.01.01 Distinguish among the levels of biological organization.

Accessibility: Keyboard Navigation

6) The classification system most commonly used by biologists today contains five domains.

Answer: FALSE

Explanation: The classification most commonly used by biologists today contains three domains: Bacteria, Archaea, Eukarya.

Section: 01.02

Topic: Evolution

Bloom's: 1. Remember

Learning Outcome: 01.02.02 Distinguish among the three domains of life.

Accessibility: Keyboard Navigation

7) Single-celled prokaryotes

- A) lack a membrane-bounded nucleus.
- B) are classified in the domains Bacteria and Archaea.
- C) are found in almost all habitats.
- D) All of the choices are correct.

Answer: D

Explanation: Single-celled prokaryotes lack a membrane-bounded nucleus, are classified in the domains Bacteria and Archaea, and are found in almost all habitats. All of the choices are correct.

Section: 01.02

Topic: Evolution

Bloom's: 2. Understand

Learning Outcome: 01.02.02 Distinguish among the three domains of life.

Accessibility: Keyboard Navigation

Match the items below with their descriptions:

- A) multicellular organisms that ingest their food
- B) multicellular organisms comprised of filaments that obtain their food by absorption
- C) multicellular, photosynthetic organisms

8) Plantae

Section: 01.02

Topic: Evolution

Bloom's: 1. Remember

Learning Outcome: 01.02.02 Distinguish among the three domains of life.

Accessibility: Keyboard Navigation

9) Animalia

Section: 01.02

Topic: Evolution

Bloom's: 1. Remember

Learning Outcome: 01.02.02 Distinguish among the three domains of life.

Accessibility: Keyboard Navigation

10) Fungi

Section: 01.02

Topic: Evolution

Bloom's: 1. Remember

Learning Outcome: 01.02.02 Distinguish among the three domains of life.

Accessibility: Keyboard Navigation

Answers: 8) C 9) A 10) B

11) Climate change is primarily due to an imbalance in the chemical cycling of the element carbon.

Answer: TRUE

Explanation: Climate change is primarily due to an imbalance in the chemical cycling of the element carbon. Normally, carbon is cycled within an ecosystem. However, due to human activities, more carbon dioxide is being released into the atmosphere than is being removed.

Section: 01.04

Topic: Challenges Facing Science

Bloom's: 1. Remember

Learning Outcome: 01.04.02 Summarize the major challenges facing science and society.

Accessibility: Keyboard Navigation

Living organisms on Earth share many common characteristics. Which statements are TRUE and which are FALSE about nearly all living things?

12) All living organisms are made up of cells.

Answer: TRUE

Explanation: The cell theory states that living organisms are made of cells. This is a true statement.

Section: 01.01

Topic: General

Bloom's: 1. Remember

Learning Outcome: 01.01.02 Identify the basic characteristics of life.

Accessibility: Keyboard Navigation

13) Living things must have an outside source of nutrients and energy.

Answer: TRUE

Explanation: Living organisms cannot maintain their organization or carry on life's activities without an outside source of nutrients and energy.

Section: 01.01

Topic: General

Bloom's: 1. Remember

Learning Outcome: 01.01.02 Identify the basic characteristics of life.

Accessibility: Keyboard Navigation

14) In multicellular organisms, tissues are comprised of many different types of cells.

Answer: FALSE

Explanation: In multicellular organisms, tissues are comprised of similar cells.

Section: 01.01

Topic: General

Bloom's: 1. Remember

Learning Outcome: 01.01.01 Distinguish among the levels of biological organization.

Accessibility: Keyboard Navigation

15) Only multicellular organisms need to maintain homeostasis.

Answer: FALSE

Explanation: All living organisms must maintain homeostasis, which is a state of internal balance.

Section: 01.01

Topic: General

Bloom's: 1. Remember

Learning Outcome: 01.01.02 Identify the basic characteristics of life.

Accessibility: Keyboard Navigation

16) The ultimate source of energy for nearly all forms of life on Earth is water.

Answer: FALSE

Explanation: The ultimate source of energy for nearly all life on Earth is the sun. While water is crucial for living organisms, it is not the ultimate source of energy.

Section: 01.01

Topic: General

Bloom's: 1. Remember

Learning Outcome: 01.01.02 Identify the basic characteristics of life.

Accessibility: Keyboard Navigation

17) In the scientific method, what precedes the formation of the hypothesis?

A) a prediction

B) experimentation

C) analysis of results

D) observation

Answer: D

Explanation: A hypothesis is not a guess, it is a tentative explanation based on observation. Therefore, observation must precede the hypothesis. Once a hypothesis is made, it is tested by experimentation.

Section: 01.03

Topic: Process of Science

Bloom's: 1. Remember

Learning Outcome: 01.03.02 Distinguish between a theory and a hypothesis.

Accessibility: Keyboard Navigation

18) The control group in an experiment receives all the same treatments as the experimental group(s), except for the one variable being tested.

Answer: TRUE

Explanation: The control group in an experiment receives all the same treatments as the experimental group(s), except for the one variable being tested.

Section: 01.03

Topic: Process of Science

Bloom's: 2. Understand

Learning Outcome: 01.03.03 Analyze a scientific experiment and identify the hypothesis, experiment, control groups, and conclusions.

Accessibility: Keyboard Navigation

19) The selective agents for natural selection can be either abiotic or biotic.

Answer: TRUE

Explanation: Both abiotic agents (ex. temperature, precipitation) and biotic agents (ex. competition, predation) can act as selective agents.

Section: 01.02

Topic: Evolution

Bloom's: 2. Understand

Learning Outcome: 01.02.01 Explain the relationship between the process of natural selection and evolutionary change.

Accessibility: Keyboard Navigation

20) Living organisms are characterized by

A) adapting to the environment.

B) evolving over time.

C) displaying homeostatic controls.

D) All of the choices pertain to living organisms.

Answer: D

Explanation: Living organisms are characterized by adaptation to the environment, evolving over time, and displaying homeostatic controls. All of the choices are correct.

Section: 01.01

Topic: General

Bloom's: 1. Remember

Learning Outcome: 01.01.02 Identify the basic characteristics of life.

Accessibility: Keyboard Navigation

Living and nonliving entities share some characteristics. Which statements are TRUE and which are FALSE about the living and nonliving components of an ecosystem?

21) All living things and nonliving materials are made of cells.

Answer: FALSE

Explanation: Life is organized at the cellular level. Nonliving materials like rocks are not composed of cells.

Section: 01.01

Topic: General

Bloom's: 1. Remember

Learning Outcome: 01.01.01 Distinguish among the levels of biological organization.

Accessibility: Keyboard Navigation

22) All living things and nonliving materials exhibit homeostatic controls.

Answer: FALSE

Explanation: Only living entities exhibit homeostatic controls in order to maintain a stable internal environment.

Section: 01.01

Topic: General

Bloom's: 1. Remember

Learning Outcome: 01.01.02 Identify the basic characteristics of life.

Accessibility: Keyboard Navigation

23) All matter, whether alive or not, is comprised of atoms.

Answer: TRUE

Explanation: All matter on Earth, whether alive or not is composed of chemical elements.

Section: 01.01

Topic: General

Bloom's: 2. Understand

Learning Outcome: 01.01.01 Distinguish among the levels of biological organization.

Accessibility: Keyboard Navigation

24) Both living and nonliving entities adapt to the environment.

Answer: FALSE

Explanation: Adaptation to the environment is a characteristic of living organisms.

Section: 01.01

Topic: General

Bloom's: 1. Remember

Learning Outcome: 01.01.02 Identify the basic characteristics of life.

Accessibility: Keyboard Navigation

25) Which of the following domains contains prokaryotes that are known for living in extreme environments?

- A) Archaea
- B) Bacteria
- C) Plantae
- D) Fungi
- E) Eukarya

Answer: A

Explanation: Incorrect Answers:

B. Organisms in domain Archaea are primitive prokaryotes that live in extreme environments.

C. Organisms in kingdom Plantae are composed of eukaryotic cells. Archaea are primitive prokaryotes that live in extreme environments.

D. Organisms in kingdom Fungi are composed of eukaryotic cells. Archaea are primitive prokaryotes that live in extreme environments.

E. Organisms in domain Eukarya are composed of eukaryotic cells. Archaea are primitive prokaryotes that live in extreme environments.

Section: 01.02

Topic: General

Bloom's: 2. Understand

Learning Outcome: 01.02.02 Distinguish among the three domains of life.

Accessibility: Keyboard Navigation

26) Which of the following concepts is NOT one of the basic theories of biology?

- A) All organisms are composed of cells.
- B) Life may arise through spontaneous generation.
- C) New cells only come from preexisting cells.
- D) The internal environment of an organism stays relatively constant.
- E) All living things have a common ancestor and are adapted to a particular way of life.

Answer: B

Explanation: Correct.

Section: 01.03

Topic: General

Bloom's: 1. Remember

Learning Outcome: 01.03.02 Distinguish between a theory and a hypothesis.

Accessibility: Keyboard Navigation

- 27) All of the following are examples of maintaining homeostasis except:
- A) A sensor detects CO₂ levels in the blood and triggers an increase or decrease in the rate of breathing.
 - B) A drop in body temperature triggers shivering which generates heat; an increase in body temperature triggers sweating which releases heat.
 - C) Feelings of hunger and then fullness affect the length of time between meals and quantity of food you eat, keeping your weight near a "set point."
 - D) A cancerous tumor continues to grow larger and then metastasizes, spreading to new areas of the body.
 - E) By opening and closing pores in their leaves, plants continuously exchange oxygen and carbon dioxide with the atmosphere.

Answer: D

Explanation: Homeostasis is the maintenance of a stable internal environment. Cancer, like any disease, creates an unstable, unbalanced internal environment.

Section: 01.01

Topic: General

Bloom's: 3. Apply

Learning Outcome: 01.01.02 Identify the basic characteristics of life.

Accessibility: Keyboard Navigation

- 28) The expected outcome of an experiment is known as
- A) a scientific model.
 - B) an experiment.
 - C) a prediction.
 - D) a scientific theory or principle.
 - E) experimental results.

Answer: C

Explanation: A prediction is the expected outcome of an experiment based upon the knowledge of the factors in the experiment.

Section: 01.03

Topic: Process of Science

Bloom's: 1. Remember

Learning Outcome: 01.03.01 Identify the components of the scientific method.

Accessibility: Keyboard Navigation

- 29) Which of the following organisms are ultimately dependent on the sun as a source of energy?
- A) A night-blooming flower that is pollinated by night-flying bats.
 - B) An underground earthworm that avoids the sun.
 - C) A cave fish that feeds on plant debris.
 - D) All of the choices ARE ultimately dependent on the sun.
 - E) All of the choices are NOT ultimately dependent on the sun.

Answer: D

Explanation: All of the choices ARE ultimately dependent on the sun. Plants, regardless of the kind of animal that pollinates them, rely on the sun for photosynthesis. All animals eat plants or they eat other animals that eat plants. Therefore, they are all dependent on the sun.

Section: 01.01

Topic: General

Bloom's: 3. Apply

Learning Outcome: 01.01.02 Identify the basic characteristics of life.

Accessibility: Keyboard Navigation

- 30) A researcher is interested in determining the average length and weight of loblolly pine tree needles in the southeast United States. Will the data be obtained through observation or experimentation?
- A) observation
 - B) experimentation
 - C) Neither observation nor experimentation.
 - D) Both observation and experimentation.

Answer: A

Explanation: Since the researcher is not testing the contribution of a specific variable in relation to the length and weight of the pine needles, the data is a result of observation.

Section: 01.03

Topic: Process of Science

Bloom's: 3. Apply

Learning Outcome: 01.03.01 Identify the components of the scientific method.

Accessibility: Keyboard Navigation

31) A doctor is testing the effectiveness of a new antibiotic. He gives the first group of patients a placebo, a second group receives antibiotic A, while the third group receives antibiotic B. Which of the groups is considered the control group?

- A) the group that received antibiotic A
- B) the group that received the placebo
- C) the group that received antibiotic B
- D) both groups receiving antibiotic A and B

Answer: B

Explanation: Correct.

Section: 01.03

Topic: Process of Science

Bloom's: 3. Apply

Learning Outcome: 01.03.01 Identify the components of the scientific method.

Accessibility: Keyboard Navigation

32) An earlier classification system grouped organisms by whether they inhabited the air, land, or sea. More modern classification systems such as the three-domain system are divided into class-order-family-genus-species as described in this chapter. What advantages does the more modern classification system have over the older system?

- A) The modern classification system better represents the unity of life.
- B) The modern classification system reflects the evolutionary relationships between organisms.
- C) The modern classification system allows for the precise organization of a multitude of species.
- D) The more modern classification system groups organisms based on similarities related to their structure and evolution.
- E) All of the choices are correct.

Answer: E

Explanation: All of the choices are correct. The later classification systems better represent the unity and diversity of life, allow for better organization of ever-increasing numbers of species, and group organisms based on similarities related to their structure and evolution.

Section: 01.02

Topic: Evolution

Bloom's: 5. Evaluate

Learning Outcome: 01.02.02 Distinguish among the three domains of life.

Accessibility: Keyboard Navigation

- 33) A cell is to a tissue as an atom is to a
- A) molecule.
 - B) subatomic particle.
 - C) electron.
 - D) population.

Answer: A

Explanation: Tissues are made of cells and molecules are made of atoms.

Section: 01.01

Topic: General

Bloom's: 2. Understand

Learning Outcome: 01.01.01 Distinguish among the levels of biological organization.

Accessibility: Keyboard Navigation

- 34) You are interested in the effect of increased carbon dioxide versus normal air on the growth of corn plants as well as the effect of green light versus full sunlight on the growth of corn plants. Your plan is to set up your experiment inside a greenhouse where you can control the environment. Which of the following is an aspect of the experiment that should be considered and controlled?
- A) An increase in carbon dioxide should not result in a substantial decrease of other necessary gases.
 - B) All seedlings come from one uniform strain.
 - C) The intensity or brightness of the green light equals the intensity of the full sunlight.
 - D) All temperatures and available water remain the same for all plants.
 - E) All of the choices are important considerations.

Answer: E

Explanation: All of the choices are important to conduct a valid, controlled experiment.

Section: 01.03

Topic: Process of Science

Bloom's: 5. Evaluate

Learning Outcome: 01.03.03 Analyze a scientific experiment and identify the hypothesis, experiment, control groups, and conclusions.

Accessibility: Keyboard Navigation

- 35) Tropical rain forests have many species that are found in great abundance. A study in the Brazilian rain forest found 487 tree species growing on a single hectare (2.5 acres). In the U.S. and Canada together, there are only 700 species of trees on millions of acres. In one park in a Peruvian rain forest, scientists have identified over 1,300 species of butterflies, while in all of Europe there are approximately 320 butterfly species. These findings suggest that
- A) rain forests are biologically less diverse than other ecosystems on Earth.
 - B) the number of tree species and butterfly species are about the same throughout the ecosystems of the world.
 - C) rain forests are biologically more diverse than other ecosystems.
 - D) as many as 400 species a day are lost due to human activity.
 - E) rain forests do not have any type of value to humans.

Answer: C

Explanation: Correct

Answer:

These data suggest that rain forests are more biologically diverse than other ecosystems.

Section: 01.03

Topic: Ecology

Bloom's: 5. Evaluate

Learning Outcome: 01.03.03 Analyze a scientific experiment and identify the hypothesis, experiment, control groups, and conclusions.

Accessibility: Keyboard Navigation

- 36) Biodiversity in a particular ecosystem
- A) is the total number of species in that ecosystem.
 - B) includes the variability of the individual genes.
 - C) impacts the function of the ecosystem in which the species live.
 - D) All of the choices are correct.

Answer: D

Explanation: All of the choices are correct. Biodiversity involves the total number of species and the variability of individual genes, and it impacts the function of the ecosystem in which the species live.

Section: 01.04

Topic: Ecology

Bloom's: 2. Understand

Learning Outcome: 01.04.02 Summarize the major challenges facing science and society.

Accessibility: Keyboard Navigation

37) Some members of *Daphnia*, a water flea, have a genetic mutation that causes them to prefer warmer environments. These members reproduce and pass these genetic changes to their offspring. The next generation will occupy warmer environments not previously occupied by this species. This is an example of

- A) adaptation.
- B) homeostasis.
- C) irritability.
- D) All of the choices are correct.

Answer: A

Explanation: This situation describes adaptation to the environment.

Section: 01.01

Topic: General

Bloom's: 3. Apply

Learning Outcome: 01.01.02 Identify the basic characteristics of life.

Accessibility: Keyboard Navigation

38) Some biologists study the complex interactions of animals and plants in forests or prairies. Such ecology field research often produces slightly different results for different researchers. In contrast, ecology experiments that are run indoors with one organism in a terrarium usually produce results that are repeatable. What is the most likely explanation?

- A) The scientific method is only useful in laboratory settings.
- B) It is not possible to establish a control group outside of a laboratory.
- C) It is easier to hold all but one variable constant in a laboratory.
- D) Field research is only descriptive, and descriptive research is not strictly "science."
- E) Fieldwork is inductive; lab work is deductive.

Answer: C

Explanation: It is easier to hold all but one variable constant in a laboratory.

Section: 01.03

Topic: Process of Science

Bloom's: 5. Evaluate

Learning Outcome: 01.03.03 Analyze a scientific experiment and identify the hypothesis, experiment, control groups, and conclusions.

Accessibility: Keyboard Navigation

Dr. James isolated *Staphylococcus aureus*, a type of bacteria, from the leg wound of a ten-year-old boy. He suspected these bacteria would grow better at body temperature than room temperature (72°F), but thought that he should collect data to support his thinking. Dr. James introduced the same number of *Staphylococcus* bacteria into each of six test tubes containing the same type and amount of nutrient broth. Three test tubes were incubated at 98.6°F (Group 1), while three test tubes (Group 2) sat at 72°F. After 24 hours, Dr. James compared the turbidity (indicative of growth) of all six tubes and rated each on a scale of 0 - 4. 0 indicates no turbidity (no growth), while 4 indicates high turbidity (high growth). The following data were collected:

Test Tube	Temperature °F	Turbidity
Group 1:		
1	98.6	+4
2	98.6	+4
3	98.6	+3
Group 2:		
4	72	0
5	72	+1
6	72	0

39) After reading the scenario, write the hypothesis that was being tested in Dr. James's experiment.

Answer: The null hypothesis is:

H₀: There is no difference in the growth of *Staphylococcus* at 98.6°F and 72°F.

The alternate hypothesis may be written as follows:

H_A: *Staphylococcus* will grow better at 98.6°F than at 72°F in a 24-hour period.

Section: 01.03

Topic: Process of Science

Bloom's: 6. Create

Learning Outcome: 01.03.03 Analyze a scientific experiment and identify the hypothesis, experiment, control groups, and conclusions.

40) Would you consider this to be a controlled experiment?

Answer: Yes, this may be considered a controlled experiment. Where possible, extraneous variables, such as the type and amount of nutrient broth, same number of bacteria in the inoculums, same incubation time, etc., are held constant.

Section: 01.03

Topic: Process of Science

Bloom's: 5. Evaluate

Learning Outcome: 01.03.03 Analyze a scientific experiment and identify the hypothesis, experiment, control groups, and conclusions.

41) Evaluate the data presented here to reach a conclusion. Would you reject or accept the null hypothesis?

Answer: After analysis of the data, one should reject the null hypothesis. The growth of *Staphylococcus* at 98.6°F was greater than at 72°F.

Section: 01.03

Topic: Process of Science

Bloom's: 5. Evaluate

Learning Outcome: 01.03.03 Analyze a scientific experiment and identify the hypothesis, experiment, control groups, and conclusions.

42) The dependent (responding) variable in this experiment is

A) the temperature.

B) growth of bacteria, as indicated by the turbidity in the test tubes.

C) the time that the test tubes were allowed to sit.

D) amount of initial inoculum, or number of bacteria introduced into each test tube.

Answer: B

Explanation: The dependent, or responding variable, is the variable that may or may not change, depending on the treatment introduced by the researcher.

Section: 01.03

Topic: Process of Science

Bloom's: 5. Evaluate

Learning Outcome: 01.03.03 Analyze a scientific experiment and identify the hypothesis, experiment, control groups, and conclusions.

43) The independent (experimental) variable is

- A) temperature.
- B) growth of bacteria.
- C) incubation period.
- D) amount of initial inoculum.

Answer: A

Explanation: The temperature is the experimental, or independent variable, which is directly manipulated by the researcher.

Section: 01.03

Topic: Process of Science

Bloom's: 3. Apply

Learning Outcome: 01.03.03 Analyze a scientific experiment and identify the hypothesis, experiment, control groups, and conclusions.

44) To ensure a controlled experiment, all of the following conditions (variables) should be identical in Group 1 and Group 2:

- A) type of bacteria, temperature, and incubation period
- B) temperature and amount of initial inoculum (bacteria used)
- C) type of bacteria, incubation period, amount of bacteria used
- D) degree of turbidity, incubation period, and amount of bacteria

Answer: C

Explanation: The controlled variables should include the type of bacteria, incubation period, and the amount of bacteria introduced into each test tube.

Section: 01.03

Topic: Process of Science

Bloom's: 4. Analyze

Learning Outcome: 01.03.03 Analyze a scientific experiment and identify the hypothesis, experiment, control groups, and conclusions.

45) Choose which of the following statements is a hypothesis for an experiment.

- A) Based on the data collected during an experiment, *S. aureus* grows better at body temperature than room temperature.
- B) Based on observation, it is predicted that *S. aureus* will grow better at body temperature than at room temperature.
- C) *S. aureus* grew equally well at room temperature and at body temperature.
- D) Based on the data collected during the experiment, it is confirmed that *S. aureus* grew better at room temperature.

Answer: B

Explanation: Correct.

Section: 01.03

Topic: Process of Science

Bloom's: 5. Evaluate

Learning Outcome: 01.03.03 Analyze a scientific experiment and identify the hypothesis, experiment, control groups, and conclusions.

46) Dr. James performed another experiment. Instead of inoculating the test tubes with Staphylococcus, he used the bacterium, Streptococcus. He found that Streptococcus grew better at body temperature than at room temperature. This is a replicate of the first experiment.

Answer: FALSE

Explanation: This is not a replicate of the first experiment. Dr. James used Streptococcus instead of Staphylococcus.

Section: 01.03

Topic: Process of Science

Bloom's: 3. Apply

Learning Outcome: 01.03.03 Analyze a scientific experiment and identify the hypothesis, experiment, control groups, and conclusions.

47) Dr. James considers the bacteria grown at body temperature to be the control group and room temperature the experimental group. Do you agree with this reasoning?

Answer: One knows what to expect concerning the dependent variable in a control group. Since body temperature is 98.6°F and the bacteria were isolated from a wound on a leg, one would surmise that the bacteria would grow well at body temperature.

Section: 01.03

Topic: Process of Science

Bloom's: 5. Evaluate

Learning Outcome: 01.03.03 Analyze a scientific experiment and identify the hypothesis, experiment, control groups, and conclusions.

48) For five years, you wake up before the alarm is set to ring each morning. This leads you to conclude that all people have a built-in "alarm clock" capable of waking them up. From a science viewpoint, this conclusion

A) is science because it is based on real observations.

B) is science because it is predictive of what will happen tomorrow morning.

C) is scientifically valid because $5 \text{ years} \times 365 \text{ days}$ is a large number of trials.

D) may not be valid because it generalizes about all people, and there may have been other variables that could awaken you without a built-in clock.

E) cannot be scientifically tested because it involves human behavior.

Answer: D

Explanation: From a science viewpoint, this conclusion may not be valid because it generalizes about all people, and there may have been other variables that could awaken you without a built-in clock.

Section: 01.03

Topic: Process of Science

Bloom's: 5. Evaluate

Learning Outcome: 01.03.03 Analyze a scientific experiment and identify the hypothesis, experiment, control groups, and conclusions.

Accessibility: Keyboard Navigation

49) The manner in which a scientist intends to conduct an experiment is called

A) inductive reasoning.

B) the experimental design.

C) data collection and analysis.

D) the conclusion.

Answer: B

Explanation: The manner in which a scientist intends to conduct an experiment is called the experimental design.

Section: 01.03

Topic: Process of Science

Bloom's: 1. Remember

Learning Outcome: 01.03.01 Identify the components of the scientific method.

Accessibility: Keyboard Navigation

50) Arrange in order, the levels of ecological study from most inclusive to most exclusive:

- A) biosphere, ecosystem, community, population, individual organism
- B) ecosystem, biosphere, population, community, individual organism
- C) individual organism, community, population, ecosystem, biosphere
- D) individual organism, population, community, ecosystem, biosphere

Answer: A

Explanation: The levels of ecological study from most inclusive to most exclusive are: biosphere, ecosystem, community, population, individual organism.

Section: 01.01

Topic: Ecology

Bloom's: 2. Understand

Learning Outcome: 01.01.01 Distinguish among the levels of biological organization.

Accessibility: Keyboard Navigation

51) Which definition best describes a population?

- A) the members of a species in a given area
- B) the interaction between the organisms and their environment
- C) the region of Earth that contains living organisms
- D) the interaction between various groups of organisms in a given environment
- E) all of the females of a given species in a particular area

Answer: A

Explanation: A population consists of all of the individuals of a given species in a particular region.

Section: 01.01

Topic: Ecology

Bloom's: 1. Remember

Learning Outcome: 01.01.01 Distinguish among the levels of biological organization.

Accessibility: Keyboard Navigation

52) Which of the following features are present at the ecosystem level?

- A) chemical cycling through the food chain
- B) energy flow that begins at the producer level
- C) input of solar energy
- D) complex interactions between a variety of populations
- E) All are features of an ecosystem.

Answer: E

Explanation: All are features of an ecosystem.

Section: 01.01

Topic: Ecology

Bloom's: 2. Understand

Learning Outcome: 01.01.01 Distinguish among the levels of biological organization.

Accessibility: Keyboard Navigation

53) Organisms belonging to the same _____ would be the most closely related.

- A) kingdom
- B) phylum
- C) family
- D) class
- E) order

Answer: C

Explanation: Organisms belonging to the same family would be the most closely related.

Section: 01.02

Topic: Evolution

Bloom's: 1. Remember

Learning Outcome: 01.02.02 Distinguish among the three domains of life.

Accessibility: Keyboard Navigation

54) What type of information does science provide for society?

- A) information about the natural world
- B) information about the supernatural world
- C) information about religious beliefs
- D) information about religious beliefs and the natural world

Answer: A

Explanation: Science is a systematic way of acquiring information about the natural world.

Section: 01.04

Topic: General

Bloom's: 1. Remember

Learning Outcome: 01.04.01 Distinguish between science and technology.

Accessibility: Keyboard Navigation

55) What is the best description of technology?

- A) Technology is the application of scientific knowledge to the interests of humans.
- B) Technology is the development of new tools.
- C) Technology is the use of power to make human life easier.
- D) Technology is the advancement of the functionality of computers.

Answer: A

Explanation: Technology is the application of scientific knowledge to the interests of humans.

Section: 01.04

Topic: General

Bloom's: 1. Remember

Learning Outcome: 01.04.01 Distinguish between science and technology.

Accessibility: Keyboard Navigation