Campbell Biology in Focus 4th edition Urry Test Bank

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Chapter 1 Introduction: Evolution and the Foundations of Biology

1.1 Multiple Choice Questions

1) Which of the following terms best describes all of the organisms living in a particular ecosystem?

A) biological community

B) order

C) family

D) population

Answer: A

Topic: 1.1 The study of life reveals unifying themes

Bloom's Taxonomy: 1-2: Remembering/Understanding

Learning Outcome: 1.1, V&C 5

Global L.O.: G7

2) Many properties of living things involve the transfer and transformation of energy and matter. For example, plant chloroplasts convert energy from sunlight to which of the following forms of energy or matter?

A) the energy of motion

B) carbon dioxide

C) chemical energy

D) oxygen

E) heat energy

Answer: C

Topic: 1.1 The study of life reveals unifying themes

Bloom's Taxonomy: 1-2: Remembering/Understanding

Learning Outcome: 1.1, V&C 4

Global L.O.: G7

3) The primary source of energy for producers in an ecosystem is

A) light energy.

B) energy from food.

C) heat energy.

D) chemical energy.

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Answer: A

Topic: 1.1 The study of life reveals unifying themes

Bloom's Taxonomy: 1-2: Remembering/Understanding

Learning Outcome: 1.1, V&C 4

Global L.O.: G7

4) Which of the following terms best describes all the living things on Earth along with all the places where life exists?

A) the ecosystem

B) the biosphere

C) the community

D) the population

Answer: B

Topic: 1.1 The study of life reveals unifying themes

Bloom's Taxonomy: 1-2: Remembering/Understanding

Learning Outcome: 1.1, V&C 5

Global L.O.: G7

5) Which of the following terms best describes all the living organisms in a particular area along with all the nonliving aspects of the environment with which the organisms interact?

A) an ecosystem

B) the biosphere

C) a biological community

D) a population

Answer: A

Topic: 1.1 The study of life reveals unifying themes

Bloom's Taxonomy: 1-2: Remembering/Understanding

Learning Outcome: 1.1, V&C 5

Global L.O.: G7

6) Which of the following terms best describes all the individuals of a particular species living within the bounds of a specified area?

A) a biological system

B) a biosphere

C) a biological community

D) a population

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Answer: D

Topic: 1.1 The study of life reveals unifying themes

Bloom's Taxonomy: 1-2: Remembering/Understanding

Learning Outcome: 1.1, V&C 5

Global L.O.: G7

7) Which of the following lists best describes the sequential events involved in gene expression to produce an amino acid chain?

A) DNA → transcription → mRNA → translation → amino acid chain

B) DNA → translation → mRNA → transcription → amino acid chain

C) mRNA → transcription → DNA → translation → amino acid chain

D) mRNA → translation → DNA → transcription → amino acid chain

Answer: A

Topic: 1.1 The study of life reveals unifying themes

Bloom's Taxonomy: 1-2: Remembering/Understanding

Learning Outcome: 1.1, V&C 5

Global L.O.: G4

8) Investigating the molecular structure of DNA in order to understand the chemical basis of inheritance is an example of which of the following approaches utilized in the study of biology?

A) systems biology

B) emergent properties

C) reductionism

D) deductive reasoning

Answer: C

Topic: 1.1 The study of life reveals unifying themes

Bloom's Taxonomy: 3-4: Applying/Analyzing

Learning Outcome: 1.1, V&C 1

Global L.O.: G2

9) Which of the following lists correctly describes the sequential forms by which energy flows through an ecosystem from entry to exit?

A) heat → chemical → heat

B) light → heat → chemical

C) light → chemical → heat

D) chemical → heat → light

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Answer: C

Topic: 1.1 The study of life reveals unifying themes

Bloom's Taxonomy: 3-4: Applying/Analyzing

Learning Outcome: 1.1, V&C 4

Global L.O.: G2

10) Which of the following organisms have produced all of the oxygen in the Earth's atmosphere?

A) humans

B) animals and fungi

C) plants and archaea

D) plants and other photosynthetic organisms

Answer: D

Topic: 1.1 The study of life reveals unifying themes

Bloom's Taxonomy: 1-2: Remembering/Understanding

Learning Outcome: 1.1, V&C 4, 5

Global L.O.: G7

11) Which of the following terms best describes membrane-enclosed components of cells that carry out specialized functions?

A) tissues

B) organs

C) organelles

D) cells

Answer: C

Topic: 1.1 The study of life reveals unifying themes

Bloom's Taxonomy: 1-2: Remembering/Understanding

Learning Outcome: 1.1, V&C 2

Global L.O.: G7

12) Which of the following lists best reflects the hierarchy of biological organization from small scale to larger scale?

A) cells → organisms → communities → populations → ecosystems

B) organisms → cells → populations → communities → ecosystems

C) cells → organisms → populations → communities → ecosystems

D) organisms → cells → ecosystems → populations → communities

Answer: C

Topic: 1.1 The study of life reveals unifying themes

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Bloom's Taxonomy: 1-2: Remembering/Understanding

Learning Outcome: 1.1, V&C 5

Global L.O.: G7

13) Living things are divided into three different domains. Which of these domains are classified as prokaryotes?

A) bacteria and eukarya

B) archaea and eukarya

C) bacteria and fungi

D) bacteria and archaea

Answer: D

Topic: 1.1 The study of life reveals unifying themes

Bloom's Taxonomy: 1-2: Remembering/Understanding

Learning Outcome: 1.1, V&C 2

Global L.O.: G7

14) A single-celled organism isolated from an ancient peat bog was found to have a cell wall and a nucleus. This organism is most likely a member of which of the following domains?

A) eukarya

B) archaea

C) bacteria

D) archaea or eukarya

Answer: A

Topic: 1.1 The study of life reveals unifying themes

Bloom's Taxonomy: 3-4: Applying/Analyzing

Learning Outcome: 1.1, V&C 2

Global L.O.: G1, G7

15) Strong evidence in support of the common ancestry of all life comes from which of the following observations about living things?

A) the fact that decomposers include both bacteria and fungi

B) the ability of plants to convert light energy to chemical energy

C) the existence of a nearly universal genetic code

D) the fact that all living things release heat when chemical energy is used to do work

Answer: C

Topic: 1.2 The Core Theme: Evolution accounts for the unity and diversity of life

Bloom's Taxonomy: 3-4: Applying/Analyzing

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Learning Outcome: 1.2, V&C 1, 2

Global L.O.: G2

16) Charles Darwin proposed that “descent with modification” resulted when organisms of a particular species become adapted to their environment because they possess which of the following characteristics?

A) nonheritable traits that enhance survival and decrease their reproductive success in the local environment.

B) nonheritable traits that enhance their survival and reproductive success in the local environment.

C) heritable traits that enhance their survival and reproductive success in the local environment

D) heritable traits that enhance their survival and decrease their reproductive success in the local environment

Answer: C

Topic: 1.2 The Core Theme: Evolution accounts for the unity and diversity of life

Bloom’s Taxonomy: 1-2: Remembering/Understanding

Learning Outcome: 1.2, V&C 1

Global L.O.: G1, G4

17) Which of the following statements describes an individual that is likely to be the most successful in an evolutionary sense?

A) a reproductively sterile individual who never falls ill

B) an organism that dies after five days of life but leaves 10 offspring, all of whom survive to reproduce

C) a male who mates with 20 females and fathers one offspring

D) an organism that lives 100 years and leaves two offspring, both of whom survive to reproduce

E) a female who mates with 20 males and produces two offspring who live to reproduce

Answer: B

Topic: 1.2 The Core Theme: Evolution accounts for the unity and diversity of life

Bloom’s Taxonomy: 3-4: Applying/Analyzing

Learning Outcome: 1.2, V&C 1

Global L.O.: G2

18) Over time, the lineage that led to modern whales shows a change from four-limbed land animals to aquatic animals with two limbs that function as flippers. This change is best explained by which of the following concepts or processes?

A) an emergent property

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B) reductionism

C) the hierarchy of the biological organization of life

D) natural selection

Answer: D

Topic: 1.2 The Core Theme: Evolution accounts for the unity and diversity of life

Bloom's Taxonomy: 3-4: Applying/Analyzing

Learning Outcome: 1.2, V&C 1, 2

Global L.O.: G2, G7

19) Which of the following statements describes Charles Darwin's most significant original contribution to understanding both the unity and the diversity of life?

A) He documented examples of organisms that had evolved over time.

B) He proposed a mechanism to explain the process of evolution.

C) He explained the relationship between genes and evolution.

D) He observed that individuals in a population generally displayed variation for a number of traits.

E) He suggested that survival depends upon competition.

Answer: B

Topic: 1.2 The Core Theme: Evolution accounts for the unity and diversity of life

Bloom's Taxonomy: 1-2: Remembering/Understanding

Learning Outcome: 1.2, V&C 1

Global L.O.: G7

20) Which of the following statements is a distinguishing characteristic of animals?

A) obtaining nutrients by absorbing them from the environment

B) obtaining nutrients by ingesting other organisms

C) converting light energy to chemical energy in the form of sugars

D) living in extreme environments like boiling hot springs

Answer: B

Topic: 1.2 The Core Theme: Evolution accounts for the unity and diversity of life

Bloom's Taxonomy: 1-2: Remembering/Understanding

Learning Outcome: 1.2, V&C 2

Global L.O.: G7

21) A newly discovered organism was found to obtain nutrients exclusively by absorbing them from the soil or air. This organism is most likely a new species in which of the following kingdoms?

A) plant

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B) animal

C) fungus

D) animal or fungus

Answer: C

Topic: 1.2 The Core Theme: Evolution accounts for the unity and diversity of life

Bloom's Taxonomy: 3-4: Applying/Analyzing

Learning Outcome: 1.2, V&C 2

Global L.O.: G7

22) The variation observed among the finches Darwin collected from the Galápagos Islands illustrate which of the following principles associated with the evolution of species?

A) mutation frequency

B) production of more offspring than can survive

C) descent with modification

D) the accuracy of the fossil record

Answer: C

Topic: 1.2 The Core Theme: Evolution accounts for the unity and diversity of life

Bloom's Taxonomy: 1-2: Remembering/Understanding

Learning Outcome: 1.2, V&C 1

Global L.O.: G4

23) Imagine there is a species-specific fishing regulation that mandates that only adult fish of this species that are 75 cm or longer may be kept; shorter fish must be released. Based on your knowledge of natural selection, how would you predict that the average length of the adult fish population might be affected?

A) Length would remain unchanged.

B) Length would gradually decrease.

C) Length would rapidly decrease.

D) Length would gradually increase.

E) Length would rapidly increase.

Answer: B

Topic: 1.2 The Core Theme: Evolution accounts for the unity and diversity of life

Bloom's Taxonomy: 3-4: Applying/Analyzing

Learning Outcome: 1.2, V&C 1

Global L.O.: G2

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24) In her studies of chimpanzee behavior, Jane Goodall collected both qualitative and quantitative data. Which of the following is an example of quantitative data?

A) Chimpanzees typically travel together in small groups.

B) Young animals tend to play with different animals throughout the day.

C) Young chimpanzees play games in the trees and on the ground.

D) Mothers and their infants typically nap for two to three hours each afternoon.

Answer: D

Topic: 1.3 In studying nature, scientists form and test hypotheses

Bloom's Taxonomy: 3-4: Applying/Analyzing

Learning Outcome: 1.3, V&C 1

Global L.O.: G1

25) The process of science involves testing which of the following?

A) a data set

B) a hypothesis

C) an observation

D) a conclusion

E) a control group

Answer: B

Topic: 1.3 In studying nature, scientists form and test hypotheses

Bloom's Taxonomy: 1-2: Remembering/Understanding

Learning Outcome: 1.3, V&C 1

Global L.O.: G1

26) Which of the following statements best describes a controlled experiment?

A) an experiment that is repeated many times to ensure that the results are accurate

B) an experiment that proceeds at a slow pace to guarantee that the scientist can carefully observe all reactions and process all experimental data

C) an experiment with at least two groups, one of which does not receive the experimental treatment

D) an experiment with at least two groups, one differing from the other by two or more variables

Answer: C

Topic: 1.3 In studying nature, scientists form and test hypotheses

Bloom's Taxonomy: 3-4: Applying/Analyzing

Learning Outcome: 1.3, V&C 1

Global L.O.: G1

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27) Which of the following is a requirement for a good scientific hypothesis?

A) It must generate quantitative data.

B) It must explain a large body of specific observations.

C) It must lead to testable predictions.

D) It must be able to be proven true.

Answer: C

Topic: 1.3 In studying nature, scientists form and test hypotheses

Bloom's Taxonomy: 1-2: Remembering/Understanding

Learning Outcome: 1.3, V&C 1

Global L.O.: G1

28) Which of the following is the best description of a control for an experiment?

A) The control group is kept in an unchanging environment.

B) The control group is left alone by the experimenters.

C) The control group is matched with the experimental group except for the one experimental variable.

D) The control group is exposed to only one variable rather than several.

Answer: C

Topic: 1.3 In studying nature, scientists form and test hypotheses

Bloom's Taxonomy: 1-2: Remembering/Understanding

Learning Outcome: 1.3, V&C 1

Global L.O.: G1

29) Which of the following is an example of inductive reasoning?

A) If a banana is not ripe, then an ape will not eat it.

B) Numerous different species live in sunny parts of an ecosystem; therefore, they are all photosynthetic.

C) Hundreds of cultures of a unicellular alga are incubated in the presence of light, and in all of the samples the cells congregate on the side of the culture toward the light. Therefore, the alga is phototactic (attracted to light).

D) If two species are members of the same genus, then they are more similar to each other than they are to members of a different genus.

Answer: C

Topic: 1.3 In studying nature, scientists form and test hypotheses

Bloom's Taxonomy: 3-4: Applying/Analyzing

Learning Outcome: 1.3, V&C 1

Global L.O.: G1, G2

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30) Why is it important that scientific discoveries and ideas be discussed by people with various points of view, from a variety of subdisciplines, and with diverse cultural backgrounds?

A) They can correct each other's approach to make it truly scientific.

B) Robust and critical discussion between diverse groups improves scientific thinking.

C) Scientists need to exchange their ideas with other disciplines and cultures so that all groups are in agreement regarding the course of future research.

D) This is another way of ensuring that everyone gets the same results.

Answer: B

Topic: 1.3 In studying nature, scientists form and test hypotheses

Bloom's Taxonomy: 5-6: Evaluating/Creating

Learning Outcome: 1.3, V&C 1

Global L.O.: G1, G2

31) Why is it important that an experiment include a control group?

A) A control group provides a reference by which to determine if a particular outcome may reasonably result from the variable being tested.

B) The control group provides a reserve of experimental subjects.

C) A control group is required for the development of an "If . . . then" statement.

D) A control group assures that an experiment will be repeatable.

Answer: A

Topic: 1.3 In studying nature, scientists form and test hypotheses

Bloom's Taxonomy: 3-4: Applying/Analyzing

Learning Outcome: 1.3, V&C 1

Global L.O.: G1, G2

32) Which of the following descriptions constitutes a controlled experiment?

A) using a microscope to observe organisms present in a sample of pond water and recording the number of each type of organism observed

B) setting up a bird feeder and compiling a list of all of the bird species seen at the feeder over a period of several weeks

C) growing one set of 10 seedlings under white light and one set of the same type of seedlings under red light and measuring their growth over a period of two weeks

D) growing one set of 10 seedlings under white light at 30°C and one set of a different type of seedlings under red light at 25°C and measuring their growth over a period of two weeks

Answer: C

Topic: 1.3 In studying nature, scientists form and test hypotheses

Bloom's Taxonomy: 3-4: Applying/Analyzing

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Learning Outcome: 1.3, V&C 1
Global L.O.: G1, G2

1.2 End-of-Chapter Questions

1) All the organisms on your campus make up
   A) an ecosystem.
   B) a community.
   C) a population.
   D) a taxonomic domain.
   Answer: B
   Topic: End-of-Chapter Questions
   Bloom's Taxonomy: 1-2: Remembering/Understanding

2) Which of the following best demonstrates the unity among all organisms?
   A) emergent properties
   B) descent with modification
   C) DNA structure and function
   D) natural selection
   Answer: C
   Topic: End-of-Chapter Questions
   Bloom's Taxonomy: 1-2: Remembering/Understanding

3) A controlled experiment is one that
   A) proceeds slowly enough that a scientist can make careful records of the results.
   B) tests experimental and control groups in parallel.
   C) is repeated many times to make sure the results are accurate.
   D) keeps all variables constant.
   Answer: B
   Topic: End-of-Chapter Questions
   Bloom's Taxonomy: 1-2: Remembering/Understanding

4) Which of the following statements best distinguishes hypotheses from theories in science?
   A) Theories are hypotheses that have been proved.
   B) Hypotheses are guesses; theories are correct answers.

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C) Hypotheses usually are relatively narrow in scope; theories have broad explanatory power.

D) Theories are proved true; hypotheses are often contradicted by experimental results.

Answer: C

Topic: End-of-Chapter Questions

Bloom's Taxonomy: 1-2: Remembering/Understanding

5) Which of the following best describes the logic of scientific inquiry?

A) If I generate a testable hypothesis, tests and observations will support it.

B) If my prediction is correct, it will lead to a testable hypothesis.

C) If my observations are accurate, they will support my hypothesis.

D) If my prediction is correct, my hypothesis is supported.

Answer: D

Topic: End-of-Chapter Questions

Bloom's Taxonomy: 3-4: Applying/Analyzing

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