1. Award: 10.00 points

Levels of biological organization

The circulatory system of a whale is considered an organ system because it is composed of different

- cells.
- tissues.
- → organs.
- molecules.
- hearts.

Organ systems are made up of organs that work together.

References

Multiple Choice | Levels of biological organization | Section: 01.01

2. Award: **10.00 points**

Levels of biological organization II

Which of the following correctly lists the levels of biological organization from simplest to most complex?

- cells, organs, tissues, organ systems, organism
- organs, organ system, organism, cells, tissues
- tissues, organs, organ systems, organism, cells
- → cells, tissues, organs, organ systems, organism
- organ systems, tissues, cells, organism, organs

Organisms are composed of organ systems, which are composed of organs, which are composed of tissues, which are composed of cells.

References

Multiple Choice	Levels of biological organization II	Section: 01.01

3. Award: **10.00 points**

Levels of biological organization III

The smallest, most basic unit of life is a(n)

- tissue.
- organ.
- → cell.
- species.
- organism.

The smallest, most basic form of life is a single cell.

References

Multiple Choice	Levels of biological organization III	Section: 01.01

4. Award: **10.00 points**

Energy transformations

Which of the following processes transforms solar energy into chemical energy?

- metabolism
- homeostasis
- respiration
- → photosynthesis
- reproduction

Plants and other photosynthetic organisms are able to capture energy from the sun and transform it into chemical energy.

References

Multiple Choice	Energy transformations	Section: 01.01

5. Award: **10.00 points**

Characteristics of life

As autumn approaches, white-tailed deer begin to accumulate a layer of body fat. This is an example of which characteristic of life?

- maintaining homeostasis
- metabolism
- → response to the environment
- energy regulation
- organization

The accumulation of body fat occurs in response to the seasonal change in temperature.

References

Multiple Choice Characteristics of life Section: 01.01

6. Award: **10.00 points**

Characteristics of life II

Salmon live in both fresh water and salt water during their lives. They are born in in fresh water but migrate out to marine waters for most of their life. Eventually, they return to the place they were born in fresh water to spawn. Changing between fresh water and salt water affects the balance of water in their body. Salmon have an internal control system called osmoregulation that restores the balance by negative feedback. This is an example of which characteristic of life?

- adaptation
- reproduction and development
- response to the environment
- energy transformation
- → maintaining homeostasis

Many of the metabolic activities of an organism are involved in maintaining homeostasis, or an internal environment that acts within a set of physiological boundaries. Since osmoregulation allows the salmon to maintain an internal water balance, this is an example of maintaining homeostasis.

References

Multiple Choice | Characteristics of life II | Section: 01.01

7. Award: **10.00 points**

Genes

Which of the following statement(s) regarding genes is/are true? Select all that apply.

- [x] Genes are made up of DNA.
- [x] All cells in a multicellular organism contain the same set of genes.
- [ ] Humans receive their DNA/genes from either their mother or their father but not both.
- [x] Variations in genes are the result of mutations.
- [ ] All organisms such as roses, elephants and mushrooms have the same set of genes.

Genes are genetic instructions that are made up of DNA. While all organisms have DNA, they do not all have the same genes. Human and other animals pass on their genes through their gametes. Males pass their genes on through their sperm and females through their eggs. When an egg and sperm unite, a fertilized egg is formed with a full set of genes (1/2 maternal and 1/2 paternal). As the egg begins to split and form new cells, each new cell will receive a full copy of all the genes. What makes one cell different from another is determined by which of the genes are turned on and which are turned off. Variation in genes (like dimpled cheeks or smooth cheeks) is a result of mutations that occurred in the evolutionary history of the species.

References

Check All That Apply	Genes	Section: 01.01

8. Award: **10.00 points**

Levels of biological organization IV

Which of the following pairs of words is matched correctly?

- → ○ brain - organ
- ○ neuron - tissue
- ○ osteocyte - organelle
- ○ gene - atom
- ○ heart - organ system

The brain is an organ. Genes are molecules, osteocytes and neurons are cells and the heart is an organ.

References

Multiple Choice	Levels of biological organization IV	Section: 01.01

9. Award: **10.00 points**

Adaptation

Many insects cannot see the color red, and as a result many insect-pollinated flowers are colors other than red (e.g., purple and yellow). Flower color would be considered a(n)

- method for maintaining homeostasis.
- way to maintain metabolism.
- → adaptation.
- example of energy flow.
- example of nutrient cycling.

Pollination is how flowering plants pass on their genes. Flower color attracts pollinators and therefore flower color is an evolutionary adaptation that is important for successful plant reproduction.

References

Multiple Choice	Adaptation	Section: 01.01

10. Award: **10.00 points**

Natural selection

Simon is an avid gardener who spends a lot of time caring for the plants in his garden. To minimize damage from pests from his garden, Simon uses a pesticide spray. After a few years of using the same pesticide spray, he notices that it has become less effective. This is most likely due to

- → ○ evolution by natural selection.
- ○ using the spray incorrectly.
- ○ the plants in the garden evolving.
- ○ the plants maintaining homeostasis.
- ○ something else in the environment.

The pesticide that Simon is using is most likely less effective due to the insects evolving resistance. During the time that Simon was using the pesticide, the insects that were better adapted to these conditions had greater reproductive success than the other insects. Assuming the surviving insects were able to pass on the traits that confer resistance to their offspring, the population would become more and more resistant to the pesticide.

References

Multiple Choice Natural selection Section: 01.02

11. Award: 10.00 points

Characteristics of life III

All the chemical reactions that occur in a cell are collectively called

- mitosis.
- photosynthesis.
- cellular respiration.
- meiosis.
- → metabolism.

Food provides nutrient molecules to living things. When cells use these molecules to make their parts and products, they carry out a sequence of chemical reactions, which are collectively known as the organisms metabolism.

References

Multiple Choice	Characteristics of life III	Section: 01.01

12. Award: **10.00 points**

Prokaryotic cells

Is the following statement true or false? The only single-celled organisms are prokaryotes, such as archaeans and bacteria.

- ○ true, because prokaryotes are the simplest cell form
- ○ true, because all eukaryotes are multicellular
- → ○ false, because some eukaryotes, including protista, are single-celled
- ○ false, because some prokaryotes are multicellular
- ○ false, because all single-celled organisms are prokaryotes

Prokaryotes are all unicellular, but eukaryotes can be either unicellular or multicellular.

References

Multiple Choice Prokaryotic cells Section: 01.02

13. Award: **10.00 points**

Evolution

The various species of honeycreepers have an assortment of different beak shapes, but all honeycreeper species have a similar size and body shape. This is an example of

- ascent with new traits.
- → descent with modification.
- taxonomic differentiation.
- fixed traits.
- modification of adaptations.

Evolution or descent with modification explains how one species can give rise to several different species.

References

Multiple Choice	Evolution	Section: 01.02

14. Award: **10.00 points**

Three domains of life

Based on the evolutionary tree of the three domains, which of the following statements is true?

- → ○ All three domains have a common ancestor.
- ○ Domain Bacteria and domain Eukarya are more closely related to each other than to domain Archaea.
- ○ The Eukarya have remained the same throughout evolutionary time.
- ○ All three domains are equally related to one another.
- ○ The Eukarya are the common ancestor to the three domains.

All three domains have a common ancestor.

References

Multiple Choice	Three domains of life	Section: 01.02

15. Award: **10.00 points**

Classification of living things

Which of the following can be categorized as prokaryotic?

- domain Eukarya
- kingdom Plantae
- kingdom Protista
- → domain Archaea
- kingdom Animalia

Prokaryotic cells are found in two domains, Domain Bacteria and Domain Archaea.

References

Multiple Choice	Classification of living things	Section: 01.02

16. Award: **10.00 points**

Classification of living things II

Is the following statement true or false? The mountain zebra (*Equus zebra*) and the donkey (*Equus asinus*) belong to the same species.

- true, because they both start with *Equus*
- true, because they are both related to horses
- → false, because the specific epithet is different
- false, because they have no similarities to each other
- true, because they belong to the same genus

The second part of the binomial or the specific epithet refers to the species. Because each is different, this indicates different species.

References

Multiple Choice	Classification of living things II	Section: 01.02

17. Award: **10.00 points**

Classification of living things III

Which of the following correctly lists the classification categories from least to most inclusive?

- kingdom, phylum, domain, class, order family, genus, species
- domain, kingdom, class, order, family, phylum, genus, species
- species, genus, family, class, order, domain, phylum, kingdom
- → species, genus, family, order, class, phylum, kingdom, domain
- phylum, species, genus, kingdom, domain, order, class, family

There are various acronyms for remembering the correct order for these classification categories (e.g., King Phillip Came Over For Ginger Snaps).

References

Multiple Choice	Classification of living things III	Section: 01.02

18. Award: **10.00 points**

Classification of living things IV

Phylum Arthropoda is broken into subgroups which include both Arachnida (e.g., spiders) and Insecta (e.g., insects). As a result, Arachnida and Insecta most likely belong to which classification category?

- → ○ class
- ○ order
- ○ family
- ○ kingdom
- ○ domain

Phylum Arthropoda is subdivided into many classes including Arachnida and Insecta.

References

Multiple Choice	Classification of living things IV	Section: 01.02

19. Award: **10.00 points**

Classification of living things V

Which kingdom includes both unicellular and multicellular organisms?

- Eukarya
- Bacteria
- → Protista
- Fungi
- Plantae

Protists range from unicellular to multicellular organisms.

References

Multiple Choice	Classification of living things V	Section: 01.02

20. Award: **10.00 points**

Classification of living things VI

Which of the following classification categories for humans is correct?

- → ○ *Homo sapiens*: binomial name
- ○ *Homo:* species
- ○ Fungi: kingdom
- ○ *sapiens*: family
- ○ Domain: Archaea

Humans are classified within Domain Eukarya, Kingdom Animalia, Genus *Homo*, Species *sapiens*, and have the scientific binomial name *Homo sapiens.*

References

Multiple Choice	Classification of living things VI	Section: 01.02

21. Award: **10.00 points**

Natural selection IV

Eli keeps a worm bin in his basement because the worms need cooler temperatures to survive. He feeds them about one pound of kitchen scraps each week. One summer the temperatures rose above the optimal temperature for the red worms (~ 85°F) and many in his colony died. However, those that survive continued to reproduce and within six months his colony was thriving again. The following summer, unusually warm temperatures once again resulted in the basement temperatures rising above 85°F. Surprisingly, Eli noticed that only a small portion of the worm colony died. What is the best explanation for this?

- After the first summer, a new species of worm evolved.
- The worms sensed that the temperature was going to be hot in the future and adapted.
- The worms learned how to tolerate higher temperatures.
- → The worms that survived the first summer had a higher heat tolerance and passed this trait on to their offspring.
- Temperature and worm survival are not related.

Animals, such as worms, with favorable traits (like heat tolerance) will survive and pass those traits on to their offspring.

References

Multiple Choice Natural selection IV Section: 01.02

22. Award: **10.00 points**

Ecosystem examples

Which of the following levels of biological organization is correctly matched with an example?

- a herd of bison - community
- a spider - organ system
- flowers and insects in a garden - organism
- a rock garden with various plants and rocks of different sizes - population
- → a desert with little water, high heat, sand, cacti, and some mammals - ecosystem

A desert is an ecosystem as it involves both the living organisms and the physical environment (soil, atmosphere, etc.).

References

Multiple Choice	Ecosystem examples	Section: 01.01

23. Award: **10.00 points**

Composition of ecosystems

A biologist is studying how acid rain affects earthworm and beetle populations in a portion of Yellowstone National Park. What level of organization is she studying?

- population
- community
- → ecosystem
- biosphere
- cells

Ecosystems incorporate both biotic (earthworms and beetles) and abiotic (acid rain) factors.

References

Multiple Choice	Composition of ecosystems	Section: 01.01

24. Award: **10.00 points**

Trophic levels

Didinium are carnivorous protistans that prey on other, slower moving protistans. How should *Didinium* be classified?

- eukaryotic decomposer
- prokaryotic consumer
- bacterial decomposer
- prokaryotic producer
- → eukaryotic consumer

Protista are eukaryotes and carnivores are consumers.

References

Multiple Choice	Trophic levels	Section: 01.01

25. Award: **10.00 points**

Composition of ecosystems II

Sam is studying the interaction between porcupines, pinion pine trees, and pine bark beetles. Over the course of his study in Colorado, he observes the behaviors of 25 porcupines, records the location of 151 pinion pines, and traps 332 beetles. How many populations does his study include?

- 1
- → 3
- 508
- 151
- There is not enough information to answer the question.

A population is all members of a species in a particular area. There are 3 different species, thus 3 populations. Each individual is an organism so there are a total of 508 organisms.

References

Multiple Choice	Composition of ecosystems II	Section: 01.01

26. Award: **10.00 points**

Composition of ecosystems III

Which of the following is the most inclusive level of organization?

- class
- population
- → ecosystem
- species
- cells

The ecosystem includes both abiotic and biotic factors. Communities and populations include only the living components. Cells are the building block for all living things.

References

Multiple Choice	Composition of ecosystems III	Section: 01.01

27. Award: **10.00 points**

Trophic levels II

Kevin is studying predator-prey interactions. One day he notices a spider eating a cricket caught in its web. Later that day, a bird eats the spider. How many consumers has Kevin observed directly in this scenario?

- 0
- 1
- → 2
- 3
- 4

Only organisms that consume other organisms for food (spider, bird) are consumers.

References

Multiple Choice Trophic levels II Section: 01.01

28. Award: **10.00 points**

Trophic levels III

Kevin is studying predator-prey interactions. One day he notices a spider eating a cricket caught in its web. Later that day, a bird eats the spider. How many producers are there is this scenario?

- → ○ 0
- ○ 1
- ○ 2
- ○ 3
- ○ 4

Only organisms that produce food (e.g., plants) are producers. None are mentioned in the question.

References

Multiple Choice	Trophic levels III	Section: 01.01

29. Award: **10.00 points**

Trophic levels IV

Kevin is studying predator-prey interactions. One day he notices a spider eating a cricket caught in its web. Later that day, a bird eats the spider. How many populations are involved in his study?

- 0
- 1
- 2
- → 3
- 4

Populations include all members of the same species. This study includes a spider, a cricket, and a bird, all of which are different species.

References

Multiple Choice Trophic levels IV Section: 01.01

30. Award: **10.00 points**

Community composition

Kevin is studying predator-prey interactions. One day he notices a spider eating a cricket caught in its web. Later that day, a bird eats the spider. Based on the organisms involved in this study, what level of organization is he studying?

- population
- → community
- ecosystem
- biosphere
- cells

Communities include more than one population. There are three populations in this study.

References

Multiple Choice	Community composition	Section: 01.01

31. Award: **10.00 points**

Ecosystems

Which of the following is true about ecosystems?

- nutrients are constantly recycled
- producers are a food source for both consumers and decomposers
- solar energy is required for photosynthesis
- chemicals are constantly recycled
- → All of the above answers are true.

All of the answers are true statements about ecosystems.

References

Multiple Choice	Ecosystems	Section: 01.01

32. Award: **10.00 points**

Trophic levels V

A pond ecosystem includes small water fleas which feed on submerged aquatic plants. When the water fleas die, they sink to the bottom of the pond where their dead bodies are broken down with the help of bacteria. List in order the producer, decomposer, and consumer in this system.

- water fleas, bacteria, aquatic plants
- aquatic plants, water fleas, bacteria
- bacteria, water fleas, aquatic plants
- → aquatic plants, bacteria, water fleas
- bacteria, aquatic plants, water fleas

Plants are producers, water fleas are consumers because they eat other organisms, and decomposers break down dead and decaying matter.

References

Multiple Choice Trophic levels V Section: 01.01

33. Award: **10.00 points**

Experimental design

Male amphibians, including frogs and toads, have been plagued by feminization, deformity, behavioral abnormalities and sterility. Biologists from the University of Florida investigated whether reproductive problems among populations of cane toads (*Bufo marinus*) are caused by poisons from chemicals associated with agriculture. The biologists collected local adult cane toads from more than 20 different locations. Toads were collected from areas close to agriculture, both large-scale and small-scale farms, as well as from suburbs that are nonagricultural areas. Which of the following statements would be the best hypothesis for this study?

- Amphibian populations are facing problems due to agricultural chemicals.
- Toxins are capable of causing diseases and deformities within many amphibian populations.
- Toads collected from suburbs had fewer deformities compared to toads collected from agricultural areas.
- → Agricultural chemicals can cause deformities and feminization amongst cane toads.
- More male toads from the large-scale agricultural areas showed signs of feminization.

A hypothesis is a testable explanation for a natural phenomenon. The hypothesis for this experiment is that agricultural chemicals can cause deformities and feminization amongst the cane toads.

References

Multiple Choice Experimental design Section: 01.03

34. Award: **10.00 points**

Controlled experiments

Male amphibians, including frogs and toads, have been plagued by feminization, deformity, behavioral abnormalities and sterility. Biologists from the University of Florida investigated whether reproductive problems among populations of cane toads (*Bufo marinus*) are caused by poisons from chemicals associated with agriculture. The biologists collected local adult cane toads from more than 20 different locations. Toads were collected from areas close to agriculture, both large-scale and small-scale farms, as well as from suburbs that are nonagricultural areas. Based on this study, what is the control group?

- → ○ male toads collected from the suburbs
- ○ male toads collected from areas near large-scale farms
- ○ male toads collected from small-scale farms
- ○ male toads collected from all the different sites
- ○ female toads that were not collected

The control group is the one group that is not exposed to the experimental variable. If biologists are investigating the role of agricultural chemicals, toads from nonagricultural areas (suburbs) would be the control.

References

Multiple Choice	Controlled experiments	Section: 01.03

35. Award: **10.00 points**

Experimental design II

Male amphibians, including frogs and toads, have been plagued by feminization, deformity, behavioral abnormalities and sterility. Biologists from the University of Florida investigated whether reproductive problems among populations of cane toads (*Bufo marinus*) are caused by poisons from chemicals associated with agriculture. The biologists collected local adult cane toads from more than 20 different locations. Toads were collected from areas close to agriculture, both large-scale and small-scale farms, as well as from suburbs that are nonagricultural areas. Based on this study, what is/are the test group(s)?

- male toads collected from the suburbs
- → male toads collected from areas near large-scale and small-scale farms
- female toads collected from all the different sites
- male toads collected from all the different sites
- male and female toads collected from areas near large-scale and small-scale farms

The test groups were male cane toads exposed to agricultural chemicals (the experimental variable) associated with farms.

References

Multiple Choice Experimental design II Section: 01.03

36. Award: **10.00 points**

Classification of living things VII

Male amphibians, including frogs and toads, have been plagued by feminization, deformity, behavioral abnormalities and sterility. Biologists from the University of Florida investigated whether reproductive problems among populations of cane toads (*Bufo marinus*) are caused by poisons from chemicals associated with agriculture. The biologists collected local adult cane toads from more than 20 different locations. Toads were collected from areas close to agriculture, both large-scale and small-scale farms, as well as from suburbs that are nonagricultural areas. In this study, what is the genus of the study animal?

- ○ *Bufo marinus*
- ○ cane toad
- ○ amphibian
- → ○ *Bufo*
- ○ *marinus*

Genus is the first part of the two-part binomial name.

References

Multiple Choice	Classification of living things VII	Section: 01.02

37. Award: **10.00 points**

The scientific meaning of theory

Male amphibians, including frogs and toads, have been plagued by feminization, deformity, behavioral abnormalities and sterility. Biologists from the University of Florida investigated whether reproductive problems among populations of cane toads (*Bufo marinus*) are caused by poisons from chemicals associated with agriculture. The biologists collected local adult cane toads from more than 20 different locations. Toads were collected from areas close to agriculture, both large-scale and small-scale farms, as well as from suburbs that are nonagricultural areas. Data collected by the biologists suggested a strong correlation between feminization of male toads and agricultural chemicals. Is it accurate to state that the scientists had supported their theory that agricultural chemicals cause deformities?

- yes, the data collected during the study strongly supports their theory
- no, the data did not show a link between the feminization of male toads and agricultural chemicals
- → no, the scientists were testing a hypothesis which is not the same things as a theory
- yes, this was a controlled study.
- no, this was a controlled study.

The biologists were testing a hypothesis that agricultural chemicals cause feminization in male toads. Theories are much broader explanations of how the world works and are usually supported by many years of observations and experiments.

References

Multiple Choice	The scientific meaning of theory	Section: 01.03

38. Award: **10.00 points**

Experimental design III

Which of the following statements is correctly matched to the step of the scientific method?

- Biologists suggested that 2-3 cups of coffee per day can decrease death rates among women. (Hypothesis)
- Leslie set up mist nets to catch bats flying over a small stream. Each bat that was caught was weighed and sexed. (Experimental design)
- Bethany watched butterflies feeding in a large field of wild flowers. She noticed that more butterflies approached the yellow and purple flowers than the red flowers. (Observation)
- A researcher reported that red-foot tortoises preferred red-colored fruits and vegetables to those that were green or white. (Conclusion)
- → All of the above statements are correctly matched.

All the statements are correctly matched to appropriate step of the scientific method.

References

Multiple Choice Experimental design III Section: 01.03

39. Award: **10.00 points**

Experimental design IV

Robert, an aspiring scientist in a biology class, wanted to conduct a study on the effects of cigarette smoke on the web-building ability of spiders. Which of the following statements is an incorrect use of terms pertaining to the scientific method?

- → ○ Robert wanted to see if his *theory* was true that cigarette smoke will influence web-building in spiders.
- ○ Robert made the *observation* that spiders weave webs.
- ○ As a *control*, Robert had a group of spiders that were never exposed to cigarette smoke.
- ○ Robert examined the webs from both the control group and the test group and the *data* were recorded in a table.
- ○ Robert *concluded* that there was no significant difference in the ability to weave a web under conditions of cigarette smoke compared to spiders that were not exposed.

Robert wanted to see if his hypothesis was true that cigarette smoke will influence web-building in spiders. A theory would need the support of many repeated experiments of this study by a large number of scientists.

References

Multiple Choice Experimental design IV Section: 01.03

40. Award: **10.00 points**

Experimental design V

Scientists were studying temperature selection amongst pregnant big brown bats. What would be the best control group for this study?

- pregnant bats
- → female bats that were not pregnant
- male bats
- juvenile male bats
- juvenile female bats

Scientists try to vary just one experimental variable between the control and treatment group.Therefore, the best control group for this study would be female bats that are not pregnant.

References

Multiple Choice Experimental design V Section: 01.03

41. Award: 10.00 points

Experimental design VI

Scientists were studying temperature selection among pregnant big brown bats. What would the test group be in this experiment?

- → ○ pregnant bats
- ○ female bats that were not pregnant
- ○ male bats
- ○ juvenile male bats
- ○ juvenile female bats

The subjects of this study are pregnant big brown bats so they would form the experimental group.

References

Multiple Choice Experimental design VI Section: 01.03

42. Award: 10.00 points

The scientific meaning of theory II

Which of the following statement(s) is/are true with respect to scientific theory?

- Theories are accepted explanations for how the world works.
- The theory of evolution is considered the unifying concept in biology.
- Theories can help scientists generate new testable hypotheses.
- Theories are supported by many observations and experiments.
- → All of the statements about scientific theories are true.

All of the statements accurately describe a scientific theory.

References

Multiple Choice	The scientific meaning of theory II	Section: 01.03

43. Award: **10.00 points**

Effects of human activities on extinction

Which of the following is a true statement about extinction?

- Many extinctions are associated with climate change.
- It is estimated that presently we are losing hundreds of species every year due to human activities.
- It is estimated that as much as 38% of all species, including most primates, birds, and amphibians, may be in danger of extinction before the end of the century.
- Extinction is the death of a species or a larger taxonomic group.
- → All of the statements about extinction are true.

All of the statements accurately describe extinction.

References

Multiple Choice	Effects of human activities on extinction	Section: 01.04

44. Award: 10.00 points

The characteristics of biodiversity

Which of the following statements inaccurately describes biodiversity?

- Biodiversity is the total number and relative abundance of species, the variability of their genes, and the different ecosystems in which they live.
- The biodiversity of our planet has been estimated to be around 8.7 million species.
- The impact of human activities on biodiversity loss is one of the most significant bioethical issues that we face today.
- → So far, approximately 6 million species have been identified and named.
- Biologists are alarmed about the current rate of extinction.

So far, approximately 2.3 million species have been identified and named.

References

Multiple Choice | The characteristics of biodiversity | Section: 01.04

45. Award: **10.00 points**

Metabolic reactions and energy conversions

Living organisms must constantly take in energy in order to power functions necessary to remain alive. All of the chemical reactions that involve energy conversions within a cell are called

- evolution.
- respiration.
- photosynthesis.
- → metabolism.
- homeostasis.

Energy conversions, like all other chemical reactions in a cell, are part of the metabolism of a cell. Chemical reactions that build substances consume energy and chemical reactions that break things apart release energy.

References

Multiple Choice	Metabolic reactions and energy conversions	Section: 01.01

46. Award: 10.00 points

Conditions for metabolic reactions

For metabolic processes to occur within their cells, all living organisms need to maintain homeostasis which means they need

- → ○ to maintain the correct internal temperature, moisture level, and acidity as well as other factors.
- ○ to rely on the external conditions in the environment to maintain their body temperature.
- ○ minute to minute and day to day fluctuations in body temperature, moisture level and acidity.
- ○ to eat other organisms for energy and nutrition.
- ○ to constantly evolve as the environment changes around them.

For metabolic processes to continue, living organisms need to keep themselves stable with regard to temperature, moisture level, acidity, and other factors critical to maintaining life. Many of the metabolic activities of an organism are involved in maintaining homeostasis,or an internal environment that acts within a set of physiological boundaries

References

Multiple Choice	Conditions for metabolic reactions	Section: 01.01

47. Award: **10.00 points**

The results of natural selection

The process of _____ leads to organisms that are _____ that environment.

- → ○ natural selection; adapted to
- ○ adaption; evolved for
- ○ homeostasis; suited to
- ○ natural selection; perfect for
- ○ adaptation; only found in

Natural selection leads to organisms that are better suited to their current environment.

References

Multiple Choice	The results of natural selection	Section: 01.02

48. Award: 10.00 points

The results of natural selection II

In general, evolutionary processes lead to organisms that

- are perfect.
- → function well in a given environment.
- can only survive in that one environment.
- have a single adaptive trait.
- become extinct.

Natural selection leads to organisms that have groups of traits that function well in a given environment, but there will never be a perfect organism.

References

Multiple Choice	The results of natural selection II	Section: 01.02

49. Award: **10.00 points**

The scientific meaning of theory III

In science, a theory

- is tested by an experiment.
- is more narrow in scope than a hypothesis.
- → encompasses many hypotheses.
- cannot be tested.
- is held to be an absolutely correct answer to a question.

A theory is tested and supported by many hypotheses. It is held to be the best explanation for something in the natural world, but is not considered a perfect or absolute explanation.

References

Multiple Choice	The scientific meaning of theory III	Section: 01.03

50. Award: **10.00 points**

Using a control group

The purpose of a control group in an experiment is

- to prove the hypothesis.
- → for comparison to the other test groups.
- for comparison to the results of other experiments.
- to prove the prediction.
- to control the dependent variable.

A control group is used as a baseline comparison group for the test groups.

References

Multiple Choice	Using a control group	Section: 01.03

51. Award: **10.00 points**

Steps of the scientific method

Which answer choice lists the steps of the scientific method in the correct order?

- → ○ observation, hypothesis, prediction, experiment, conclusion
- ○ hypothesis, observation, experiment, conclusion, predictions
- ○ conclusion, hypothesis, observation, experiment, predictions
- ○ observation, experiment, hypothesis, conclusion, prediction
- ○ prediction, conclusion, hypothesis, experiment, observation

In a typical application of the scientific method, observations are used to formulate a hypothesis. A prediction is made based on the hypothesis. The prediction may then be tested in an experiment. Based on the results of the experiment a conclusion about whether to support or reject a hypothesis can be reached.

References

Multiple Choice	Steps of the scientific method	Section: 01.03

52. Award: **10.00 points**

Scientific method

The scientific method

- ○ begins with the hypothesis.
- ○ ends with the predictions.
- → ○ begins with observations.
- ○ ends after the experiment.
- ○ does not require a hypothesis.

The scientific method begins with observations that lead to a hypothesis. Based on the hypothesis, the researcher makes a prediction of the outcome of the experiment. The experiment is conducted and then a conclusion is made as to whether to accept or reject the hypothesis.

References

Multiple Choice	Scientific method	Section: 01.03

53. Award: **10.00 points**

Challenges facing science

Managing emerging diseases such as SARS is just one of the many challenges facing science today.

- → ○ True
- ○ False

In the past several years, avian influenza (H5N1), swine flu (H1N1), and severe acute respiratory syndrome (SARS) have generated a lot of press. These are considered new, or emerging, diseases. Scientists don't know the full extent of how deadly these diseases are going to be.

References

True / False	Challenges facing science	Section: 01.04

54. Award: **10.00 points**

Development of new technologies

The development of new technologies is based on science.

- → ○ True
- ○ False

Technology is the application of scientific knowledge to the interests of humans. Scientific investigations are the basis for the majority of our technological advances. As is often the case, a new technology, such as your cell phone or a new drug, is based on years of scientific investigations.

References

True / False	Development of new technologies	Section: 01.04