Biology 1 End-of-Course Assessment Practice Test

For Multiple Choice Items, circle the correct response.

(1.02 MC) SC.912.N.1.1
If a company claims that its product has been proven scientifically, which of the following should have taken place if the results are to be considered reliable?
A. The company should have held discussions with leading industry scientists.
B. Technology should have been used in both the gathering of data and data analysis.
C. Results should have been peer reviewed and repeated producing the same findings.
D. The results of the investigation should have been published in popular magazines.

(1.02 MC) SC.912.N.1.1
Based on your knowledge of scientific investigations, which stage of scientific investigation did the invention of the microscope significantly advance?
A. Communicating the results of experimentation
B. Gathering the data for the investigation
C. Generating explanations of phenomena
D. Planning the investigation and experimentation

(1.02 HC) SC.912.N.1.1
A student is conducting an investigation to determine the effect of temperature on the metabolism of yeast (Saccharomyces cerevisiae). Yeast and sugar are added to water, the gas produced is captured, and its volume is recorded. Which variables should be held constant during this investigation?
A. Mass of sugar and water temperature
B. Mass of yeast and mass of sugar
C. Volume of gas and water temperature
D. Volume of gas and mass of yeast

(1.02 MC) SC.912. L.14.1
Scientific law and a scientific theory are similar in that both
A. are based on what we expect to happen based on natural history.
B. describe the events that can be observed in nature.
C. explain why events and conditions occur as they do in the natural world.
D. represent a large amount of scientific investigation and evidence.

FLVS.net | info@flvs.net | 800.374.1430 | 2145 Metrocenter Blvd, Suite 200, Orlando, FL 32835

(1.02 MC) SC.912. L.14.1
To help patients replenish bodily fluids quickly during an illness, doctors need to understand how cells behave in their environment. Doctors have confidence in what they know about how cells behave because
A. cell theory has been tested, refined, and observed to be true over hundreds of years
B. large medical institutions have conducted their own experiments justifying cell theory
C. the basics of cell theory have not changed much since the original experiments
D. what we know about cell theory has been published in reputable journals

(1.04 MC) SC.912.L.18.12
Which of the following best describes a result of the polar nature of water molecules?
A. Ionic compounds dissolve easily in water.
B. The volume of water decreases by nearly half when it is frozen.
C. Water molecules repel each other.
D. Water molecules repel most other substances.

(1.04 HC) SC.912.L.18.12
Water has a much higher specific heat than most other covalent compounds. What do you predict might happen if water had a low specific heat instead?
A. Flooding would occur and animals would be forced to migrate.
B. Harmful organisms living in water would reproduce at a rapid rate.
C. Organisms that are sensitive to changes in temperature would die.
D. Plants would not have enough water to effectively carry out photosynthesis.

(1.05 MC) SC.912.L.15.8
In which of the following circumstances would it be most likely for large organic molecules to form during a laboratory experiment?
A. If amino acids and nucleic acids both formed
B. If oxygen were slowly added as the experiment progressed
C. If RNA segments that could act as catalysts formed
D. If the mixture were repeatedly heated and cooled

(1.05 MC) SC.912.L.15.8
Assume a group of scientists has managed to set up an experiment simulating the conditions of early Earth that resulted in a cell with DNA using RNA to produce proteins from amino acids as modern cells do. What conclusion could they draw from this experiment?
A. It is possible for a cell similar to a modern cell to form under the conditions of the experiment.
B. Modern cells developed from inorganic compounds in the conditions that existed on early Earth.
C. The conditions of their experiment exactly replicated the conditions found on early Earth.
D. The way modern cells function is the only way a cell could be constructed and survive.

(1.05 MC) SC.912. L.15.8
A variety of organic molecules have been found in meteorites that have landed on Earth, including individual amino acids and lipid molecules. To date, however, no microspheres have

been found on these meteorites. Why is it unlikely that microspheres will ever be found on a meteorite even though lipids can form in them?
A. Amino acids cannot form the enzymes needed to construct microspheres in a meteorite.
B. Any microspheres that formed would be destroyed by the radiation in space.
C. Groups of lipids will only form into microspheres when they are in liquid water.
D. Individual lipids can only begin to form microspheres when oxygen is present.

(2.01 MC) SC.912.L.18.1
Which of the following best compares the structures of lipids and carbohydrates?
A. Both are made up of monosaccharide monomers, but lipids are hydrophobic and carbohydrates are hydrophilic.
B. Both consist of carbon, hydrogen, and oxygen, but carbohydrates have repeating structural units and lipids do not.
C. Both contain carbon and hydrogen, but carbohydrates also contain oxygen and lipids contain nitrogen.
D. Both have a carbon backbone, but lipids also have an amino group and carbohydrates have a carboxylic acid group.

(2.01 MC) SC.912.L.18.1
Which of the following best describes the difference between the functions of nucleic acids and enzymes?
A. Nucleic acids are used as the building blocks of proteins, while enzymes are used as the building blocks of phospholipids.
B. Nucleic acids contain the genetic code for protein synthesis, while enzymes catalyze chemical reactions.
C. Nucleic acids inhibit biochemical reactions, while enzymes provide structural support in cells.
D. Nucleic acids transmit signals that begin biochemical processes, while enzymes convert carbohydrates into lipids and proteins.

(2.01 HC) SC. 912.L.18.1
Some proteins catalyze biochemical reactions. If a genetic defect prevented a protein catalyst from being produced, which of the following do you predict would happen in the cell?
A. The cell would find a different type of protein to catalyze the reaction.
B. The reaction the protein catalyzes would proceed very slowly or not at all.
C. The reaction the protein catalyzes would only occur in some places in the cell.
D. The reverse reaction of the one the protein catalyzes would begin to proceed.

(2.02 MC) SC. 912.L.14.1
Which of the following best summarizes why the technological invention of microscopes was important to biology?
A. It allowed for development of the cell theory.
B. It created a means of funding for cell research.
C. It created public interest and support for research.
D. It proved that cells could form spontaneously.

(2.02 MC) SC. 912.L.14.1
Early elements of the cell theory followed soon after the development of Hooke's light microscope. What does this relationship suggest about the evolution of the cell theory since Hooke?
A. Improvements in technology are closely related to changes in the cell theory.
B. Isolated scientists contributed pieces of the cell theory to form the whole.
C. Progress on the cell theory was delayed by a lack of technological progress.
D. Scientists needed to focus less on cells and more on microscope development.

(2.02 LC) SC. 912.L.14.3
Which of the following characteristics defines a cell as a eukaryote?
A. Being able to move
B. Being able to reproduce
C. Having a nucleus
D. Having ribosomes

(2.02 MC) SC. 912.L.14.3
Which statement best compares a eukaryote and a prokaryote?
A. Eukaryotes have a cell wall, while prokaryotes have a cell membrane.
B. Eukaryotes have membrane-bound organelles, while prokaryotes have few specialized structures.
C. Eukaryotes use active transport to move substances across the cell membrane, while prokaryotes use facilitated diffusion.
D. Eukaryotes use flagella to move themselves through substances, while prokaryotes are not able to move.

(2.03 MC) SC. 912.L.14.3
Which of the following best compares the structures found in plant cells and animal cells?
A. Animal cells contain cell walls and a large central vacuole while plant cells contain cell membranes and many small vacuoles.
B. Animal cells do not contain chloroplasts, cell walls, or a large central vacuole while plant cells do.
C. Plant cells contain rough endoplasmic reticulum and a Golgi apparatus while animal cells contain smooth endoplasmic reticulum surrounded by lysosomes.
D. Plant cells have rigid cell walls and do not contain mitochondria or ribosomes while animal cells do.

(2.03 MC) SC. 912.L.14.3
Which of the following best compares the membranes found in different types of cells?
A. Animal cells have cell membranes and cell walls, but plant cells do not have cell membranes.
B. Animal cells have membrane-bound organelles, while plant cells carry out the functions necessary for life in the cytoplasm.
C. Prokaryotes have only cell membranes, while eukaryotes have both cell walls and cell membranes.
D. Prokaryotes and eukaryotes both have cell membranes, but eukaryotes also have membrane-bound organelles.

FLVS.net | info@flvs.net | 800.374.1430 | 2145 Metrocenter Blvd, Suite 200, Orlando, FL 32835

(2.05 MC) SC. 912.L.18.9
Oxygen is a product of photosynthesis. The primary role of this oxygen in cellular respiration is to
A. yield energy in the form of ATP as it is passed down the respiratory chain.
B. act as an acceptor for electrons and hydrogen, forming water.
C. combine with carbon, forming CO_2.
D. combine with lactate, forming pyruvate.

(2.05 LC) SC. 912.L.18.9
What are the reactants for cellular respiration?
A. H_2O and O_2
B. Glucose and O_2
C. Glucose and CO_2
D. H_2O and CO_2

(2.05 MC) SC. 912.L.18.9
Which equation describes what happens in photosynthesis?
A. $C_6H_{12}O_6 + H_20 \rightarrow CO_2 + \text{energy}$
B. $6CO_2 + 6H_2O + \text{energy} \rightarrow C_6H_{12}O_6 + 6O_2$
C. $C_6H_{12}O_6 + 6O_2 \rightarrow 6CO_2 + 6H_2O + \text{energy}$
D. $CO_2 + O_2 + H_20 + \text{energy} \rightarrow CH_2O_5$

(3.02 MC) SC.912.L.16.17
Which of the following best compares the processes of mitosis and meiosis?
A. Mitosis involves one division cycle and results in diploid daughter cells, while meiosis consists of two division cycles and results in haploid gametes.
B. Mitosis involves one division cycle and results in haploid gametes, while meiosis consists of two division cycles and results in diploid daughter cells.
C. Mitosis involves two division cycles and results in diploid daughter cells, while meiosis consists of one division cycle and results in haploid gametes.
D. Mitosis involves two division cycles and results in haploid gametes, while meiosis consists of one division cycle and results in diploid daughter cells.

(3.02 MC) SC.912.L.16.17
Which of the following best explains why meiosis results in greater genetic diversity than mitosis?
A. After meiosis, daughter cells are diploid and have twice as much genetic material, which can be divided in many more possible combinations.
B. After meiosis, haploid daughter cells are fertilized, which doubles their number of chromosomes and increases the number of possible genes.
C. During meiosis, chromosomes assort themselves independently of each other, which allows for more different possible combinations of chromosomes.
D. During meiosis, more daughter cells are produced, which increases the likelihood that fertilization will occur.

FLVS.net | info@flvs.net | 800.374.1430 | 2145 Metrocenter Blvd, Suite 200, Orlando, FL 32835

(3.02 MC) SC.912.L.16.17
Which of the following best describes how the process of crossing over during meiosis leads to an increase in genetic diversity?
A. During prophase I, DNA replication takes place, and homologous chromosomes trade places with each other before lining up in preparation for metaphase.
B. During prophase I, DNA segments are exchanged between homologous chromosomes, resulting in different combinations of alleles.
C. During prophase II, fragments of DNA break off of chromosomes and attach to the ends of other chromosomes, resulting in different gene sequences.
D. During prophase II, sister chromatids separate from each other, and as they travel to opposite ends of the cell, DNA segments of nearby chromosomes are exchanged.

(3.02 HC) SC.912.L.16.17
Some organisms are able to reproduce asexually through mitosis, while cells of organisms that reproduce sexually will undergo meiosis to produce gametes. Which process do you predict would be most beneficial to a species during a drastic change in environmental conditions?
A. Meiosis; it results in more daughter cells, which increases the population of the species.
B. Meiosis; it results in more genetic variation, which would help ensure the species will survive.
C. Mitosis; it results in more genetic mutations, which may be advantageous to the species.
D. Mitosis; it results in more offspring in a short time, which increases the odds that some will survive.

(3.03 MC) SC.912.L.16.1
The allele for brown eyes is dominant to the allele for blue eyes. Which of the following best explains how two brown-eyed parents could produce a blue-eyed child?
A. Each parent must be carrying the recessive allele for blue eyes.
B. Eye color is a sex-linked trait and male children could have only the allele for blue eyes.
C. Mutations after fertilization could alter gene sequences and change alleles.
D. One parent must have had only blue-eyed parents.

(3.03 MC) SC.912.L.16.1
When an organism has more than 10 fingers or toes, the condition is known as polydactylism. Although polydactylism is rare, it is a dominant trait. If two cats that are heterozygous for polydactylism mate and have a litter with a total of 12 kittens, how many of them would you expect to have more than 10 fingers or toes?
A. 0
B. 6
C. 9
D. 12

(3.03 HC) SC.912.L.16.1
In pea plants, the allele for white flowers is recessive to the allele for purple flowers. In a generation of pea plants, 89 plants produced purple flowers and 31 plants produced white flowers. Which of the following is the best conclusion you can make about the parent plants of this generation?
A. Both parent plants are heterozygous for flower color.
B. Both parent plants were homozygous with purple flowers.
C. One parent plant had white flowers and the other was heterozygous for flower color.
D. One parent plant was heterozygous for flower color and the other was homozygous with purple flowers.

(3.05 MC) SC.912.L.16.3
Why do cells need both tRNA and mRNA?
A. Only tRNA bends into a shape that can carry specific amino acids
B. Only mRNA can be used to repair mistakes in the DNA sequence.
C. The tRNA in used on the ribosomes and the mRNA is used in the nucleus.
D. The mRNA brings information to the nucleus for the tRNA to use.

(3.05 LC) SC.912.L.16.3
ATCAGTGAT
A codon is a sequence of three nucleotides that code for an amino acid. If the DNA sequence shown here goes through transcription and translation, how many amino acids will result from this sequence?
A. 5
B. 4
C. 2
D. 3

(3.05 HC) SC.912.L.16.3
A cell is replicating its DNA. Part of the DNA strand reads A-C-C-G-T-A-C. The new strand built off this section reads T-G-G-A-A-T-G. What effect might this have when the DNA replicates in the future?
A. Cells having the new DNA version will look or operate differently from cells with the original DNA.
B. Only the sections of DNA without mistakes will be used in the future so the DNA strand will shorten.
C. The DNA will be exactly like the original since only the original strand of DNA is used as a template.
D. When the new strand is used as a template the strand built from it will differ from the original DNA.

FLVS.net | info@flvs.net | 800.374.1430 | 2145 Metrocenter Blvd, Suite 200, Orlando, FL 32835

(4.01 LC) SC.912.L.17.9
Which of the following best explains the difference in the amount of energy available in each tropic level of this food web?

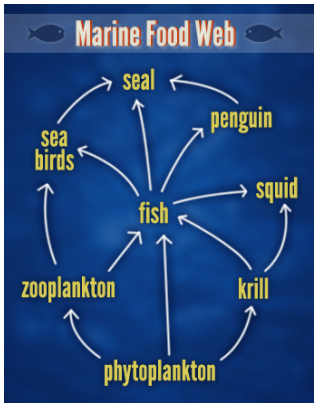
A. There is more available energy in the seal than there is in the phytoplankton
B. There is more available energy in the penguin than there is in the zooplankton
C. There is less available energy in the seal than there is in the phytoplankton
D. There is less available energy in the zooplankton than there is in the penguin

(4.01 MC) SC.912.L.17.9
Which of the following correctly traces the energy transfer through the trophic levels in the marine food web shown below?

A. Fish → sea birds → seal → penguin
B. Phytoplankton → krill → fish → seal
C. Seal → sea birds → fish → phytoplankton
D. Zooplankton → phytoplankton → krill → squid

FLVS.net | info@flvs.net | 800.374.1430 | 2145 Metrocenter Blvd, Suite 200, Orlando, FL 32835

(4.01 MC) SC.912.L.17.9
Which of the following describes how the amount of energy changes as it flows from one trophic level to the next in the marine food web shown below?



A. Energy increases as it is transferred from penguins to seals, since seals are more massive than penguins.
B. Energy decreases as it is transferred from zooplankton to fish, since zooplankton are producers and fish are consumers.
C. When krill consume phytoplankton, about 90 percent of the phytoplankton's energy is transferred to the krill.
D. When sea birds consume fish, about 10 percent of the fish's energy is transferred to the sea birds.

(4.01 MC) SC.912.L.17.5
Many insects, such as mosquitoes and dragonflies, spend their juvenile stage as aquatic larvae before becoming winged and airborne adults. Most years, these insects are extremely abundant in the Arctic tundra in summer. What might account for this?
A. Adult insects spend the long Arctic winter laying thousands of eggs under the ice of frozen ponds.
B. Many insects migrate long distances to take advantage of good breeding areas in the tundra.
C. Pools of water which make good breeding areas are plentiful in summer as the permafrost melts.
D. Summer rains in the Arctic tundra replenish breeding ponds that dried up during the winter.

(4.01 LC) SC.912.L.17.5
A population of rodents becomes stranded on a remote island. Eventually, the population reaches the island's carrying capacity. At this point, the birth and death rates are
A. relatively equal.
B. crashing.
C. density dependent.
D. density independent.

FLVS.net | info@flvs.net | 800.374.1430 | 2145 Metrocenter Blvd, Suite 200, Orlando, FL 32835

(4.01 HC) SC.912.L.17.5
Rainbow trout need at least 6.0 mg/L of dissolved oxygen to survive. Biologists are trying to reestablish rainbow trout in a mountain stream but the stream only has 5.5 mg/L of dissolved oxygen. Which of the following would be the most useful to encourage the development of the rainbow trout population?
A. Create more bends in the stream to allow the water to slow down.
B. Cut down trees along the stream to allow more sunlight to warm the water.
C. Pull out aquatic plants growing in the stream to allow oxygen to accumulate.
D. Remove dams along the stream to allow the water to flow faster.

(4.03 MC) SC.912.L.17.5
Which of the following describes how an abiotic factor can impact the population dynamics in an ecosystem?
A. A parasite that invades a host can reproduce and cause a decline in the host species population.
B. Organisms that compete for the same resources will keep each other from overpopulating.
C. Predators will prevent herbivores from depleting the plants and other resources in an ecosystem.
D. Seasonal variations in temperature can cause some of the individuals in a population to die.

(4.03 HC) SC.912.L.17.5
If a snake species were introduced to an ecosystem where it had no natural predators, what long-term effect do you predict the snakes would have on the population dynamics of the ecosystem?
A. They would breed with native snake species, resulting in an increase in biodiversity in the ecosystem.
B. They would compete with native snake species for resources, causing a decline in native snake populations and possibly extinction.
C. They would form mutualistic relationships with native snakes, since they would occupy the same niche in the ecosystem.
D. They would serve as a food source for predators of native snakes, causing an increase in native snake populations.

(4.04 MC) SC.912.L.17.20
Carbon Dioxide is important in our atmosphere because it is required for photosynthesis and traps some heat, keeping the Earth warm. However, human produced carbon dioxide is a problem because it
A. leads to higher global temperatures.
B. disrupts the natural cycling of other greenhouse gases.
C. add too much carbon dioxide to the oceans.
D. causes uncontrolled photosynthesis.

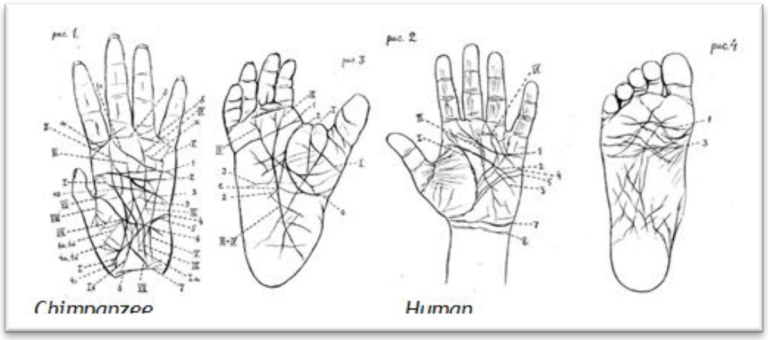
(4.04 MC) SC.912.L.17.20
The choices that humans make every day affect the environment. Sometimes, our lifestyles can harm the environment rather than protect it. Which of the following would be most helpful in protecting the environment and achieving sustainability?

A. Buying paper products made from harvested trees
B. Buying fewer mass produced products
C. Using natural gas as a fuel source instead of petroleum
D. Using solar power to generate electricity

(4.04 MC) SC.912.L.17.20
The activities that take place to meet human needs can often be harmful to ecosystems. By developing sustainable practices, however, we can help protect our environment. Which of the following changes would be most helpful in reaching sustainability?
A. Building more water treatment facilities
B. Planting trees to replace those that are cut down by logging
C. Tilling soil to improve soil fertility and increase crop production
D. Using natural gas for fuel instead of burning petroleum

(5.01 MC) SC.912.L.15.1
How is the scientific theory of evolution supported by the comparison of the skulls and skeletons of modern humans and extinct hominids?
A. By making the hip, spine, and skull comparisons, the age of different hominid specimens can be determined.
B. Comparison of skull and skeletons provides evidence that humans and different hominid species interacted.
C. Similarity in skull shapes, hands, and hips between extinct hominids and humans supports a common ancestry.
D. Skull and skeleton comparisons can explain why hominids were inferior and became extinct while humans evolved.

(5.01 MC) SC.912.L.15.1



Based on the illustration above, what do the similarities between human and chimpanzee hands and feet suggest about the two different organisms?
A. Chimpanzees and humans both have hands and feet adapted for walking upright, showing they have identical DNA.
B. Chimpanzees and humans both have similar hands for grasping, proving they make and use complex tools.
C. Humans and chimpanzees both developed five digits on their hands and feet, suggesting they have a common ancestor.
D. Humans and chimpanzees both have thumbs, proving they eat similar foods like meat, nuts, and vegetation.

(5.01 MC) SC.912.L.15.1
Paleontologists have compared modern human skeletons to fossils of hominids from two to five million years ago, before the appearance of modern humans. They found certain features, like the shape of their hips and the way the spine supported the body, was similar to the modern human skeletal structure. Which of the following best describes why the discoveries of the hominid fossils are important for understanding modern human evolution?
A. They are evidence of transitional species that show how modern humans evolved from ape-like ancestors.
B. They are important for understanding how modern human pelvic bones are necessary for upright walking.
C. They provide evidence that modern humans and chimpanzees are not related by a common ancestor.
D. They show that modern humans had to compete with other upright bipedal hominids for food and resources.

(5.01 HC) SC.912.L.15.1
The following table compares a human protein with the protein of other organisms. Each numbered column is a different amino acid position in the protein. If an organism's amino acid is the same as the human molecule, then a dash (-) is shown. Otherwise, an abbreviation for the organism's amino acid at that location is given. Based on the information in the table, what conclusion can be made about the relationship of humans to the other organisms?

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Human		Gly	Asp	Val	Glu	Lys	Gly	Lys	Lys	Ile	Phe	Ile	Met	Lys	Cys	Ser	Gln	Cys	His	Thr	Val	Glu	Lys
Chicken		-	-	Ile	-	-	-	-	-	-	-	Val	Gln	-	-	-	-	-	-	-	-	-	-
Dogfish		-	-	-	-	-	-	-	-	Val	-	Val	Gln	-	-	Ala	-	-	-	-	-	-	Asn
Fruit Fly	<<<	-	-	-	-	-	-	-	-	Leu		Val	Gln	Arg		Ala	-	-	-	-	-	-	Ala
Pig		-	-	-	-	-	-	-	-	-	-	Val	Gln	-	-	Ala	-	-	-	-	-	-	-
Wheat	<<<	-	Asn	Pro	Asp	Ala	-	Ala	-	-	-	Lys	Thr	-	-	Ala	-	-	-	-	-	Asp	Ala
Yeast	<<<	-	Ser	Ala	Lys	-	-	Ala	Thr	Leu	-	Lys	Thr	Arg	-	Glu	Leu	-	-	-	-	-	-

Note: <<< Indicates a sequence of amino acids preceding the sequence shown here.

A. Humans and chickens cannot be traced to a common ancestor.
B. Humans and dogfish are the most closely related organisms.
C. Humans and pigs are related to a common ancestor.
D. Humans are not related to any of the other organisms.

(5.01 MC) SC.912.L.15.13
A group of well-separated islands in the Pacific Ocean has a population of hibiscus plants that produce either orange or white flowers. On one of the islands, most of the hibiscus plants were killed a few years ago by a volcanic lava flow. Why is there a greater percentage of orange hibiscus plants on this island than on the other islands?
A. Cross pollination across the islands without the lava flow caused the percentage of orange flowers to dramatically change on these islands over time.
B. The hibiscus plants on the island that had the lava flow suffered from a higher mutation rate than plants on other islands, causing a difference in the populations.
C. The limited population size after the lava flow resulted in a limited gene pool, causing genetic drift in future generations of hibiscus plants on this island.
D. Orange flowering hibiscus plants were better adapted to survive lava flows, so white hibiscus were naturally selected out of the population on the island.

(5.01 MC) SC.912.L.15.13
Water frogs that live on Greek islands in the Mediterranean were separated from mainland water frogs when salt-water levels rose to form the islands, allowing differences in the isolated populations to develop. Suppose one large group of frogs on the mainland uses a low-pitched call to attract mates while otherwise identical frogs on a nearby island use a high-pitched call. A boat carries a few high-pitched frogs in its cargo to the mainland. Which of the following answer choices best predicts the outcome of this event?
A. The frogs from the islands are quickly eliminated by natural selection because they sound different than the mainland frogs.
B. The frogs from the islands introduce new genes to the mainland gene pool, causing a change of pitch in the mainland frog population.
C. The mainland frogs learn to make high-pitched calls and pass on this adaptation in their genes to future generations.
D. The mainland frogs respond to competition with the new frogs by genetically mutating their offspring to produce high-pitched calls.

(5.01 MC) SC.912.L.15.13
Suppose a family of black wolves migrates across a land bridge to a region supporting a large population of gray wolves. A few generations later, the population consists entirely of wolves with black and gray markings. Which of the following best describes the mechanism that caused this change in the population of the wolves in the region?
A. Genetic mutations naturally occurred in the black and gray wolf populations, resulting in both groups simultaneously developing black and gray coat markings.
B. The flow of black wolf genes across the land bridge added to the gray wolf population's gene pool, increasing the frequency of the genes for black fur in the population.
C. The gray wolves selected other gray wolves over black wolves as mates, causing a limit to the gray wolf gene pool that resulted in genetic drift.
D. The wolves with gray coats had to compete for resources with the successful black wolves, so they adapted their coats to mimic the black wolves.

(5.02 HC) SC.912.L.15.13
Due to human encroachment, the range of the Florida panther has been reduced to a very small area in South Florida. Predict the long-term effect of this isolation on the conditions required for natural selection.
A. It would boost the panthers' population by limiting their reproductive territory and would eventually decrease the populations of their prey animals.
B. It would increase the panthers' ability to hunt successfully and would eventually lead to an increase in their numbers.
C. It would limit the panthers' variety of food sources and they would all eventually become extinct due to starvation.
D. It would reduce the panthers' capacity for inherited variation and would leave them vulnerable to disease and genetic abnormalities.

(6.01 MC) SC.912.L.15.6
In which of the domains would it be easiest to determine the phylogenetic relationships among organisms?
A. The Animalia are easiest because they are large enough that their morphological characteristics are clearly visible.
B. The Archaea are easiest because they are the most ancient and have the greatest amount of genetic variation among them.
C. The Bacteria are easiest because they have the smallest amounts of DNA which can be sequenced quickly.
D. The Eukaryotes are easiest because they tend not to share genetic material with each other except when they are reproducing sexually.

(6.01 MC) SC.912.L.15.6
Which of the following provides the best argument for separating Archaea and Bacteria into their own domains instead of leaving them together in the single kingdom, Monera?
A. Genetic analyses showed that Archaea are much more ancient than Bacteria.
B. It was discovered that they make their membranes differently and copy their DNA differently.
C. Phylogenetic studies showed they have evolved different ways of storing their DNA in their nuclei.
D. The kingdom was getting much too large as new species were discovered.

(6.02 MC) SC.912.L.15.6
What similarities are there between the ways Archaea and Bacteria react to difficult environmental conditions?
A. They both create a capsule around the cell or add cellulose to their cell walls for protection.
B. They both develop flagella to swim away or change their cell membranes for protection.
C. They both form endospores for protection or develop cilia or flagella to swim away.
D. They both make their own toxins or switch to photosynthesis as alternate sources of food.

(6.03 MC) SC.912.L.15.6
In which of the following ways are the fungus-like protists similar to the heterotrophic protists?
A. They both are commonly found living in dry environments.
B. They both can use photosynthesis if adequate sunlight is available.
C. They both have the ability to move around using flagella or cilia as adults.
D. They both need to gather food from their environment.

(6.04 MC) SC.912.L.15.6
Which of the following best describes a characteristic that distinguishes Fungi from other kingdoms?
A. Fungi are able to reproduce both sexually and asexually.
B. Fungi are eukaryotes with complex organ systems.
C. Fungi are multicellular and break down dead plant and animal matter.
D. Fungi have cell walls and specialized tissues.

(6.05 MC) SC.912.L.15.6
Which of the following correctly compares two of the divisions of the plant kingdom?
A. Gymnosperms and angiosperms both reproduce sexually, but gymnosperms produce flowers or fruit, and angiosperms produce pollen cones and seed cones.
B. Nonvascular plants lack xylem and phloem and reproduce asexually, while angiosperms have xylem and phloem and reproduce sexually.
C. Seedless vascular plants and gymnosperms both reproduce asexually, but seedless vascular plants contain xylem, and gymnosperms contain xylem and phloem.
D. Seedless vascular plants and nonvascular plants both contain xylem and phloem, but seedless vascular plants reproduce asexually, and nonvascular plants reproduce sexually.

(6.05 HC) SC.912.L.15.6
An unknown plant species has stomata, xylem, and phloem. It reproduces sexually and has male pollen cones and female seed cones. Which of the following is the most logical conclusion about the classification of this plant?
A. It is a gymnosperm, and belongs to the division Coniferophyta.
B. It is a nonvascular plant, and belongs to the division Bryophyta.
C. It is a seedless vascular plant, and belongs to the division Psilophyta.
D. It is an angiosperm, and belongs to the division Anthophyta.

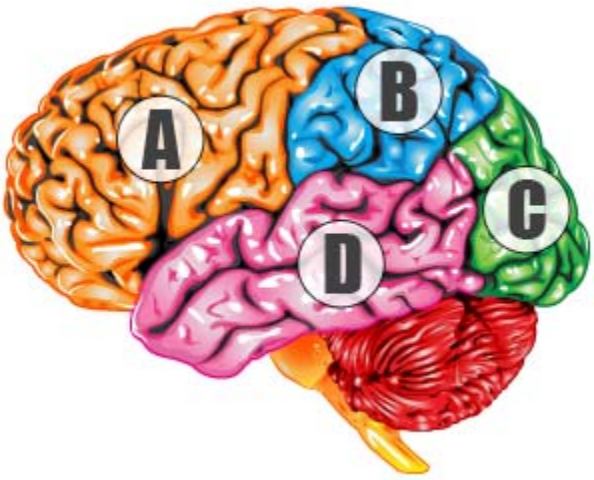
(6.06 MC) SC.912.L.14.7
If a plant's leaves developed so that its vascular tissue only contained xylem, how would this affect the rest of the plant's physiological processes?
A. Since most parts of the plant contain chloroplasts, the plant's cells would function as usual without a need for glucose from the leaves.
B. The carbon dioxide required for photosynthesis would not be absorbed and transported to the leaf cells, and photosynthesis would stop.
C. The glucose produced during photosynthesis in the leaf cells would not be able to reach the rest of the plant, and the cellular respiration in the plant's other cells would not function.
D. The plant's ground tissues would still be able to transport the water and nutrients from the roots to the rest of the plant, and so other processes like photosynthesis would continue as usual.

(6.06 MC) SC.912.L.14.7
Terrestrial plants have a waxy covering produced by the dermal tissues called the cuticle. If this waxy covering was overproduced so that the stomata became clogged, what would happen to the plant?
A. Glucose produced during photosynthesis would be prevented from reaching the rest of the plant, and energy production by cellular respiration would stop.
B. Sunlight would not be able to reach the plant's ground tissue cells through the thick dermal tissue, and the plant's ability to perform photosynthesis would be damaged.
C. The plant would not be able to absorb water and oxygen from the air, and the plant would dry out, limiting most cell functions.
D. The plant would not be able to exchange oxygen for carbon dioxide, and the plant's ability to perform photosynthesis would be limited.

(6.07 MC) SC.912.L.14.7
The structure of the leaf best supports the process of
A. water absorption for transpiration.
B. gas exchange for photosynthesis.
C. energy absorption for cellular reproduction.
D. water absorption for cellular respiration.

(6.08 MC) SC.912.L.15.6
Which of the following best describes the characteristics that differentiate animals from the organisms of other kingdoms?
A. Animals have complex organ systems and reproduce sexually.
B. Animals have prokaryotic cells and are multicellular.
C. Animals have external digestion and are vertebrates.
D. Animals have rigid cell walls and specialized tissues.

(7.01 LC) SC.912.L.14.26
Which of the brain regions marked on the diagram below is the frontal lobe?



A. A
B. B
C. C
D. D

(7.02 MC) SC.912.L.14.36
Illnesses can often lead to fever and dehydration. How might these symptoms affect a person's cardiovascular system?
A. Fever and dehydration increase body temperature and fluids, which decrease a person's heart rate and respiration.
B. Fever and dehydration increases body temperature and decreases the amount of fluids, which increase a person's heart rate and respiration
C. Fever and dehydration increase body temperature and decrease in the amount of fluids, which decrease the viscosity of the blood
D. Fever and dehydration increases body temperature and fluids, which increase the viscosity of the blood.

(7.02 MC) SC.912.L.14.36
A doctor examines a patient who has high blood pressure and atherosclerosis in the coronary artery. What medical condition connected to blood flow is most likely to affect this patient in the future?
A. The patient may develop headaches and confusion due to cancer in the brain caused by years of low levels of oxygen supplied to the brain.
B. The patient may develop stiff joints and chest pains from the high blood pressure applied to the muscle and joint tissues of the body.
C. The patient may show signs of confusion, weakness, and partial paralysis due to high blood pressure when the plaque dislodges and blocks blood flow to the brain.
D. The patient may suffer a heart attack because of the reduction in blood flow to the heart muscles due to severe plaque build-up in the coronary artery.

(7.05 MC) SC.912.L.16.13
Which event happens earliest during pregnancy?
A. The embryo's organs begin to function on their own
B. The embryo stores nutrients and minerals
C. The embryo's cartilage begins to become bone.
D. The embryo reaches approximately fifteen inches in length.

(7.05 MC) SC.912.L.16.13
Which of the following correctly compares the functions of the vas deferens and the fallopian tubes?
A. Sperm leaves the body through the vas deferens, and eggs leave the body through the fallopian tubes.
B. Sperm travels through the vas deferens, and eggs travel through the fallopian tubes.
C. The vas deferens produces sperm, and the fallopian tubes produce eggs.
D. The vas deferens stores sperm, and the fallopian tubes store eggs.

(7.05 HC) SC.912.L.16.13
Normally, the temperature inside the scrotum is slightly lower than normal body temperature. What do you predict would happen if the temperature inside the scrotum were a few degrees higher than normal body temperature instead?
A. Sperm would not be able to travel through the vas deferens.
B. Sperm would be stored in the epididymis rather than in the testes.
C. Sperm would not be able to develop properly.
D. The rate of sperm production would increase.

(7.05 MC) SC.912.L.16.17
Which of the following correctly explains how crossing over benefits organisms that reproduce sexually?
A. It allows for fewer mutations in offspring.
B. It allows for adjustments in a population's sex ratio.
C. It increases genetic variation in offspring.
D. It increases the number of chromosomes in offspring.

(7.06 MC) SC.912.L.14.52
Which of the following would be the best way to detect whether someone was infected with a virus, like HIV?
A. Check for an inflammatory response in the body.
B. Check for the presence of antibodies in the blood.
C. Check for the presence of histamines in the body.
D. Check for the presence of white blood cells in the blood.

(7.06 MC) SC.912.L.14.52
Which of the following explains why people need to get a flu shot each year?
A. Antibodies for the flu virus only last for one year.
B. The flu virus eventually breaks down the vaccine.
C. The flu virus is constantly mutating and changing.
D. There are not enough antibodies in the vaccine to kill the entire virus.

(7.06 HC) SC.912.L.14.52
Many times people visit the doctor requesting antibiotics to treat colds and viral infections. How is the doctor justified in offering the patient treatment options that do not include antibiotics for these cases?
A. Antibiotics can weaken the immune system when used for colds and viruses, whereas other medications are not so hard on the immune system during these types of illnesses.
B. Colds and viruses should be first treated with viral therapies and then when the body begins to recover, antibiotics can be used. Otherwise, the use of antibiotics is not effective at all.
C. If a doctor provides an antibiotic to treat colds and viruses, any bacteria in the patient's body will be killed, but a few will survive. Those few survivors may become resistant to antibiotics needed for real bacterial illnesses.
D. Side effects from antibiotics are severe when used for colds and viruses. Any use of antibiotics for colds and viruses will only make the patient more ill and ultimately make the patient's recovery time longer.