STAR Test Sample Questions

Biology (End-of-course)

Table of Contents

More Questions

STAR Test Sample Questions

Biology (End-of-course)

Physiology (contiued)

- Question 3
- Question 4
- Question 5
- Question 6

Basic Level Questions

- Question 1
- Question 2

Below Basic Level Questions

- Question 1

Standardized Testing and Reporting - STAR

Biology (End-of-course)

Cell Biology (Performance Level: Advanced) – Question 01

A cell from heart muscle would probably have an unusually high proportion of

A lysosomes.

B mitochondria.

C mRNA.

D Golgi bodies.

Biology (End-of-course)

Cell Biology (Performance Level: Advanced) – Question 02

In aerobic respiration, the Krebs cycle (citric acid cycle) takes place in

A chloroplasts.

B nuclei.

C lysosomes.

D mitochondria.

Biology (End-of-course)

Cell Biology (Performance Level: Proficient) – Question 01

The cell membrane of the red blood cell will allow water, oxygen, carbon dioxide, and glucose to pass through. Because other substances are blocked from entering, this membrane is called

A perforated.

B semi-permeable.

C non-conductive.

D permeable.

Biology (End-of-course)

Cell Biology (Performance Level: Proficient) – Question 02

There are many different enzymes located in the cytoplasm of a single cell. How is a specific enzyme able to catalyze a specific reaction?

A Different enzymes are synthesized in specific areas of the cytoplasm.

B Most enzymes can catalyze many different reactions.

C An enzyme binds to a specific substrate (reactant) for the reaction catalyzed.

D Enzymes are transported to specific substrates (reactants) by ribosomes.

Biology (End-of-course)

Cell Biology (Performance Level: Proficient) – Question 03

What causes tomatoes to ripen much more slowly in a refrigerator than they do if left on a table at room temperature?

A Tomatoes need sunlight to ripen.

B Humidity accelerates the ripening process.

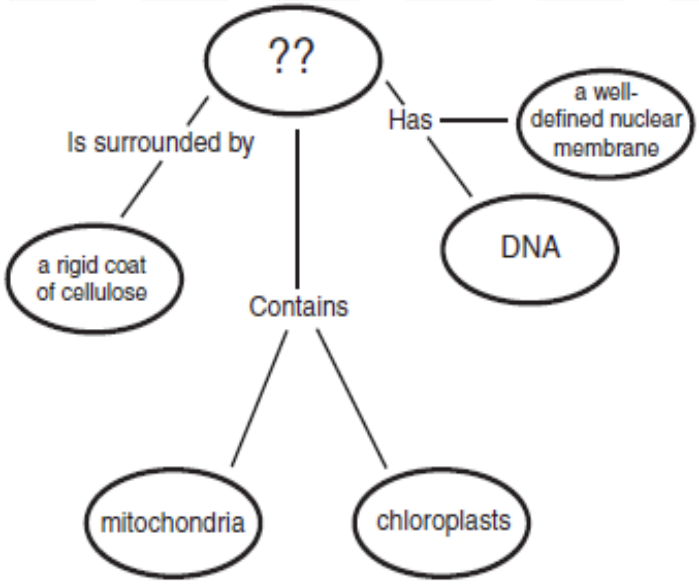
C Low temperatures reduce the action of ripening enzymes.

D Enzymes produced by bacteria inhibit ripening.

Biology (End-of-course)

Cell Biology (Performance Level: Proficient) – Question 04

Which of these best completes this concept map?



A an animal cell

B a prokaryotic cell

C a virus

D a plant cell

Biology (End-of-course)

Cell Biology (Performance Level: Proficient) – Question 05

Eukaryotic cells are differentiated from prokaryotic cells because eukaryotic cells

A are much smaller.

B have permeable membranes.

C have a higher rate of reproduction.

D have nuclei.

Biology (End-of-course)

Cell Biology (Performance Level: Proficient) – Question 06

Which molecule in plant cells first captures the radiant energy from sunlight?

A glucose

B carbon dioxide

C chlorophyll

D adenosine triphosphate

Biology (End-of-course)

Ecology (Performance Level: Proficient) – Question 01

Rabbits introduced into Australia over 100 years ago have become a serious pest to farmers. Rabbit populations increased so much that they displaced many native species of plant eaters. What is the most logical explanation for their increased numbers?

A Rabbits have a high death rate.

B There are few effective predators.

C Additional rabbit species have been introduced.

D There is an increase in rabbit competitors.

Biology (End-of-course)

Ecology (Performance Level: Proficient) – Question 02

Which of these organisms would most likely be found at the top of an energy pyramid?

A clams

B sardines

C sharks

D kelp

Biology (End-of-course)

Ecology (Performance Level: Basic) – Question 01

Scientists found that, over a period of 200 years, a mountain pond was transformed into a meadow. During that time, several communities of organisms were replaced by different communities. Which of these best explains why new communities were able to replace older communities?

A The original species became extinct.

B Species in the older community died from old age.

C The abiotic characteristics of the habitat changed.

D Diseases that killed the older organisms disappeared.

Biology (End-of-course)

Ecology (Performance Level: Basic) – Question 02

Complete burning of plant material returns carbon primarily to the

A herbivores.

B water.

C vegetation.

D atmosphere.

Biology (End-of-course)

Evolution (Performance Level: Proficient) – Question 01

In carrier pigeons there is a rare inherited condition that causes the death of the chicks before hatching. In order for this disease to be passed from generation to generation there must be parent birds that

A are heterozygous for the disease.

B have the disease themselves.

C produce new mutations for this disease.

D are closely interbred.

Biology (End-of-course)

Evolution (Performance Level: Proficient) – Question 02

A healthy individual is a carrier of a lethal allele but is unaffected by it. What is the probable genotype of this individual?

A two dominant normal alleles

B one recessive lethal allele and one dominant lethal allele

C one recessive lethal allele and one dominant normal allele

D one dominant lethal allele and one recessive normal allele

Biology (End-of-course)

Evolution (Performance Level: Proficient) – Question 03

Mutations within a DNA sequence are

A natural processes that produce genetic diversity.

B natural processes that always affect the phenotype.

C unnatural processes that always affect the phenotype.

D unnatural processes that are harmful to genetic diversity.

Biology (End-of-course)

Evolution (Performance Level: Proficient) – Question 04

A species of finch has been studied on one of the geographically isolated Galapagos Islands for many years. Since the island is small, the lineage of every bird for several generations is known. This allows a family tree of each bird to be developed. Some family groups have survived and others have died out.
The groups that survive *probably* have

A interbred with other species.

B inherited some advantageous variations.

C found new places on the island to live.

D been attacked by more predators.

Biology (End-of-course)

Evolution (Performance Level: Proficient) – Question 05

Earth has undergone some catastrophic changes from time to time. Which of these most likely explains why life on Earth continued following these catastrophes?

A Dominant species had a slow mutation rate.

B Many species filled the same niche.

C A strong species had many different characteristics.

D A wide diversity of species existed.

Biology (End-of-course)

Evolution (Performance Level: Proficient) – Question 06

A single species of squirrel evolved over time into two species, each on opposite sides of the Grand Canyon. This change was most likely due to

A higher mutation rates on one side.

B low genetic diversity in the initial population.

C the isolation of the two groups.

D differences in reproductive rates.

Biology (End-of-course)

Evolution (Performance Level: Proficient) – Question 07

If a paleontologist finds fossils of many different species existing in the same area at approximately the same time, the paleontologist can conclude that the ecosystem in this area had a high degree of

A climatic variation.

B episodic speciation.

C biological diversity.

D geographic isolation.

Biology (End-of-course)

Evolution (Performance Level: Basic) – Question 01

Rabbit coat color

Allele	Phenotype
C	Rabbit with fully colored coat
c^{ch}	Rabbit with light gray coat
c^{h}	Himalayan rabbit: white with dark ear tips, nose, paws, and tail
c	Albino rabbit

Order of dominance $C \rightarrow c^{ch} \rightarrow c^{h} \rightarrow c$

The chart shows four alleles at the same locus that affect rabbits' coat color. Each allele is dominant to the ones below it. Rabbits with an albino or Himalayan coat are more susceptible to predators. Which of the following genotypes will produce a rabbit that is least likely to survive?

A cchc

B Cc

C chc

D Cch

Biology (End-of-course)

Evolution (Performance Level: Basic) – Question 02

Which of these best illustrates natural selection?

A An organism with favorable genetic variations will tend to survive and breed successfully.

B A population monopolizes all of the resources in its habitat, forcing other species to migrate.

C A community whose members work together utilizes all existing resources and migratory routes.

D The largest organisms in a species receive the only breeding opportunities.

Biology (End-of-course)

Evolution (Performance Level: Basic) – Question 03

Fossil evidence suggests that a number of members of one fish species from an ancient lake in Death Valley, California, became several isolated species. Each of these new species lived in a different pond. Which of the following best explains the cause of this speciation?

A episodic isolation

B temporal isolation

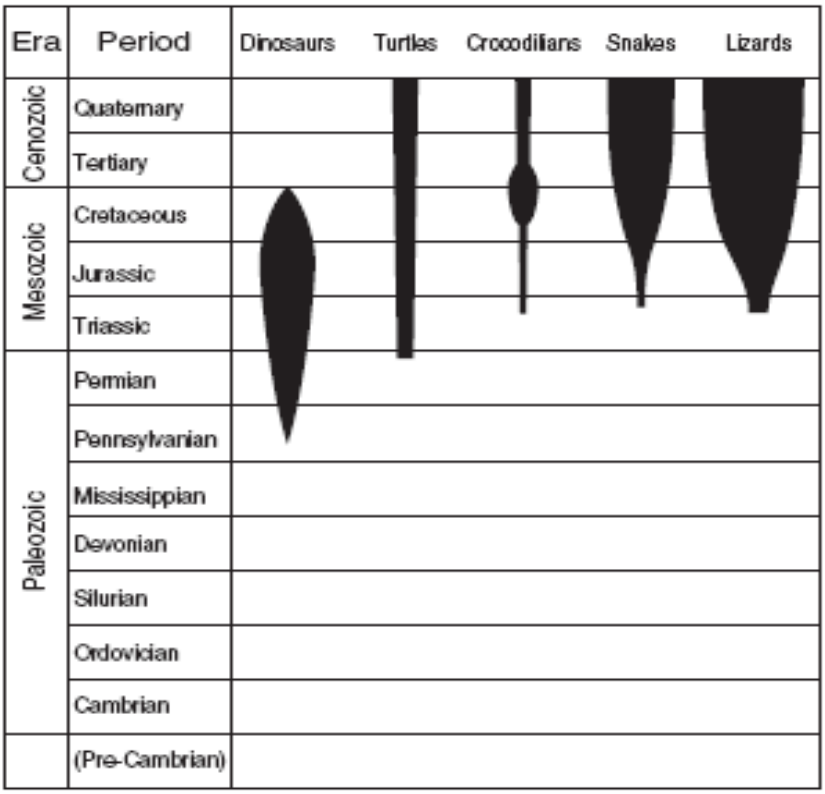
C geographic isolation

D behavioral isolation

Biology (End-of-course)

Evolution (Performance Level: Basic) – Question 04

Numbers of Representative Species



According to this information, which group demonstrated the greatest biodiversity during the Cretaceous period?

A dinosaurs

B crocodilians

C snakes

D lizards

Biology (End-of-course)

Genetics (Performance Level: Advanced) – Question 01

If a human baby boy inherits a recessive allele from his mother, in which circumstance would he most likely show the trait coded for by the recessive allele?

A The baby inherits the dominant allele from his father.

B The allele is on an autosomal chromosome and the baby is a twin.

C The allele is on the X chromosome.

D The allele is on the Y chromosome.

Biology (End-of-course)

Genetics (Performance Level: Advanced) – Question 02

Mendel hypothesized that reproductive cells have only one factor for each inherited trait. This hypothesis is supported by the observation that

A haploid cells are produced by mitosis.

B diploid cells are produced by mitosis.

C haploid cells are produced by meiosis.

D diploid cells are produced by meiosis.

Biology (End-of-course)

Genetics (Performance Level: Proficient) – Question 01

Which of the following best describes meiosis?

A It is carried out in all tissues that require cell replacement.

B It occurs only in cells in the reproductive structures of the organism.

C It happens in all tissues except the brain and spinal cord.

D It is the first stage of mitosis.

Biology (End-of-course)

Genetics (Performance Level: Proficient) – Question 02

In certain breeds of dogs, deafness is due to a recessive allele (d) of a particular gene, and normal hearing is due to its dominant allele (D). What percentage of the offspring of a normal heterozygous (Dd) dog and a deaf dog (dd) would be expected to have normal hearing?

A 0%

B 25%

C 50%

D 100%

Biology (End-of-course)

Genetics (Performance Level: Proficient) – Question 03

Codons Found in Messenger RNA

Second Base

First Base	U	C	A	G	Third Base
U	Phe	Ser	Tyr	Cys	U
	Phe	Ser	Tyr	Cys	C
	Leu	Ser	Stop	Stop	A
	Leu	Ser	Stop	Trp	G
C	Leu	Pro	His	Arg	U
	Leu	Pro	His	Arg	C
	Leu	Pro	Gln	Arg	A
	Leu	Pro	Gln	Arg	G
A	Ile	Thr	Asn	Ser	U
	Ile	Thr	Asn	Ser	C
	Ile	Thr	Lys	Arg	A
	Met	Thr	Lys	Arg	G
G	Val	Ala	Asp	Gly	U
	Val	Ala	Asp	Gly	C
	Val	Ala	Glu	Gly	A
	Val	Ala	Glu	Gly	G

A strand of mRNA containing the repeating sequence AAGAAGAAGAAG could code for which of the following amino acid sequences?

A lys–arg–glu–lys

B ser–ser–glu–glu

C lys–arg–lys–arg

D lys–lys–lys–lys

Biology (End-of-course)

Genetics (Performance Level: Proficient) – Question 04

5' ATCAGCGCTGGC 3'

The above sequence of DNA is part of a gene. How many amino acids are coded for by this segment?

A 4

B 8

C 12

D 20

Biology (End-of-course)

Genetics (Performance Level: Proficient) – Question 05

A scientist puts nucleotide chains of UUUUUU in a test tube under conditions allowing protein synthesis. Soon the test tube is full of polypeptide chains composed of only the amino acid phenylalanine. What does this experiment indicate?

A The amino acid phenylalanine is composed of uracil.

B UUU codes for the amino acid phenylalanine.

C Protein synthesis malfunctions in test tubes.

D Most proteins contain only one type of amino acid.

Biology (End-of-course)

Genetics (Performance Level: Proficient) – Question 06

5' G T A _ _ _ A A 3'
3' C A T G C A T T 5'

This segment of DNA has undergone a mutation in which three nucleotides have been deleted. A repair enzyme would replace them with

A CGT.

B GCA.

C CTG.

D GTA.

Biology (End-of-course)

Genetics (Performance Level: Proficient) – Question 07

A base sequence is shown below.

ACAGTGC

How would the base sequence be coded on mRNA?

A TGTCACG

B GUGACAU

C UGUCACG

D CACUGUA

Biology (End-of-course)

Genetics (Performance Level: Proficient) – Question 08

Genetic engineering has produced goats whose milk contains proteins that can be used as medicines. This effect was produced by

A mixing foreign genes into the milk.

B injecting foreign genes into the goats' udders.

C inserting foreign genes into fertilized goat eggs.

D genetically modifying the nutritional needs of the goats' offspring.

Biology (End-of-course)

Genetics (Performance Level: Basic) – Question 01

If a corn plant has a genotype of Ttyy, what are the possible genetic combinations that could be present in a single grain of pollen from this plant?

A Ty, ty

B TY, ty

C TY, Ty, ty

D Ty, ty, tY, TY

Biology (End-of-course)

Genetics (Performance Level: Basic) – Question 02

In fruit flies, the gene for red eyes (R) is dominant and the gene for sepia eyes (r) is recessive. What are the possible combinations of genes in the offspring of two red-eyed heterozygous flies (Rr)?

A RR only

B rr only

C Rr and rr only

D RR, Rr, and rr only

Biology (End-of-course)

Genetics (Performance Level: Basic) – Question 03

Fur color in cats is controlled by an autosomal gene that can occur in the dominant form, (B), or the recessive form, (b). The length of the cat's fur is controlled by another autosomal gene that occurs in the dominant form, (S), or the recessive form, (s). The table below shows the traits for these allele codes.

Gene	Trait
B	black fur
b	white fur
S	short-haired fur
s	long-haired fur

The following genotypes were found in a male cat and a female cat.

BbSs (male) bbSS (female)

Which one of the following choices is true of the phenotype of offspring from these parents?

A All offspring will have black fur.

B All offspring will have white fur.

C All offspring will have long-haired fur.

D All offspring will have short-haired fur.

Biology (End-of-course)

Investigation and Experimentation (Performance Level: Proficient) – Question 01

Two students were testing the amount of fertilizer that would best promote the growth of strawberries in a garden. Which of the following could be an unavoidable source of experimental error?

A length of the study

B variation in the strawberry plants

C the cost of watering the plants

D fertilization during the study

Biology (End-of-course)

Investigation and Experimentation (Performance Level: Proficient) – Question 02

A computer model of cellular mitosis can simulate the aspects of cellular division quite well. However, microscopic observation of actual cellular mitosis can improve understanding because actual observations

A may reveal greater unknown complexities.

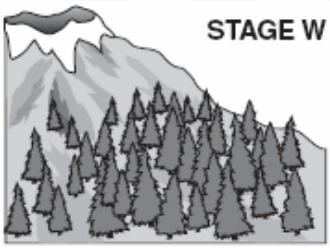
B are easier than a computer model to view.

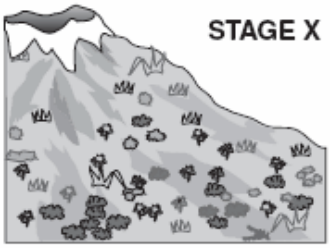
C are the same each time.

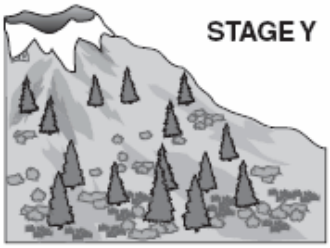
D may provide division events in sequence.

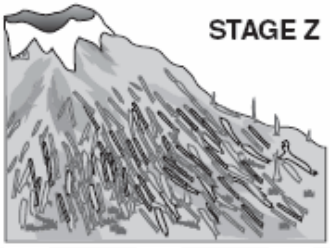
Biology (End-of-course)

Investigation and Experimentation (Performance Level: Proficient) – Question 03









When the Mount St. Helens volcano erupted, the blast covered much of the surrounding area with ash. Based on the diagram above, which list shows the sequence of secondary succession that followed that eruption?

A X, Y, Z, W

B Z, X, Y, W

C W, Y, X, Z

D Z, Y, W, X

Back to Table of Contents

Biology (End-of-course)

Physiology (Performance Level: Proficient) – Question 01

In order for the body to maintain homeostasis, the chemical decomposition of food to produce energy must be followed by

A water intake.

B muscle contractions.

C waste removal.

D nervous impulses.

Biology (End-of-course)

Physiology (Performance Level: Proficient) – Question 02

The respiratory system depends on the nervous system for signals to

A enhance the amount of available oxygen in the lungs.

B coordinate muscles controlling breathing.

C release enzymes to increase the exchange of gases.

D exchange gases with the circulatory system.

Biology (End-of-course)

Physiology (Performance Level: Proficient) – Question 03

The fight-or-flight response includes greater heart output and a rise in blood pressure. This response is due to

A insulin secreted by the pancreas.

B thyroxine secreted by the thyroid gland.

C oxytocin secreted by the pituitary gland.

D adrenaline secreted by the adrenal glands.

Biology (End-of-course)

Physiology (Performance Level: Proficient) – Question 04

What is the greatest danger to a patient who has had damage to the skin?

A loss of oils produced by the skin

B excessive muscle contractions in the damaged area

C infections in uncovered tissues

D damaged tissue entering the blood stream

Biology (End-of-course)

Physiology (Performance Level: Proficient) – Question 05

The Sabin vaccine is a liquid containing weakened polio viruses. Vaccinated individuals become protected against polio because the weakened viruses

A prevent further viral invasion.

B induce an inflammatory response.

C promote production of antibodies.

D are too weak to cause illness.

Biology (End-of-course)

Physiology (Performance Level: Proficient) – Question 06

Which of the following require a host cell because they are not able to make proteins on their own?

A blue-green algae

B bacteria

C protozoans

D viruses

Biology (End-of-course)

Physiology (Performance Level: Basic) – Question 01

Which of the following is a function of the nervous system?

A releasing ATP into contracting muscle tissues

B signaling muscle tissues to contract

C producing lactic acid in fatigued muscle tissues

D increasing cellular respiration in muscle tissues

Biology (End-of-course)

Physiology (Performance Level: Basic) – Question 02

Individuals with HIV sometimes contract a pneumonia infection that is rare in the rest of the population because people with HIV

A are unable to fight off these pneumonia-causing organisms.

B are more often exposed to these pneumonia-causing organisms.

C release pheromones that attract the pneumonia-causing organisms.

D release substances that increase the strength of the pneumonia-causing organisms.

Biology (End-of-course)

Physiology (Performance Level: Below Basic) – Question 01

Striking the tendon just below the kneecap causes the lower leg to jerk. Moving an object quickly toward the face can cause the eyes to blink shut. These are examples of

A learned responses.

B short-term memory.

C reflex reactions.

D sensory overload.