Student Name: _____

Biology
EOC Test Prep
Materials

For the complete Georgia Milestones Assessment Guide for this grade level, go to the GA DOE Website at **gadoe.org** and search for the **EOC Assessment Guides** – choose your grade level. **Here's the link:** http://www.gadoe.org/Curriculum-Instruction-and-Assessment/Assessment/Pages/Georgia-Milestones-End-of-Course-Assessment-Guides.aspx

Item 1

What is the role of mitochondria in eukaryotic plant cells?

A to transport materials
B to provide a storage area
C to produce chemical energy
D to control chemical reactions

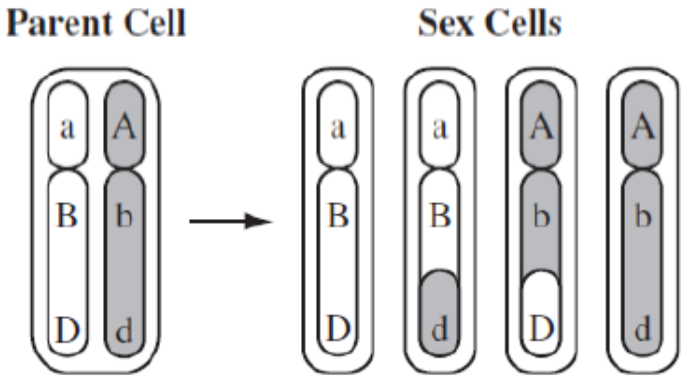
Item 2

Which characteristic does a virus have in common with a eukaryotic cell?

A a cell wall
B a mitochondrion
C a nucleic acid
D a ribosome

Item 3

The diagram shows the results of meiosis. The parent cell has one pair of chromosomes. The locations of three genes are shown on each chromosome.



Why are the chromosomes in two of the sex cells different from the chromosomes in the parent cell?

A crossing over occurred in the chromosome
B an insertion mutation occurred during replication
C some of the genes were damaged during replication
D the chromosomes from another parent cell were introduced

Item 4

A plant species growing in a certain location has one variety that grows best in wet soil and another **variety that grows best in dry soil. Which outcome is MOST LIKELY to occur at the end of an extended drought at that location?**

A The variety that prefers dry soil will show an increase in population.
B The variety that prefers wet soil will show an increase in population.
C Both varieties will compete for space, so the size of both populations will remain the same.
D Both varieties will adapt to the new conditions, so the size of both populations will remain the same.

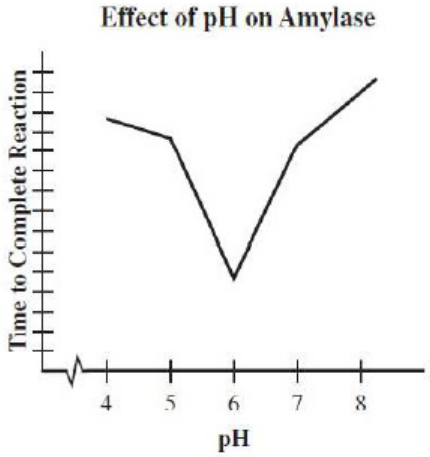
Item 5

In prairies around the world, grass species provide food for many different prairie animals. Based on the titles, in which book would a student find the MOST information about relationships between specific plants and animals of the prairie?

A *The Prairie Community*
B *The Biomes of the Prairie*
C *The Ecosystems of the Prairie*
D *The Abiotic Factors of a Prairie*

Item 6

Amylase is an enzyme in saliva that catalyzes the digestion of starch.



Based on the graph, what is the optimal pH for amylase?

A 5
B 6
C 7
D 8

Item 7

Which of the following supported the change in the classification system from five kingdoms to six kingdoms?

A parasites on deep sea fish
B new viral diseases in people
C molecular differences among bacteria
D new insect species in tropical rain forests

Item 8

Use this information to answer the question.

Alleles and Traits in Pea Plants	
R – round seeds	Y – yellow seeds
r – wrinkled seeds	y – green seeds

Plants with the genotype RrYy are crossed with plants with the genotype rryy. What is the probability of an offspring with round, yellow seeds?

A 10%
B 25%
C 50%
D 100%

Item 9

The human body contains nitrogen (N_2) as part of amino acids, ATP, DNA, and RNA. The atmosphere is about 79% nitrogen, but humans cannot use nitrogen in its atmospheric form.

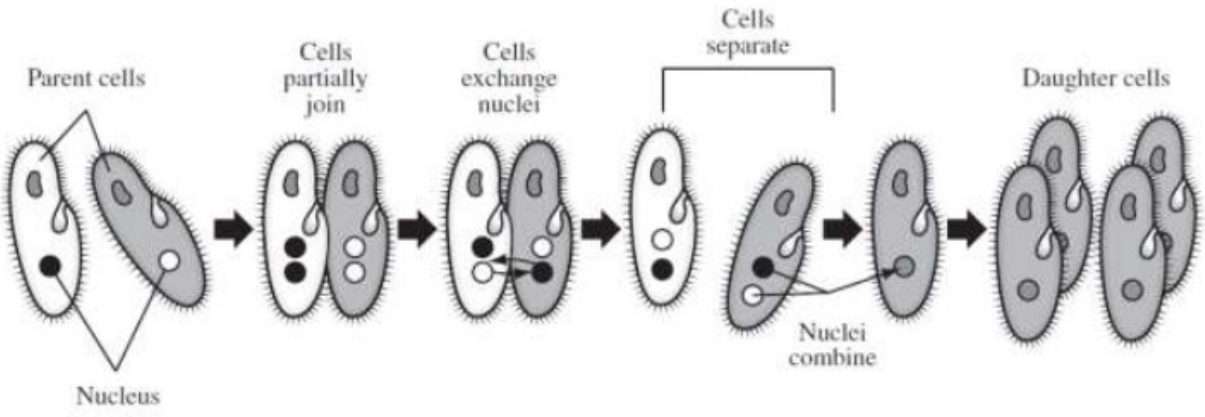
How is atmospheric nitrogen made available for use in the human body?

A Plants absorb nitrogen after it is changed to useable compounds by the radiant energy of the Sun.
B Rainwater dissolves the nitrogen gas in the air and makes it available to plants and animals.
C Humans have special enzymes in their lungs to make nitrogen gas useable.
D Bacteria change nitrogen gas to useable compounds that can be absorbed by plants.

Georgia Milestones Biology EOC Assessment Guide

Item 10

This diagram shows a form of reproduction in *Paramecium*.



What is the advantage of this type of reproduction in *Paramecium*?

A a greater number of offspring are produced
B the genetic variability in offspring is increased
C a more accurate form of DNA replication occurs
D the exchange of genetic information is decreased

On the following pages are the answers for all the content questions. Note that the third column of the answer key provides a **DOK Level. "Depth of Knowledge" (DOK)** is the complexity or depth of understanding required to answer or explain an assessment item. Four distinct depths of knowledge levels have been identified in education.

Level 1 includes basic recall of facts, concepts, information or procedures.
Level 2 includes skills and concepts such as the use of information (graphs) or requires two or more steps with decision points along the way.
Level 3 includes strategic thinking that requires reasoning and is abstract and complex.
Level 4 includes extended thinking such as an investigation or application to real work.

Each EOC test will have questions ranging from DOK 1 to DOK 4 and by utilizing that diversity of questioning better assesses a student's level of understanding of the specific content.

Additional Sample Item Keys

Item	Standard/ Element	Characteristics of Science Standard/ Element	DOK Level	Correct Answer	Explanation
1	SB1a	n/a	1	C	The correct answer is choice (C) to produce chemical energy. Mitochondria convert the energy stored in food into energy forms that the cell can use. Choice (A) is incorrect because organelles such as vesicles transport materials within cells. Choice (B) is incorrect because organelles such as vacuoles are storage areas for cells. Choice (D) is incorrect because substances such as enzymes control chemical reactions within cells.
2	SB3d	SCSh7a	2	C	The correct answer is (C) a nucleic acid. Both viruses and eukaryotic cells contain genetic material (DNA and RNA) which are nucleic acids. Choices (A), (B), and (D) are incorrect because viruses do not contain cell organelles.
3	SB2d1	SCSh3e	2	A	The correct answer is choice (A) crossing over occurred in the chromosome. During the process of crossing over, chromosomes exchange alleles to produce new combinations. Choices (B) and (C) are incorrect because replication happens before meiosis takes place. Choice (D) is incorrect because meiosis does not involve an additional parent cell.
4	SB5d	SCSh3	2	A	The correct answer is choice (A) The variety that prefers dry soil will show an increase in population. An extended drought will cause the soil in the location to dry out. This will give a competitive advantage to the variety that prefers dry soil. Choices (B) and (C) are incorrect because the variety that prefers wet soil will have a competitive disadvantage; it will likely struggle to obtain resources and experience a population decrease. Choice (D) is incorrect because, although it is possible that the variety that prefers wet soil will adapt to the new conditions, this will require many generations; in the meantime, the variety that prefers dry soil will likely thrive and experience a population increase.

Item	Standard/ Element	Characteristics of Science Standard/ Element	DOK Level	Correct Answer	Explanation
5	SB4a	SCSh7a	2	A	The correct answer is choice (A) *The Prairie Community*. A book focused on the organisms in a prairie community will have more detailed information about the relationships between the organisms than books about other aspects of a prairie. Choices (B) and (C) are incorrect because they would likely focus on other content that goes beyond the relationships between the organisms in the prairie. Choice (D) is incorrect because it focuses on the non-living factors that affect the prairie community.
6	SB1b	SCSh3d	2	B	The correct answer is choice (B) 6. The graph shows that when the pH is 6, amylase catalyzes the digestion of starch in the least amount of time. Choices (A), (C), and (D) are incorrect because the graph shows that when pH is greater or less than 6, amylase requires more time to catalyze the digestion of starch.
7	SB3c	SCSh7c	2	C	The correct answer is choice (C) molecular differences among bacteria. These differences led scientists to divide what had been a single kingdom, Monera, into two kingdoms, Eubacteria and Archaebacteria. Choice (A) is incorrect because parasites may belong to the Plantae or Animalia kingdoms. Choice (B) is incorrect because viruses are not organisms, and therefore do not belong to a kingdom. Choice (D) is incorrect because insects belong to the Animalia kingdom.
8	SB2c	SCSh5e	3	B	The correct answer is choice (B) 25%. Crossing these genotypes produces 16 possible combinations of alleles. Of these combinations, 4 have both the allele for round seeds (R) and the allele for yellow seeds (Y). Choices (A), (C), and (D) are incorrect because 4 out of 16 equals 25%, not 10%, 50%, or 100%.
9	SB4b3	SCSh7b	3	D	The correct answer is choice (D) Bacteria change nitrogen gas to useable compounds that can be absorbed by plants. Animals, including humans, then absorb this nitrogen when they eat plants. Choices (A), (B), and (C) are incorrect because they do not accurately describe natural processes.

Item	Standard/ Element	Characteristics of Science Standard/ Element	DOK Level	Correct Answer	Explanation
10	SB2e	SCSh3f	3	B	The correct answer is choice (B) the genetic variability in offspring is increased. This diagram shows conjugation, a sexual process through which organisms such as *Paramecium*, which typically reproduce asexually, temporarily conjoin and exchange nuclear material. Choices (A) and (C) are incorrect because these are not effects of conjugation. Choice (D) is incorrect because the opposite happens: the exchange of genetic information within a population increases.

EOC Practice Test Prep Bubble Sheet Answer Key

Student Name: _____

Biology

1 Ⓐ Ⓑ Ⓒ Ⓓ
2 Ⓐ Ⓑ Ⓒ Ⓓ
3 Ⓐ Ⓑ Ⓒ Ⓓ
4 Ⓐ Ⓑ Ⓒ Ⓓ
5 Ⓐ Ⓑ Ⓒ Ⓓ

6 Ⓐ Ⓑ Ⓒ Ⓓ
7 Ⓐ Ⓑ Ⓒ Ⓓ
8 Ⓐ Ⓑ Ⓒ Ⓓ
9 Ⓐ Ⓑ Ⓒ Ⓓ
10 Ⓐ Ⓑ Ⓒ Ⓓ