Biology

Texas Assessment Review and Practice

Includes

- Review and Practice for Biology Assessed TEKS
- TEKS practice items in 5 reporting categories
  - Cell Structure and Function
  - Mechanisms of Genetics
  - Biological Evolution and Classification
  - Biological Processes and Systems
  - Interdependence with Environmental Systems
  - *plus* Scientific Process Skills
- TEKS Practice Test A and Practice Test B

SAMPLER

Contents

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5.B.12.F Biology

INTERDEPENDENCE WITHIN ENVIRONMENTAL SYSTEMS

The student will demonstrate an understanding of the interdependence and interactions that occur within an environmental system and their significance.

(B.12) **Science concepts.** The student knows that interdependence and interactions occur within an environmental system. The student is expected to (F) describe how environmental change can impact ecosystem stability.

(B.1) **Scientific processes.** The student, for at least 40% of instructional time, conducts laboratory and field investigations using safe, environmentally appropriate, and ethical practices. The student is expected to (B) demonstrate an understanding of the use and conservation of resources and the proper disposal or recycling of materials.

STANDARD REVIEW

There are many problems that can affect the survival of individuals and entire species in an ecosystem. The following factors can negatively affect the environment.

- **Pollution** Pollution is an unwanted change in the environment caused by substances such as wastes or by forms of energy such as radiation. Anything that causes pollution is called a pollutant. Many pollutants are human-made, such as garbage or chemical wastes in water, soil, or the atmosphere.
- **Resource Depletion** A renewable resource is one that can be replaced at the same rate that the resource is used. Solar and wind energy are renewable resources, as are some kinds of trees. A non-renewable resource is one that cannot be replaced or that can be replaced only over thousands or millions of years. Most minerals and fossil fuels, such as oil and coal, are non-renewable resources.
- **Exotic Species** Often without knowing it, people carry other species with them when they travel. An organism that makes a home for itself in a new place outside its native home is called an exotic species. Exotic species often thrive in new places where they have fewer predators. Exotic species can become pests and compete with native species.
- **Human Population Growth** Advances in medicine, such as immunizations, and advances in farming have made human population growth possible. Some people argue that there may eventually be too many people on Earth. Overpopulation occurs when the number of individuals becomes so large that the resources needed for survival are not available to everyone.
- **Habitat Destruction** When land is cleared so it can be used for construction, crops, mines, or lumber, the topsoil may erode. Chemicals may pollute nearby streams and rivers. The organisms that were living in these areas may be left without food and shelter and may die. An organism's habitat is where it lives. Every habitat has its own number and variety of organisms, or biodiversity. If a habitat is damaged, biodiversity is lost.

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STANDARD PRACTICE

1 Which of the following actions would not help maintain biodiversity?

A Protecting individual species

B Protecting forests and wetlands

C Increasing consumption of natural resources

D Preventing industrial wastes from being dumped in the ocean

2 During a field experiment, students tested the effects of adding heavy metals to samples of water. Samples of water were taken from a pond. Different heavy metals were then added to each sample. After the experiment was complete, what is the best way to dispose of the samples?

A Pour them back into the pond from which they were taken.

B Pour them on soil that is located far from the pond.

C Pour them on sand located along the edge of the pond.

D Pour them into a chemical waste container in the laboratory.

3 A dock was built over a large bed of sea grass in a manatee habitat. The dock shaded the bed of sea grass from the sun. The population of manatees decreased in the area even though the manatees could still swim under the dock. Why did the population of manatees decrease?

A The sea grass was poisoned.

B The sea grass grew too thick.

C The manatees swam to another area to eat sea grass.

D The sea grass died because the dock shaded it from the sun.

4 Imagine that a city located in a desert environment has grown significantly over the last few decades. Which statement best describes how the growth of the metropolitan city would impact the desert environment in the area?

A Biodiversity would decrease in the area but increase in the desert beyond the city.

B By destroying habitat to build homes and highways, the growth of the city would decrease the biodiversity in the desert.

C The growth of the city would have little impact on the environment, because few animals likely lived there before growth happened.

D By bringing in water, the growth of the city would improve the entire desert environment and increase the biodiversity.

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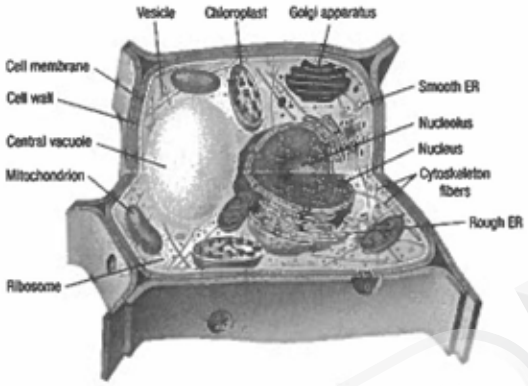


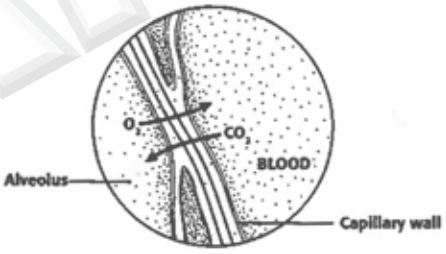
7 What type of organism might contain the type of cell shown above?

A Animal

B Bacterium

C Plant

D Prokaryote



8 The picture above shows the exchange of oxygen and carbon dioxide through a capillary wall. This picture shows the exchange of gases between which two body systems?

A Circulatory and digestive

B Circulatory and respiratory

C Endocrine and circulatory

D Respiratory and endocrine

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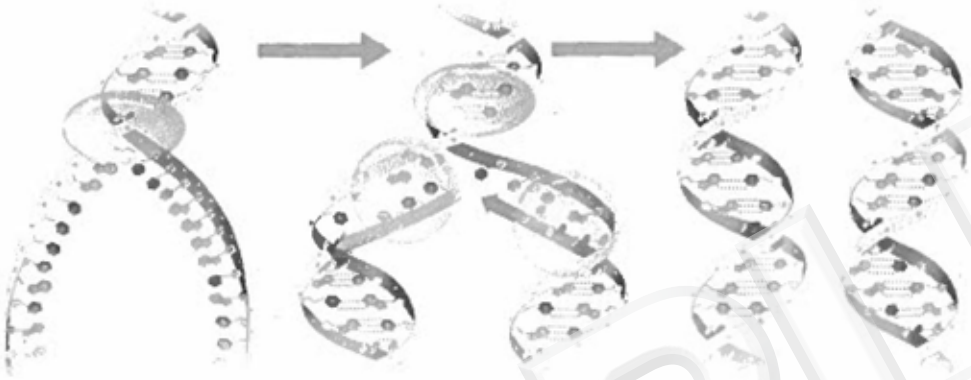

14 Which cellular process is shown in the illustration above?

A Transcription

B Gene expression

C DNA translation

D DNA replication

15 The sequence of bases in a nucleotide of DNA makes up an organism's genetic code. How could a change in a sequence of DNA bases affect an organism?

A DNA could change into RNA.

B The function of the resulting protein could change.

C The DNA nucleotide could form an ATP nucleotide.

D The gene could code for carbohydrates instead of proteins.

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19 The diagram above shows how living things use enzymes in chemical reactions to release energy. How do enzymes affect the reactions in which they take part?

A Most enzymes slow down chemical reactions.

B Enzymes are converted into products in the reaction.

C Enzymes increase the activation energy of the reaction.

D Enzymes decrease the activation energy of the reaction.

20 At first, a mutation may make no difference to an individual. Even if the mutation results in a nonfunctional protein, the body's cell may have a functional copy of the gene as its second allele. However, this new nonfunctioning version could be passed on as a recessive allele. This kind of mutation is the probable origin of many recessive disorders. Only characteristics that are expressed can be targets of natural selection. Therefore, natural selection cannot operate against recessive alleles, even if they are unfavorable. What does this explain?

A Why recessive alleles are never expressed

B Why genetic disorders can persist in a population

C Why advantageous offspring are more likely to survive and reproduce

D Why natural selection can act only against heterozygous carriers of a recessive disorder

21 Imagine that a mouse has white fur because of a mutation in its DNA. Which of the following conclusions can be drawn?

A The white mouse increases the diversity of the species.

B The white mouse decreases the diversity of the species.

C The internal organs of the white mouse must not function as well as those of other mice.

D The white mouse is more likely to survive than other mice because it is more visible to predators.

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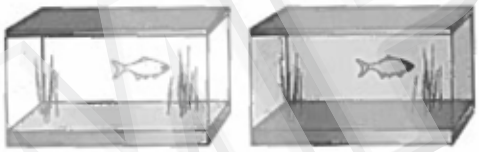
22 For a certain plant, purple flowers (allele: *P*) are dominant, and white flowers (allele: *p*) are recessive. A purple plant carrying both types of alleles is crossed with a truebreeding white plant. What are the possible genotypes (allele pairs) of the offspring?

A *pp* only

B *Pp* only

C *Pp* and *pp* only

D *PP*, *pp*, and *Pp*



23 A scientist set up two glass fish tanks. She put 5 L of water, a small fish, and several plants in each tank. She then sealed the tops of both tanks so that no air could leave or enter. Tank A was placed in a bright room. Tank B was placed in a dark room. After 45 hours, the fish in the tank that was kept in darkness died. The fish in the brightly lit tank remained healthy for more than 96 hours. Based on the results of the experiment described above, what conclusion can you draw about the relationship between the aquarium conditions and the organisms that live within the aquarium?

A Fish cannot survive in an overcrowded aquarium.

B Fish cannot survive in an aquarium that does not contain plants.

C Fish cannot survive in a plant-filled aquarium kept in darkness for 45 hours.

D Fish cannot survive in a plant-filled aquarium that has been sealed so that no air can leave or enter.

24 Bt corn contains a gene from a bacterium. How did genetic engineers most likely begin the process of creating Bt corn containing this bacterial gene?

A By using ligase to insert the desired gene into corn DNA

B By removing a plasmid from the bacterium

C By using restriction enzymes to cut the bacterial DNA on either side of the desired gene

D By cloning the corn plant