Darwin’s ”Theory” of Evolution

Name: ____________________________                    Date: ______________

1. Western coral snakes have a striped color pattern and are poisonous. Arizona mountain kingsnakes look like western coral snakes but are not poisonous.

   The color pattern of the Arizona mountain kingsnake is an example of

   A. camouflage.  B. mimicry.  
   C. mutualism.  D. parasitism.

2. Ducks live near ponds and lakes. The shape of a duck’s foot helps it swim and walk on muddy ground. Which factor is most important in determining the shape of a baby duck’s foot?

   A. the shape of the parent ducks’ feet  
   B. the temperature of the pond water  
   C. the amount of mud in the bottom of the pond  
   D. the amount of rain that fell before the duck was born

3. Which statement about fossils could be used as evidence that evolution by natural selection has been in effect for millions of years?

   A. Fossils found in higher layers of rock are older than those found in lower layers.  
   B. Fossils found in lower layers of rock are more complex than those found in higher layers.  
   C. Fossils of current species have been found throughout rock layers that are billions of years old.  
   D. Fossils of species that no longer exist but are ancestors of current species have been found in rock layers.

4. A tree frog population lives in the canopy of a tropical rain forest. In this tree frog population, a mutation occurs that results in a new allele for skin coloration causing stripes on their legs.

   Which of the following factors has the greatest effect on whether leg stripes will become more common in the tree frog population?

   A. if the reproduction rate of the tree frog population remains constant over time  
   B. if the new allele for stripes is dominant or recessive in the tree frog population  
   C. if the new allele for stripes increases the survival of the tree frogs in their environment  
   D. if enough food and water is available in the rain forest canopy for the tree frog population
5. On a small isolated island, there is a single species of seed-eating birds. Individual birds are able to eat seeds that are within 2 mm (larger or smaller) of their beak depth. The distribution of individuals is shown in the figure below.

A long drought caused the plant species that produce seeds between 3–9 mm in size to go extinct. What does the Theory of Natural Selection predict will happen to the population of seed-eating birds over time?

A. It will permanently shrink to approximately 25% of its current size.
B. It will go extinct because there aren't enough seeds to support all of the individuals.
C. It will diverge into two species: one that eats small seeds and one that eats large seeds.
D. It will adapt and the birds that ate the medium sized seeds will learn to eat fish, insects, or other animals.

6. Over time, new species have evolved while others have become extinct.

Which of the following most likely supports how giraffes evolved long necks?

A. More long-necked giraffes survived to pass on their genes.
B. More short-necked giraffes survived to pass on their genes.
C. Short-necked giraffes modified their diets to evolve into a new species.
D. Short-necked giraffes grew longer necks to reach higher leaves.

7. Vestigial structures, such as hip bones in whales and appendixes in humans, are those that have little or no function for the organism. What is the most likely reason for this loss of function over time?

A. The organism is undergoing speciation.
B. The organism is experiencing genetic drift.
C. The structure was over utilized by the organism.
D. The structure was not highly beneficial to the organism.
8. Water is necessary for life. During Connecticut winters, the ground freezes, making it difficult for trees to absorb water. How are Connecticut trees adapted to survive cold winters?

A. They use sap as a water source.
B. They reverse the photosynthetic process.
C. They drop their leaves and become dormant
D. They use the water produced during cellular respiration.

9. Few flowers are able to grow on the northern arctic tundra. Those that do grow there have very short stems. How is this an adaptation to help them survive in the arctic climate?

A. It protects them from freezing.
B. It prevents them from being eaten by consumers.
C. It protects them from breaking in strong winds.
D. It makes it very hard for them to be pulled from the ground.

10. The picture below shows a flower with a long slender bloom.

The size and shape of a bird’s beak are related to the type of food that the bird eats. Which of the following beaks is suitable for drinking nectar located deep within flowers such as the one shown above?

A.
B.
C.
D.
11. The picture below shows a bird.

From the shape of its beak and the length of its legs, this bird is best adapted for feeding on which of the following?

A. insects that feed on plants
B. small fish in shallow water
C. nuts from riverside trees and plants
D. birds in ground nests

12. The picture below shows the foot of a certain species of bird.

In which of the following environments is this species best adapted for survival?

A. desert  B. freshwater lake
C. meadow  D. tropical rain forest
13. The pictures below show the change in the fur of an arctic hare from summer to winter.

Fur in summer

Fur in winter

Which of the following statements best describes how this change helps arctic hares?

A. It lowers their body temperature.
B. It protects their eyes from sunlight.
C. It helps them move on slippery ice.
D. It makes them less visible to predators.

14. Emperor penguins are specialized birds that eat fish. Emperor penguins have developed many special characteristics that help them survive in the ocean environment. The picture below shows two emperor penguins swimming in the ocean.

Which of the following characteristics most helps the emperor penguins survive in an ocean environment?

A. having very little sense of smell
B. having a very weak sense of taste
C. having large feathers that absorb water
D. having small wings that move like flippers
15. The diagram below represents part of the horse fossil record from three time periods. It includes illustrations of the hooves and teeth of horses from each time period.

Which of the following statements is best supported by the horse fossil record?

A. The horse has been a carnivore.
B. The horse has changed over time.
C. The horse has many common ancestors.
D. The horse has lived in the same ecosystem.

16. About 300 million years ago, the land of Earth was in a single mass known as Pangaea, as shown in Figure A. About 150 million years ago, Pangaea broke up into the land masses shown in Figure B.

Based on the diagrams, which of the following were more likely to survive on continent X after the breakup of Pangaea than before it broke apart?

A. organisms that lived in fresh water
B. organisms that required warm conditions
C. organisms that hibernated for long periods
D. organisms that traveled great distances during migrations
17. The diagram below shows the beaks of five species of birds that developed over time from one parent species. The five species of birds can be found living in the same area.

Which of the following best explains why the beak shape of each species of bird developed differently?

A. Each beak shape helps the birds to produce different songs.
B. Each beak shape is an adaptation to a specific source of food.
C. Each beak shape is designed to construct a different type of nest.
D. Each beak shape helps protect the birds from a different predator.

18. One of the most common types of adaptations in plants involves the shape and structure of each plant’s leaves. The surface area of leaves is related to the amount of water a plant loses.

Based on this information, which of the following plants is probably best adapted for living in a hot, dry climate?

A. 
B. 
C. 
D.
19. The diagrams below show changes in a desert lizard population.

Which biological concept is illustrated?

A. polygenic traits
B. natural selection
C. sex-linked inheritance
D. silent mutations

20. During the fall reproductive season, the belly of a male brook trout becomes bright orange. The orange belly provides some camouflage and helps attract females.

This trait evolved in brook trout because, compared to males with pale bellies, males with bright orange bellies are more likely to

A. live in good habitats.
B. be eaten by predators.
C. mate with other species of fish.
D. fertilize eggs to produce offspring.

21. Starting in 1954, commercial fishers in the northwest Pacific were paid by weight, rather than by the individual fish, for pink salmon. The fishers increased the use of a type of net that selectively catches larger fish.

Which of the following effects did this change in fishing techniques most likely have on the salmon population over the next 20 years?

A. The average body size of the salmon population increased significantly.
B. The average body size of the salmon population decreased significantly.
C. The average body size of the males in the salmon population increased and the average body size of females in the salmon population stayed the same.
D. The average body size of the males in the salmon population stayed the same and the average body size of the females in the salmon population increased.
22. European rabbits were introduced to Australia in 1859. The rabbits reproduced rapidly in their new habitat, displaced other animals, and overgrazed vegetation. In an attempt to reduce the rabbit population, a virus was introduced in 1951. This virus is usually deadly to European rabbits.

When the virus was first introduced, the rabbits died in large numbers, but the death rate decreased over time. Which of the following best explains the decrease in the rabbit death rate?

A. Young rabbits learned to avoid being infected with this virus.
B. Natural selection favored rabbits that are resistant to this virus.
C. The lifespan of this virus is too short to affect rabbits over a long period of time.
D. The rabbits that were originally infected with this virus have been dead for many years.

23. The illustration below represents a marine iguana.

The marine iguanas of the Galápagos Islands feed on seaweed and algae. Marine iguanas have flattened tails while other species of iguanas that live inland on the Galápagos and on the South American mainland have rounded tails.

Which of the following best explains this difference in tail shape?

A. Flattened tails are better for swimming than rounded tails.
B. Flattened tails move more easily on land than in the ocean.
C. Flattened tails are harder for predators to grasp than rounded tails.
D. Flattened tails release heat more rapidly in the ocean than on land.
24. Antibiotic resistance can vary within a population of bacteria. The diagram below represents the changes in a population of bacteria as a result of exposure to an antibiotic over time.

The changes in the population are most likely the result of which of the following?

A. exponential growth  
B. genetic crosses  
C. immigration  
D. natural selection

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25. The Asian shore crab invaded parts of the eastern coast of the United States about 15 years ago. The Asian shore crab preys on blue mussels. In the time since the Asian shore crab arrived, the average shell thickness has increased in the blue mussel population.

Which of the following is the *most likely* reason that this increase in shell thickness has occurred?

A. Blue mussels with thick shells attract more crabs than mussels without thick shells.
B. Blue mussels with thick shells grow in larger colonies than mussels without thick shells.
C. Blue mussels with thick shells catch more food per day than mussels without thick shells.
D. Blue mussels with thick shells survive and reproduce more successfully than mussels without thick shells.
1. Answer: B
2. Answer: A
3. Answer: D
4. Answer: C
5. Answer: C
6. Answer: A
7. Answer: D
8. 
9. Answer: C
10. Answer: D
11. Answer: B
12. Answer: B
13. Answer: D
14. Answer: D
15. Answer: B
16. Answer: B
17. Answer: B
18. Answer: C
19. Answer: B
20. Answer: D
21. Answer: B
22. Answer: B
23. Answer: A
24. Answer: D
25. Answer: D