

## Evolution Test Pre-Biology 2020 Chapters 16, 17, 19

### Multiple Choice

Identify the choice that best completes the statement or answers the question.

- \_\_\_\_\_ 1. Biologists in Darwin's time had already begun to understand that living things change over time. How did Darwin contribute to these ideas?
- He found many fossils that showed that these changes could not possibly happen on islands.
  - He figured out and explained how these changes happened and supported his ideas with evidence.
  - He made guesses about how these changes happened, and wrote experiments that could be used to test these guesses.
  - He was the first person to truly believe that these changes happened, and he worked very hard to convince others.
- \_\_\_\_\_ 2. On the Galápagos Islands, Charles Darwin observed
- completely unrelated species on each of the islands.
  - species exactly like those found in South America.
  - species similar to mainland South American species.
  - species completely unrelated to those found in South America.
- \_\_\_\_\_ 3. In the 1800s, Charles Lyell emphasized that
- the human population will outgrow the available food supply.
  - all populations evolve through natural selection.
  - Earth is a few thousand years old.
  - past geological events must be explained in terms of processes observable today.
- \_\_\_\_\_ 4. One scientist who attempted to explain how rock formations, such as rock layers, form and change over time was
- Thomas Malthus.
  - James Hutton.
  - Charles Darwin.
  - Jean-Baptiste Lamarck.
- \_\_\_\_\_ 5. James Hutton's and Charles Lyell's work was important to Darwin because these scientists
- explained volcanoes and earthquakes.
  - explained all geologic events on Earth.
  - suggested that Earth was old enough for evolution to have occurred.
  - refuted the work of Lamarck, which was based on misunderstandings.
- \_\_\_\_\_ 6. Lamarck's ideas about evolution include the concept that differences among the traits of organisms arise as a result of
- continual increases in population size.
  - the actions of organisms as they use or fail to use body structures.
  - an unchanging local environment.
  - the natural variations already present within the population of organisms.

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- \_\_\_\_\_ 7. The idea that events like war, starvation, and disease could prevent the endless growth of human populations was presented by
- Charles Darwin.
  - Jean-Baptiste Lamarck.
  - Thomas Malthus.
  - Charles Lyell.
- \_\_\_\_\_ 8. When a dairy farmer chooses to breed the cows that give the most milk in the herd, the farmers are following the principle of
- acquired characteristics.
  - descent with modification.
  - artificial selection.
  - natural selection.
- \_\_\_\_\_ 9. Charles Darwin called the ability of an organism to survive and reproduce in its specific environment
- diversity.
  - fitness.
  - adaptation.
  - evolution.
- \_\_\_\_\_ 10. According to Darwin's theory of natural selection, the individuals that tend to survive are those that have
- characteristics their parents acquired by use and disuse.
  - characteristics that plant and animal breeders value.
  - the greatest number of offspring.
  - variations best suited to environmental conditions.
- \_\_\_\_\_ 11. The hypothesis that all species are descended from common ancestors was proposed by
- James Hutton.
  - Jean-Baptiste Lamarck.
  - Thomas Malthus.
  - Charles Darwin.
- \_\_\_\_\_ 12. Charles Darwin viewed the fossil record as
- evidence that Earth was thousands of years old.
  - useful support for his theory.
  - interesting but unrelated to the evolution of modern species.
  - evidence that traits are acquired through use or disuse.

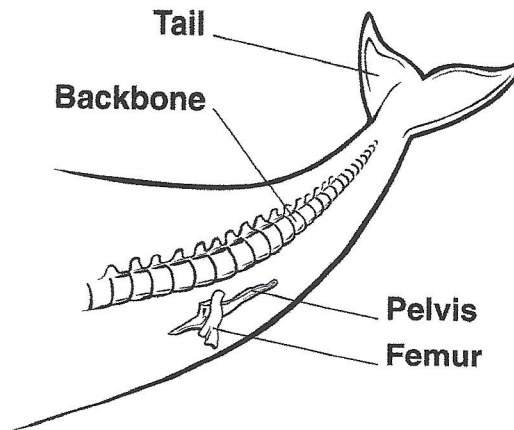


Figure 16-1

- \_\_\_\_\_ 13. In humans, the pelvis and femur, or thigh bone, are involved in walking. In whales, the pelvis and femur shown in Figure 16-1 are
- examples of fossils.
  - vestigial structures.
  - acquired traits.
  - examples of natural variation.
- \_\_\_\_\_ 14. Modern sea star larvae resemble some primitive vertebrate larvae. This similarity may suggest that primitive vertebrates
- share a common ancestor with sea stars.
  - evolved from sea stars.
  - evolved before sea stars.
  - belong to the same species as sea stars.
- \_\_\_\_\_ 15. Similar patterns of embryological development in different but related organisms are responsible for the formation of
- homologous structures.
  - analogous structures.
  - Hox genes.
  - intermediate fossil forms.
- \_\_\_\_\_ 16. The genes carried by all members of a particular population make up the population's
- allele frequency.
  - phenotype.
  - genotype.
  - gene pool.
- \_\_\_\_\_ 17. Natural selection acts directly on
- alleles.
  - genes.
  - phenotypes.
  - mutations.

- \_\_\_\_\_ 18. In a fox population, the allele frequency of a gene for red fur changes from 20 percent to 30 percent. What can you say about that population of foxes?
- The population is expanding.
  - The population is evolving.
  - The population is decreasing.
  - The population is not evolving.
- \_\_\_\_\_ 19. Three sources of genetic variation are
- genotypes, phenotypes, and polygenic traits.
  - sexual reproduction, lateral gene transfer, and mutations.
  - single-gene traits, polygenic traits, and adaptation.
  - directional selection, disruptive selection, and stabilizing selection.

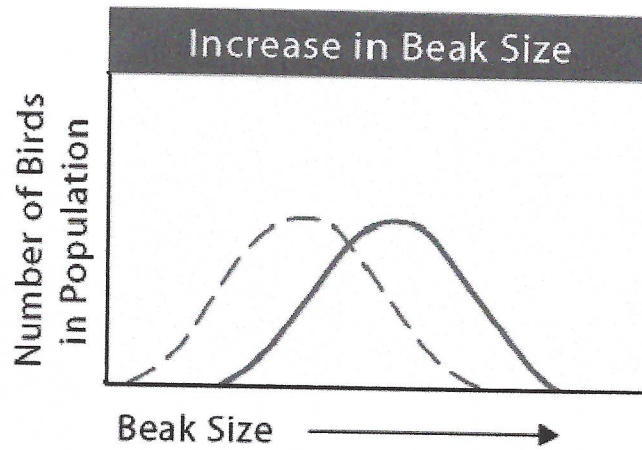


Figure 17-1

- \_\_\_\_\_ 20. One end of Figure 17-1 shows an increase in average beak size for a population of birds. When individuals at only one end of a bell curve of phenotype frequencies have high fitness, the result is
- directional selection.
  - stabilizing selection.
  - disruptive selection.
  - genetic drift.



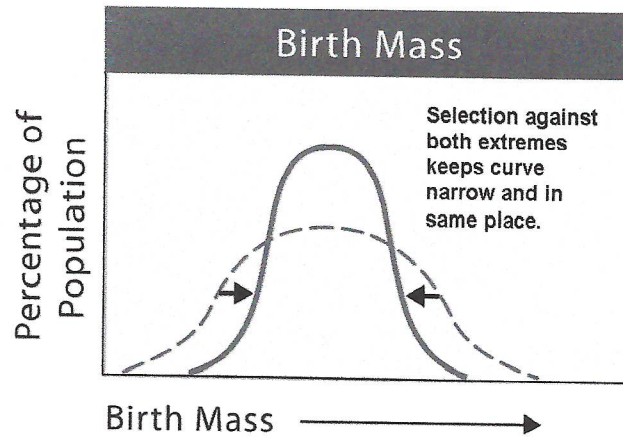


Figure 17-2

- \_\_\_\_\_ 21. Figure 17-2 shows highest fitness toward the center of the curve. When individuals with an average form of a trait have the highest fitness, the result is
- not predictable.
  - disruptive selection.
  - directional selection.
  - stabilizing selection.

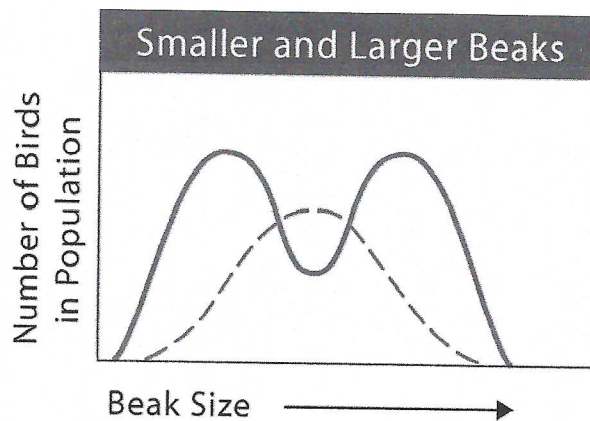


Figure 17-3

- \_\_\_\_\_ 22. Figure 17-3 shows smaller and larger beaks in a population of finches. One group of birds has a short, parrotlike beak and another group has a long, narrow beak. What process has probably occurred?
- directional selection
  - disruptive selection
  - stabilizing selection
  - genetic drift

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- \_\_\_\_\_ 23. Genetic drift tends to occur in populations that
- are very large.
  - are small.
  - are formed from new species.
  - have unchanging allele frequencies.
- \_\_\_\_\_ 24. The type of genetic drift that follows the colonization of a new habitat by a small group of individuals is called
- the Hardy-Weinberg principle.
  - the founder effect.
  - directional selection.
  - stabilizing selection.
- \_\_\_\_\_ 25. The situation in which allele frequencies in the gene pool of a population remain constant is called
- evolution.
  - genetic drift.
  - genetic equilibrium.
  - natural selection.
- \_\_\_\_\_ 26. In a certain population of 100 individuals, one fourth of the individuals have the genotype AA, half have the genotype Aa, and one fourth have the genotype aa. One day, 10 individuals with the genotype aa leave the area and cross a river into a new habitat. Which of these processes has changed the population's gene pool?
- nonrandom mating
  - immigration
  - emigration
  - natural selection
- \_\_\_\_\_ 27. The separation of populations by barriers such as rivers, mountains, or bodies of water is called
- temporal isolation.
  - geographic isolation.
  - behavioral isolation.
  - genetic equilibrium.
- \_\_\_\_\_ 28. What situation might develop in a population having some plants whose flowers open at midday and other plants whose flowers open late in the day?
- behavioral isolation
  - geographic isolation
  - temporal isolation
  - genetic drift
- \_\_\_\_\_ 29. Although they often live in the same habitat, the American toad breeds earlier in the spring than the Fowler's toad does. What can be inferred from this information?
- The two species do not interbreed because of geographic isolation.
  - The two species do not interbreed because of temporal isolation.
  - The two species interbreed throughout the spring season.
  - The American toad will cause the extinction of the Fowler's toad.

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- \_\_\_\_\_ 30. The Galápagos finch species are an excellent example of
- speciation.
  - genetic equilibrium.
  - stabilizing selection.
  - selection on single-gene traits.
- \_\_\_\_\_ 31. Species Y and Z have very different genes. Species A and B have only a few different genes. What is most likely true about these species?
- Species Y and Z are more closely related to each other than species A and B are to each other.
  - Species A and B are more closely related to each other than species Y and Z are to each other.
  - Species Y is the ancestor of species A and species Z is the ancestor of species B.
  - All four of these species are probably equally related to each other.
- \_\_\_\_\_ 32. The fossil record shows
- that most organisms that ever lived on Earth are now extinct.
  - that only bones and teeth can become fossilized.
  - that fossils formed under many different conditions.
  - a complete record of every organism that ever existed on Earth.
- \_\_\_\_\_ 33. The length of time required for half of the radioactive atoms in a sample to decay is its
- half-life.
  - relative date.
  - radioactive date.
  - period.
- \_\_\_\_\_ 34. The Mesozoic Era occurred
- before Precambrian Time.
  - during Precambrian Time.
  - after the Paleozoic Era.
  - after the Cenozoic Era.
- \_\_\_\_\_ 35. Fossilized evidence of Earth's first forms of life would consist of
- vertebrates from the Precambrian.
  - invertebrates from the Precambrian.
  - eukaryotes from the Precambrian.
  - prokaryotes from the Precambrian.
- \_\_\_\_\_ 36. In the past, mass extinctions encouraged the rapid evolution of surviving species
- by changing developmental genes.
  - by making new habitats available to them.
  - because they killed all organisms that had coevolved.
  - because they spared all organisms that had evolved convergently.
- \_\_\_\_\_ 37. Gradualism is a pattern of evolution in which
- a single species evolves into several closely related species.
  - several distantly related species develop similarities.
  - a species evolves at a slow, steady pace.
  - a species has periods of little evolution interrupted by periods of rapid evolution.

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- \_\_\_\_\_ 38. A pattern in which species experience long, stable periods interrupted by brief periods of rapid evolutionary change is called
- convergent evolution.
  - coevolution.
  - adaptive radiation.
  - punctuated equilibrium.
- \_\_\_\_\_ 39. Mass extinction would most likely result from which of the following events?
- a disease kills off a single species of predator within an ecosystem
  - a wildfire burns a national park
  - global temperatures drop several degrees after several massive volcanic eruptions
  - a massive earthquake strikes North America

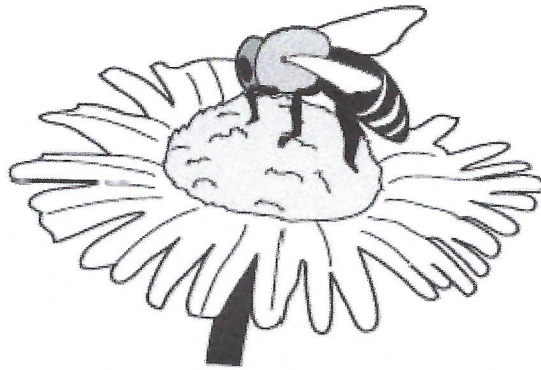


Figure 19-2

- \_\_\_\_\_ 40. In Figure 19-2, flowers and pollinating insects are examples of
- convergent evolution.
  - punctuated equilibrium.
  - coevolution.
  - adaptive radiation.