



Practice Worksheet on Biodiversity, Evolution, and Classification

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Subject: Biology

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Long Answer Questions

1. What is the relationship between specialised cells, adaptive structures and the survival of an organism?
2. What is the theory of evolution by natural selection?
3. To what degree does diversity of life (variation) impact on survival of a population?
4. Define species and its characteristics
5. Classify Iguana iguana & Ctenosaura sp. as either examples or non-examples of the same species and explain your reasoning.
6. Explain the relationship between variation, adaptation and survival

7. Explain different types of adaptations with examples

8. Describe the adaptations of marine iguana and how those adaptations improve its chance of survival

Multiple Choice Questions

1. Which of the following statements about species is correct?

- a) Two organisms of the same species always look identical.
- b) Members of the same species share the same unique scientific name and can potentially interbreed.
- c) A population consists of different species living together in one area.
- d) Species never show any variation among their members.

2. What is the primary source of variation within a species?

- a) Genetic variation
- b) Environmental factors only
- c) Lack of adaptations
- d) Natural selection only

3. What is evolution, according to Darwin's theory?

- a) Survival of the fittest
- b) Changes in allele frequencies over generations
- c) Competition for resources only
- d) No change in populations

4. Which of the following are examples of evolution?

- a) Yellow leaves on a plant due to lack of nutrients
- b) Development of feathered dinosaurs

- c) Brown skin from sun exposure
- d) Antibiotic resistance in bacteria

5. How do dichotomous keys work?

- a) They are only useful for identifying plants.
- b) They always use a single characteristic to identify a species.
- c) They use a series of paired questions to lead to the identification of a species.
- d) They are not used in scientific classification.

6. Why is global systematic classification important?

- a) A global system ensures everyone uses the same names for organisms.
- b) It is not necessary for international collaboration.
- c) It leads to confusion in identifying species.
- d) It only applies to a small number of organisms.

7. What is biodiversity?

- a) It refers to the size of an organism only.
- b) It encompasses the variety of all life on Earth at the genetic, species and habitat levels.
- c) It is only concerned with the number of species.
- d) It is a static concept that doesn't change over time.

8. Why is biodiversity significant for Earth's health and human societies?

- a) It only benefits human societies.
- b) It supports essential ecosystem services, such as clean air and water, and is crucial for human well-being.
- c) It is not important for the health of the planet.
- d) It has no impact on human societies.

Answer Key

Long Answer Questions - Expected Responses

1. What is the relationship between specialised cells, adaptive structures and the survival of an organism?

Expected Answer: Specialised cells increase efficiency and functionality. Adaptive structures aid survival in specific environments. Organisms with both are more likely to survive and reproduce.

2. What is the theory of evolution by natural selection?

Expected Answer: Natural selection is a process where organisms with advantageous traits are more likely to survive and reproduce, passing those traits to their offspring. This leads to changes in populations over time.

3. To what degree does diversity of life (variation) impact on survival of a population?

Expected Answer: High diversity increases the chance of some individuals surviving environmental changes or diseases. Low diversity makes populations vulnerable to extinction.

4. Define species and its characteristics

Expected Answer: A species is a group of organisms that can potentially interbreed and produce fertile, viable offspring. They share a common scientific name and may show variation within the species.

5. Classify Iguana iguana & Ctenosaura sp. as either examples or non-examples of the same species and explain your reasoning.

Expected Answer: Iguana iguana and Ctenosaura sp. are not the same species because they cannot interbreed to produce fertile offspring. This is evident in their distinct physical characteristics.

6. Explain the relationship between variation, adaptation and survival

Expected Answer: Variation within a species can be caused by genetic differences or environmental factors. This can lead to adaptations that increase the survival chances of certain individuals.

7. Explain different types of adaptations with examples

Expected Answer: Adaptations are characteristics that help organisms survive in their environment. They can be structural (physical features), behavioral (actions), or physiological (internal processes).

8. Describe the adaptations of marine iguana and how those adaptations improve its chance of survival

Expected Answer: Marine iguanas have structural adaptations like a flattened tail for swimming and a blunt nose for eating seaweed, and behavioral adaptations such as deep diving. These adaptations enhance their survival in the marine environment.

Multiple Choice Questions – Correct Answers

1. Which of the following statements about species is correct?

Correct Answer: Members of the same species share the same unique scientific name and can potentially interbreed.

2. What is the primary source of variation within a species?

Correct Answer: Genetic variation

3. What is evolution, according to Darwin's theory?

Correct Answer: Changes in allele frequencies over generations

4. Which of the following are examples of evolution?

Correct Answer: Development of feathered dinosaurs

5. How do dichotomous keys work?

Correct Answer: They use a series of paired questions to lead to the identification of a species.

6. Why is global systematic classification important?

Correct Answer: A global system ensures everyone uses the same names for organisms.

7. What is biodiversity?

Correct Answer: It encompasses the variety of all life on Earth at the genetic, species and habitat levels.

8. Why is biodiversity significant for Earth's health and human societies?

Correct Answer: It supports essential ecosystem services, such as clean air and water, and is crucial for human well-being.