



Practice Worksheet on Biodiversity and Evolution

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Subject: Biology

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Long Answer Questions

1. Explain how cell specialization enhances the overall capabilities of multicellular organisms.
2. What are the causes of variation within a species?
3. Explain the relationship between variation, adaptation, and survival in a species.
4. Describe the process of natural selection, making sure to include the four key stages.
5. Describe how a dichotomous key is used in the identification and classification of organisms.
6. Describe the rules and conventions for writing scientific names using binomial nomenclature.

7. Define biodiversity and explain its characteristics.

8. Explain what ecosystem services are, giving examples and explaining how biodiversity contributes to them.

Multiple Choice Questions

1. What is the primary criterion for defining a species?

- a) They can potentially interbreed to produce fertile, viable offspring.
- b) They share the same habitat.
- c) They have identical physical characteristics.
- d) They occupy the same ecological niche.

2. Which mechanism drives the evolutionary changes observed in the adaptations of marine iguanas?

- a) Natural selection
- b) Artificial selection
- c) Genetic drift
- d) Mutation

3. How is the diversity of life broadly classified in modern biological taxonomy?

- a) Three domains (Bacteria, Archaea, Eukarya), further divided into six kingdoms.
- b) Five kingdoms (Monera, Protista, Fungi, Plantae, Animalia)
- c) Two domains (Prokaryotes, Eukaryotes)
- d) Seven taxonomic levels (Kingdom, Phylum, Class, Order, Family, Genus, Species)

4. Why is a global, standardized system of naming organisms important?

- a) To ensure consistent and universally understood communication and

collaboration amongst scientists globally.

- b) To simplify the classification of organisms.
- c) To reflect the evolutionary relationships among organisms.
- d) To prevent misidentification of organisms.

5. What tool do biologists use that assists them in the identification and classification of organisms based on a series of paired characteristics?

- a) Dichotomous keys
- b) Phylogenetic trees
- c) Taxonomic hierarchies
- d) Venn diagrams

6. How does the variation in bird beaks relate to natural selection and adaptation?

- a) Variation in beak shape leads to differences in feeding efficiency and success in various habitats.
- b) Beak shape is primarily determined by genetic factors.
- c) Bird beaks always evolve to become larger over time.
- d) All bird beaks are equally well-suited for all types of food sources.

7. What are the components of biodiversity?

- a) Genetic diversity, species diversity, and habitat diversity.
- b) Only species diversity
- c) Only genetic diversity
- d) Only habitat diversity

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

- a) It supports essential ecosystem services like clean water, pollination, and climate regulation, which benefit human societies.
- b) It has little impact on human society.
- c) It is only important for the conservation of endangered species.
- d) It is solely related to aesthetic appreciation of nature.

Answer Key

Long Answer Questions - Expected Responses

1. Explain how cell specialization enhances the overall capabilities of multicellular organisms.

Expected Answer: Specialised cells increase efficiency and functionality in multicellular organisms by enabling division of labor.

2. What are the causes of variation within a species?

Expected Answer: Genetic variation, environmental factors, or a combination of both, cause variation within a species.

3. Explain the relationship between variation, adaptation, and survival in a species.

Expected Answer: Organisms with beneficial adaptations are better suited to their environment and therefore more likely to survive and reproduce, passing on their advantageous traits.

4. Describe the process of natural selection, making sure to include the four key stages.

Expected Answer: Natural Selection: Variation exists within a population; competition for resources occurs; individuals with advantageous traits survive and reproduce, passing on those traits; over time, allele frequencies change leading to evolution.

5. Describe how a dichotomous key is used in the identification and classification of organisms.

Expected Answer: A dichotomous key uses a series of paired questions, each with two possible answers, to lead to the identification of an organism. It's a tool for classifying organisms based on shared characteristics.

6. Describe the rules and conventions for writing scientific names using binomial nomenclature.

Expected Answer: Binomial nomenclature uses a two-part name, genus, and species. The genus name is capitalized, the species name is lowercase, and both are italicized (or underlined in handwritten text).

7. Define biodiversity and explain its characteristics.

Expected Answer: Biodiversity includes genetic diversity, species diversity, and habitat diversity. It is dynamic and varies based on factors such as resource availability.

8. Explain what ecosystem services are, giving examples and explaining how biodiversity contributes to them.

Expected Answer: Ecosystem services encompass provisioning, regulating, supporting, and cultural benefits. Biodiversity is crucial for maintaining these services. For example, diverse habitats enhance resilience against environmental change and support various human needs.

Multiple Choice Questions - Correct Answers

1. What is the primary criterion for defining a species?

Correct Answer: They can potentially interbreed to produce fertile, viable offspring.

2. Which mechanism drives the evolutionary changes observed in the adaptations of marine iguanas?

Correct Answer: Natural selection

3. How is the diversity of life broadly classified in modern biological taxonomy?

Correct Answer: Three domains (Bacteria, Archaea, Eukarya), further divided into six kingdoms.

4. Why is a global, standardized system of naming organisms important?

Correct Answer: To ensure consistent and universally understood communication and collaboration amongst scientists globally.

5. What tool do biologists use that assists them in the identification and classification of organisms based on a series of paired characteristics?

Correct Answer: Dichotomous keys

6. How does the variation in bird beaks relate to natural selection and adaptation?

Correct Answer: Variation in beak shape leads to differences in feeding efficiency and success in various habitats.

7. What are the components of biodiversity?

Correct Answer: Genetic diversity, species diversity, and habitat diversity.

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

Correct Answer: It supports essential ecosystem services like clean water, pollination, and climate regulation, which benefit human societies.