

Answers For Study Guide For Apes

APES Ch. 1, 2, and Supplement 5 Study Guide

Objectives: You do not need to answer any of the bullets under "Objectives." These are goals to keep in mind as we cover these chapters. At the end of this section, you should be able to:

- Describe the term sustainability as it applies to natural capital and sustainable societies
- Compare and contrast developing countries and developed countries with regards to population growth, wealth, resource use and pollution
- Determine the doubling time of any population given the rate of population growth
- Define the Tragedy of the Commons
- Cite the benefits of pollution prevention vs. pollution clean-up
- Identify the root causes of environmental problems
- Identify the principles of sustainability
- Calculate the ecological footprint of a country
- Describe the basic process of the scientific method; formulate and test a hypothesis
- Identify the main components of a system including inputs, throughputs and outputs and the role of feedback loops
- Describe synergistic interactions.
- Describe the types and structures of matter including atoms and ions, qualities of matter, states of matter and changes in matter
- Apply the Law of Conservation of Matter to the outputs of systems
- Compare and contrast the process of fission and fusion and apply the concept of half-life to radioactive decay

Textbook References:

Miller, *Living in the Environment*, 15th edition: Chapters 1, 2, and supplement 5 (starting on pg. S16- back of book)

Important Vocabulary : Write a brief definition for each word.

<ul style="list-style-type: none"> • Exponential vs. Linear Growth • Ecology • Natural Capital • Doubling Time • Agricultural revolution • Sierra Club • Easter Island Case Study • Rule of 70 • Developed vs. Developing Countries 	<ul style="list-style-type: none"> • per capita GNP/GDP • Affluenza • Industrial revolution • Biodiversity • Frontier worldview • Ecological footprint • Pollution prevention vs. pollution clean-up • Prokaryote vs. eukaryote 	<ul style="list-style-type: none"> • Four principles of Sustainability • John Muir • CCC • Earth Day • Synergy • Law of conservation of matter • Persistence
Discussion Questions. Must answer each in complete sentences.		
1. Discuss the difference between point and nonpoint sources of pollution. Provide examples of point and nonpoint sources of air, water and noise pollution. 2. Describe the "Tragedy of the Commons". Give one example. 3. Describe three contrasting characteristics of a developed and developing country. 4. Contrast perpetual, renewable, and nonrenewable resources. Give an example of each.	5. Give two examples of how poverty and human population growth have a negative effect on the environment. 6. Contrast control, independent variable, and dependent variable. 7. Contrast positive and negative feedback loops and give an example of each. 8. Contrast fission vs. fusion. 9. Contrast high quality matter and low quality matter. Give an example of each.	
Math Problems: Show all work and circle your answers.		
1. If the earth's population is approximately 7 billion currently, how long will it take to double in size if the population growth maintains at 2%? 2. If the GDP of the U.S. is \$15,000,000,000,000, and the population is about 300,000,000, what is the GDP per capita? 3. If the U.S. population is about 300,000,000, and each person has an ecological footprint of about 10 hectares, what is the total ecological footprint for the U.S. in hectares? 4. If 1 hectare = 0.01 km ² , what is the area of the ecological footprint of the U.S. in km ² ? 5. If Asia's birth rate is 19 per 1,000 people and its death rate is 7 per 1,000 people, what is its growth rate in percent?		

Answers for Study Guide for APES are crucial for students preparing for the Advanced Placement Environmental Science (APES) exam. This exam assesses the understanding of environmental concepts and the interconnections between human activities and the environment. As students dive into their study materials, having a comprehensive guide with accurate answers can significantly enhance their understanding of key topics and improve their performance. This article will provide an overview of essential concepts, effective study strategies, and specific answers to common questions that often arise in APES study guides.

Understanding the APES Exam Structure

The AP Environmental Science exam is structured to assess a variety of skills and knowledge areas. It typically consists of two main sections: multiple-choice questions and free-response questions.

Multiple-Choice Section

- Question Types: This section includes a variety of question types, ranging from factual recall to application and analysis of environmental concepts.
- Focus Areas: Topics include ecosystems, biodiversity, population dynamics, resource management, pollution, and energy resources.
- Duration: Students have 90 minutes to answer around 100 multiple-choice questions.

Free-Response Section

- Question Types: This section requires students to construct detailed responses to specific prompts.
- Focus Areas: Questions may involve data interpretation, calculations, and the application of concepts to real-world scenarios.
- Duration: Students have 90 minutes to answer three free-response questions.

Key Topics in AP Environmental Science

To effectively prepare for the exam, students must familiarize themselves with several key topics.

Ecosystems and Biodiversity

- Ecosystem Structure: Understand the components of ecosystems, including producers, consumers, and decomposers.
- Biodiversity Importance: Grasp the significance of biodiversity and the concept of ecological niches.
- Threats to Biodiversity: Be aware of habitat destruction, pollution, invasive species, and climate change impacts on biodiversity.

Population Dynamics

- Population Growth Models: Study exponential vs. logistic growth models and

factors affecting population dynamics.

- Carrying Capacity: Understand the concept of carrying capacity and its implications for resource management.

Resource Management and Sustainability

- Types of Resources: Distinguish between renewable and non-renewable resources.

- Sustainable Practices: Explore sustainable practices in agriculture, forestry, and fisheries management.

Pollution and Environmental Health

- Types of Pollution: Understand air, water, soil, and noise pollution, including their sources and effects.

- Environmental Regulations: Familiarize yourself with major environmental laws and regulations, such as the Clean Air Act and Clean Water Act.

Energy Resources and Consumption

- Energy Types: Learn about renewable and non-renewable energy sources, including solar, wind, fossil fuels, and nuclear energy.

- Energy Efficiency: Study the importance of energy conservation and efficiency measures.

Effective Study Strategies for APES

To master the content of AP Environmental Science, students should adopt effective study strategies.

Utilizing Study Guides

- Comprehensive Guides: Invest in a comprehensive study guide that covers all exam topics with detailed explanations and practice questions.

- Flashcards: Create flashcards for key terms and concepts to reinforce memory retention.

Practice Exams

- **Timed Practice:** Take timed practice exams to familiarize yourself with the exam format and pacing.
- **Review Mistakes:** Analyze incorrect answers to identify knowledge gaps and areas for improvement.

Group Study Sessions

- **Peer Learning:** Organize study groups with classmates to discuss challenging concepts and quiz each other.
- **Sharing Resources:** Exchange study materials and resources to enhance collective understanding.

Sample Questions and Answers for APES Study Guide

Below are sample questions commonly found in APES study guides, along with their answers:

Sample Question 1: What is the primary cause of ocean acidification?

- **Answer:** The primary cause of ocean acidification is the increase in atmospheric carbon dioxide (CO₂) levels, which dissolves in seawater to form carbonic acid, leading to lower pH levels in ocean waters.

Sample Question 2: Define the concept of ecological footprint.

- **Answer:** An ecological footprint measures the demand on Earth's ecosystems in terms of the area of biologically productive land and water required to produce the resources consumed and to absorb the waste generated by an individual, community, or organization.

Sample Question 3: What are the three major types of biodiversity?

- **Answer:** The three major types of biodiversity are:
 1. **Genetic Diversity:** The variety of genes within a species.
 2. **Species Diversity:** The variety of species within a particular habitat or

region.

3. Ecosystem Diversity: The variety of ecosystems in a given place.

Sample Question 4: Describe the difference between point-source and non-point-source pollution.

- Answer:

- Point-Source Pollution: Pollution that comes from a single, identifiable source, such as a pipe discharging waste into a river.

- Non-Point-Source Pollution: Pollution that comes from multiple, diffuse sources, such as runoff from agricultural fields carrying fertilizers and pesticides into nearby water bodies.

Sample Question 5: What role do decomposers play in an ecosystem?

- Answer: Decomposers, such as bacteria and fungi, break down dead organic matter, recycling nutrients back into the ecosystem. This process is essential for nutrient cycling and maintaining soil health.

Conclusion

In conclusion, the answers for study guides for APES play a vital role in preparing for the AP Environmental Science exam. By understanding the exam structure, key topics, effective study strategies, and practicing with relevant questions, students can enhance their knowledge and confidence. Preparing for APES not only equips students with essential environmental knowledge but also fosters a deeper appreciation for the interconnectedness of human activities and the natural world. By investing time and effort into studying, students can achieve success on the APES exam and contribute positively to environmental sustainability in the future.

Frequently Asked Questions

What are the main components of an AP Environmental Science (APES) study guide?

An APES study guide typically includes key topics like ecosystems, biodiversity, population dynamics, resource management, pollution, and sustainability practices, along with practice questions and exam strategies.

How can I effectively use a study guide to prepare for the APES exam?

To effectively use a study guide, break down the content into manageable sections, create a study schedule, utilize practice questions, and review key concepts regularly to reinforce your understanding.

What types of questions are commonly found in APES study guides?

Common question types include multiple-choice questions, free-response questions, and case study analyses that require application of environmental science concepts.

What resources can supplement my APES study guide?

Resources that can supplement your study guide include online practice exams, review books, educational videos, and study groups with peers to discuss and clarify difficult topics.

How important is understanding ecological principles in APES?

Understanding ecological principles is crucial in APES, as they form the foundation for topics like biodiversity, ecosystems services, and human impact on the environment.

What strategies can help with memorizing key terms and concepts for APES?

Effective strategies for memorization include creating flashcards, using mnemonic devices, engaging in active recall, and teaching concepts to someone else to reinforce your understanding.

How far in advance should I start using my APES study guide?

It is recommended to start using your APES study guide at least 8-10 weeks before the exam to allow ample time for content review, practice, and mastery of the material.

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