

ENVIRONMENTAL SYSTEMS AND SOCIETIES (ESS) TOPIC 1 FOUNDATIONS PRACTICE TEST (SAMPLE) STUDY GUIDE



SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

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THE FULL VERSION STUDY GUIDE**

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Introduction

Preparing for a certification exam can feel overwhelming, but with the right tools, it becomes an opportunity to build confidence, sharpen your skills, and move one step closer to your goals. At Examzify, we believe that effective exam preparation isn't just about memorization, it's about understanding the material, identifying knowledge gaps, and building the test-taking strategies that lead to success.

This guide was designed to help you do exactly that.

Whether you're preparing for a licensing exam, professional certification, or entry-level qualification, this book offers structured practice to reinforce key concepts. You'll find a wide range of multiple-choice questions, each followed by clear explanations to help you understand not just the right answer, but why it's correct.

The content in this guide is based on real-world exam objectives and aligned with the types of questions and topics commonly found on official tests. It's ideal for learners who want to:

- Practice answering questions under realistic conditions,
- Improve accuracy and speed,
- Review explanations to strengthen weak areas, and
- Approach the exam with greater confidence.

We recommend using this book not as a stand-alone study tool, but alongside other resources like flashcards, textbooks, or hands-on training. For best results, we recommend working through each question, reflecting on the explanation provided, and revisiting the topics that challenge you most.

Remember: successful test preparation isn't about getting every question right the first time, it's about learning from your mistakes and improving over time. Stay focused, trust the process, and know that every page you turn brings you closer to success.

Let's begin.

How to Use This Guide

This guide is designed to help you study more effectively and approach your exam with confidence. Whether you're reviewing for the first time or doing a final refresh, here's how to get the most out of your Examzify study guide:

1. Start with a Diagnostic Review

Skim through the questions to get a sense of what you know and what you need to focus on. Your goal is to identify knowledge gaps early.

2. Study in Short, Focused Sessions

Break your study time into manageable blocks (e.g. 30 – 45 minutes). Review a handful of questions, reflect on the explanations.

3. Learn from the Explanations

After answering a question, always read the explanation, even if you got it right. It reinforces key points, corrects misunderstandings, and teaches subtle distinctions between similar answers.

4. Track Your Progress

Use bookmarks or notes (if reading digitally) to mark difficult questions. Revisit these regularly and track improvements over time.

5. Simulate the Real Exam

Once you're comfortable, try taking a full set of questions without pausing. Set a timer and simulate test-day conditions to build confidence and time management skills.

6. Repeat and Review

Don't just study once, repetition builds retention. Re-attempt questions after a few days and revisit explanations to reinforce learning. Pair this guide with other Examzify tools like flashcards, and digital practice tests to strengthen your preparation across formats.

There's no single right way to study, but consistent, thoughtful effort always wins. Use this guide flexibly, adapt the tips above to fit your pace and learning style. You've got this!

Questions

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- 1. Which statement correctly defines net primary productivity (NPP) and its relation to gross primary productivity (GPP)?**
 - A. NPP is the energy fixed by photosynthesis.
 - B. NPP equals GPP minus plant respiration.
 - C. GPP equals NPP plus plant respiration.
 - D. NPP is energy used by producers for photosynthesis.
- 2. Which term describes a set of beliefs that guides how society relates to the environment, including ethical and ecological considerations?**
 - A. Sociocultural norms
 - B. Assumptions
 - C. Environmental value system
 - D. Beliefs
- 3. What is the primary goal of sustainable yield in renewable resource management?**
 - A. To maintain a resource indefinitely by harvesting at a sustainable level.
 - B. To maximize short-term profits at any ecological cost.
 - C. To deplete resources to create scarcity.
 - D. To ignore ecological limits and market demand.
- 4. Which statements best describe primary and secondary productivity and their limiting factors?**
 - A. Primary productivity is energy captured via photosynthesis; secondary productivity is growth of heterotrophs; limiting factors include light, nutrients, temperature
 - B. Secondary productivity is energy captured via photosynthesis; primary is growth of heterotrophs; nutrients limit nothing
 - C. There are no limiting factors; light is everything;
 - D. Primary productivity measures biomass produced by consumers; secondary measures photosynthesis
- 5. Which pair of human activities are the primary drivers of increased atmospheric CO₂?**
 - A. Volcanic activity and agriculture
 - B. Deforestation alone
 - C. Fossil fuel combustion alone
 - D. Fossil fuel combustion and deforestation

- 6. Which economic system aims to distribute wealth and resources more equitably among all members of society?**
- A. Market economy
 - B. Distributive economy
 - C. Circular economy
 - D. Regenerative economy
- 7. Which activities disrupt the nitrogen cycle?**
- A. Fertilizer overuse
 - B. Sewage discharge
 - C. Industrial emissions
 - D. All of the above
- 8. Which feature makes the phosphorus cycle slower than carbon and nitrogen cycles?**
- A. It has a significant atmospheric phase that cycles quickly.
 - B. It is primarily driven by photosynthesis.
 - C. It is a fast cycle with rapid turnover in living organisms.
 - D. It has no gaseous phase and moves slowly through rocks and sediments.
- 9. Which statement correctly defines carrying capacity and biocapacity and their relation to sustainability?**
- A. Carrying capacity is the Earth's total resource production; biocapacity is a population limit; sustainability occurs when population exceeds biocapacity.
 - B. Carrying capacity is a maximum population that can be supported indefinitely by available resources; biocapacity is Earth's capacity to produce resources and absorb wastes; sustainability requires population and consumption within biocapacity.
 - C. Carrying capacity is a country's GDP; biocapacity is the soil's fertility; sustainability is unrelated.
 - D. Carrying capacity is the maximum population that can be supported indefinitely by available resources; biocapacity is Earth's capacity to produce resources and absorb wastes; sustainability requires population and consumption within biocapacity.

10. Which term describes a formal agreement between countries to address global environmental issues?

- A. Environmental movement
- B. International agreement
- C. Technocentric
- D. Ecocentric

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Answers

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1. B
2. C
3. D
4. A
5. D
6. B
7. D
8. D
9. D
10. B

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Explanations

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1. Which statement correctly defines net primary productivity (NPP) and its relation to gross primary productivity (GPP)?

- A. NPP is the energy fixed by photosynthesis.
- B. NPP equals GPP minus plant respiration.**
- C. GPP equals NPP plus plant respiration.
- D. NPP is energy used by producers for photosynthesis.

Net primary productivity shows how much new plant biomass an ecosystem actually accumulates after plants pay for their own metabolic costs. Gross primary productivity is the total amount of carbon fixed by photosynthesis. Plants use a portion of that fixed carbon for respiration to fuel maintenance and growth, so what's left after subtracting respiration is the net amount that can be stored as biomass. That relationship is written as $NPP = GPP - \text{plant respiration}$. This makes the statement that GPP equals NPP plus plant respiration a correct rearrangement, but the direct and most straightforward definition most students learn is $NPP = GPP - \text{respiration}$. The other options misrepresent NPP: it is not the energy fixed by photosynthesis (that's GPP), and it is not energy used by producers for photosynthesis (that would be a misdefinition of respiration vs. fixation).

2. Which term describes a set of beliefs that guides how society relates to the environment, including ethical and ecological considerations?

- A. Sociocultural norms
- B. Assumptions
- C. Environmental value system**
- D. Beliefs

The main idea here is a framework of values that shapes how a society interacts with the environment, blending ethical judgments with ecological understanding to guide decisions about resource use, conservation, and responsibility for the natural world. This environmental value system is the lens through which people assess what is right or wrong in relation to nature and what actions are appropriate, given those values. This term is the best fit because it specifically denotes a coherent set of environmental priorities that influence policy, technology, and everyday behavior—not just general beliefs or social expectations. It captures both ethical considerations (what should we value and protect) and ecological considerations (how ecosystems function and what impacts our actions have on them). In contrast, sociocultural norms describe broader cultural expectations about behavior, assumptions refer to underlying, often implicit premises, and beliefs are too broad and not necessarily organized around how society treats the environment.

3. What is the primary goal of sustainable yield in renewable resource management?

- A. To maintain a resource indefinitely by harvesting at a sustainable level.
- B. To maximize short-term profits at any ecological cost.
- C. To deplete resources to create scarcity.
- D. To ignore ecological limits and market demand.**

The main idea here is sustainable yield: harvesting a renewable resource at a rate that allows it to replenish itself, keeping the stock stable or growing so the resource remains available for the long term. In practice, this means extracting enough to meet needs without exceeding the natural regeneration of the population or ecosystem. For a fishery, the catch should not exceed the number that the fish population can replace each year; for a forest, wood removed should be balanced by new growth. The goal is to use the resource indefinitely, maintaining its availability and the health of the ecosystem over time. Choices that push for short-term profits at ecological cost, deplete resources to create scarcity, or ignore ecological limits undermine regeneration and can lead to collapse, which is why sustainable yield focuses on aligning harvest with nature's capacity to renew.

4. Which statements best describe primary and secondary productivity and their limiting factors?

- A. Primary productivity is energy captured via photosynthesis; secondary productivity is growth of heterotrophs; limiting factors include light, nutrients, temperature**
- B. Secondary productivity is energy captured via photosynthesis; primary is growth of heterotrophs; nutrients limit nothing
- C. There are no limiting factors; light is everything;
- D. Primary productivity measures biomass produced by consumers; secondary measures photosynthesis

Primary production is the energy captured by autotrophs through photosynthesis, while secondary production is the growth of heterotrophs that consume organic matter produced by those autotrophs. Good understanding here is that producers convert light energy into chemical energy, and consumers build their own biomass by using that energy. Limiting factors for primary production are typically light and nutrients, which control how fast photosynthesis can proceed. Temperature also plays a role because it affects enzyme activity and metabolic rates, influencing overall photosynthetic efficiency. In aquatic systems, light and nutrient availability are common bottlenecks, with nutrients like nitrogen and phosphorus often limiting growth. For secondary production, the amount of biomass that consumers can generate depends on the energy available from the food produced by producers and how efficiently energy is transferred between trophic levels. This transfer is inherently limited (often around 10% efficiency), and factors such as temperature and food quality affect how well consumers can assimilate and convert ingested energy into growth. So the best statement is the one that correctly identifies primary productivity as energy captured via photosynthesis, secondary productivity as growth of heterotrophs, and recognizes light, nutrients, and temperature as common limiting factors affecting these processes. The other options mix up these definitions or overly simplify by excluding limits or mischaracterizing what is measured.

5. Which pair of human activities are the primary drivers of increased atmospheric CO₂?

- A. Volcanic activity and agriculture
- B. Deforestation alone
- C. Fossil fuel combustion alone
- D. Fossil fuel combustion and deforestation**

The main idea is that human activities both add CO₂ to the atmosphere and reduce the planet's ability to remove it. Burning fossil fuels releases large amounts of carbon that has been stored underground for millions of years, directly increasing atmospheric CO₂. At the same time, deforestation cuts down the number of trees and other vegetation that can take CO₂ out of the air through photosynthesis, and when forests are cleared or burned, stored carbon is released back into the atmosphere. This combination— emissions from fossil fuels plus the loss of carbon sinks from deforestation—explains the substantial rise in atmospheric CO₂ observed recently. Volcanic activity does contribute CO₂, but on a much smaller scale than human activities, so it isn't the primary driver. Deforestation alone raises CO₂, but the substantial impact comes from its combination with fossil fuel use.

6. Which economic system aims to distribute wealth and resources more equitably among all members of society?

- A. Market economy
- B. Distributive economy**
- C. Circular economy
- D. Regenerative economy

The question is about which economic approach explicitly aims to spread wealth and resources more evenly among all people in a society. The best match is a distributive economy, which centers on fairness and equal access to basic needs and opportunities for everyone. In practical terms, this means policies and structures that try to reduce poverty and inequality—things like social welfare programs, progressive taxation, public services, and mechanisms that ensure essentials such as housing, healthcare, and education are accessible to all, not just the wealthy or privileged. This contrasts with a market economy, where decisions are driven by price signals and private ownership, often leading to unequal outcomes as wealth concentrates. A circular economy focuses on keeping materials in use and minimizing waste, not on who benefits economically. A regenerative economy emphasizes restoring and renewing natural systems for long-term resilience, rather than distributing wealth per se. So the distributive approach directly tackles the fairness of how resources are shared, making it the best fit for the stated aim.

7. Which activities disrupt the nitrogen cycle?

- A. Fertilizer overuse
- B. Sewage discharge
- C. Industrial emissions
- D. All of the above**

Disruptions to the nitrogen cycle occur when human activities add reactive nitrogen or shift its forms, changing how nitrogen moves between air, water, soil, and living things. Overuse of fertilizers floods soils with nitrate and ammonium, which can run off into streams and rivers, promoting algal blooms and oxygen depletion in water while upsetting soil nutrient balance. Sewage discharge introduces large amounts of organic nitrogen and ammonia; microbes decompose this material, consuming oxygen and driving eutrophication that disrupts aquatic ecosystems. Industrial emissions release nitrogen oxides that become deposited back onto land and water as nitrates and ammonium, altering soil and water chemistry and contributing to acid rain, which can change microbial processes and plant communities. Because each of these adds or redistributes reactive nitrogen in ways that upset natural cycling, all of the above disrupt the nitrogen cycle.

8. Which feature makes the phosphorus cycle slower than carbon and nitrogen cycles?

- A. It has a significant atmospheric phase that cycles quickly.
- B. It is primarily driven by photosynthesis.
- C. It is a fast cycle with rapid turnover in living organisms.
- D. It has no gaseous phase and moves slowly through rocks and sediments.**

The pace of a nutrient cycle depends on whether a gas phase allows rapid exchange with the atmosphere. The phosphorus cycle has no significant gaseous phase; phosphate mainly moves through rocks, soils, and waters, being released by weathering, taken up by organisms, and then deposited as sediments. These geologic and sedimentary steps are slow, giving phosphorus a long residence time and a slow overall turnover. In contrast, carbon and nitrogen cycles involve atmospheric pools that rapidly exchange with the biosphere and hydrosphere through processes like photosynthesis, respiration, fixation, and denitrification, enabling faster cycling. So, the reason this cycle is slower is that it has no gaseous phase and moves slowly through rocks and sediments.

9. Which statement correctly defines carrying capacity and biocapacity and their relation to sustainability?

- A. Carrying capacity is the Earth's total resource production; biocapacity is a population limit; sustainability occurs when population exceeds biocapacity.
- B. Carrying capacity is a maximum population that can be supported indefinitely by available resources; biocapacity is Earth's capacity to produce resources and absorb wastes; sustainability requires population and consumption within biocapacity.
- C. Carrying capacity is a country's GDP; biocapacity is the soil's fertility; sustainability is unrelated.
- D. Carrying capacity is the maximum population that can be supported indefinitely by available resources; biocapacity is Earth's capacity to produce resources and absorb wastes; sustainability requires population and consumption within biocapacity.**

Carrying capacity is the largest population that an environment can support indefinitely given the available resources and ecosystem services, such as food, water, and waste absorption. Biocapacity is Earth's capacity to produce renewable resources and to absorb wastes—essentially the productive power of the biosphere. Sustainability means keeping the number of people and their level of consumption within those ecological limits, so we stay within biocapacity. If demand (population plus consumption) exceeds biocapacity, resources are depleted and ecosystems degrade, making it harder to support people long term. This definition accurately reflects how population size, consumption, and the environment are interconnected.

10. Which term describes a formal agreement between countries to address global environmental issues?

- A. Environmental movement
- B. International agreement**
- C. Technocentric
- D. Ecocentric

The concept here is about a formal, written commitment between nations to tackle environmental problems on a global scale. That describes an international agreement. Such agreements are often negotiated through international bodies like the United Nations and can take the form of treaties or pacts that set out obligations, timelines, and mechanisms for cooperation and monitoring. They are distinct from social campaigns (an environmental movement), which are advocacy efforts rather than formal commitments, and from worldviews (technocentric or ecocentric) that describe beliefs about how best to approach environmental issues rather than the legal instruments used to address them. Examples include the Paris Agreement and the Montreal Protocol, which show how countries come together to commit to collective actions.

Next Steps

Congratulations on reaching the final section of this guide. You've taken a meaningful step toward passing your certification exam and advancing your career.

As you continue preparing, remember that consistent practice, review, and self-reflection are key to success. Make time to revisit difficult topics, simulate exam conditions, and track your progress along the way.

If you need help, have suggestions, or want to share feedback, we'd love to hear from you. Reach out to our team at hello@examzify.com.

Or visit your dedicated course page for more study tools and resources:

<https://esstopic1foundations.examzify.com>

We wish you the very best on your exam journey. You've got this!

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