

UNIVERSITY OF CENTRAL FLORIDA (UCF) PHY1038 PHYSICS OF ENERGY, CLIMATE CHANGE AND ENVIRONMENT PRACTICE EXAM 2 (SAMPLE) STUDY GUIDE



SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

**VISIT US ONLINE FOR
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. What does the term carbon footprint refer to?**
 - A. The amount of oxygen consumed
 - B. The total greenhouse gases emitted by an individual
 - C. The number of trees planted
 - D. The size of an individual's home
- 2. What is one outcome of using fossil fuels as an energy source?**
 - A. Zero emissions
 - B. Destruction of ozone layer
 - C. Increased greenhouse gases
 - D. Production of clean energy
- 3. What environmental issue is primarily linked to the combustion of fossil fuels?**
 - A. Desertification
 - B. Air pollution
 - C. Ocean acidification
 - D. Overfishing
- 4. Which of the following is a consequence of increased greenhouse gas emissions?**
 - A. Decreased global temperatures
 - B. Increased polar bear populations
 - C. Rising global temperatures
 - D. More stable climate patterns
- 5. What type of energy generation can result from photolysis?**
 - A. Heating energy
 - B. Electrical energy
 - C. Chemical energy in the form of hydrogen fuel
 - D. Wind energy

- 6. What is the approximate value of solar energy received at the Earth's surface?**
- A. 1360 W/m²
 - B. 500 W/m²
 - C. 900 W/m²
 - D. 2000 W/m²
- 7. What is the importance of public awareness in addressing climate change?**
- A. It discourages action towards sustainability
 - B. It fosters individual and collective action for change
 - C. It limits policy changes
 - D. It focuses only on government action
- 8. What phenomenon can result from changes in habitats due to climate change?**
- A. Increased biodiversity
 - B. Species extinction
 - C. Enhanced predator-prey relationships
 - D. Equal distribution of species
- 9. How is wind energy harnessed?**
- A. Using solar panels that convert light into electricity
 - B. Using wind turbines that convert kinetic energy from wind into electrical energy
 - C. Using geothermal systems that convert heat from the earth into energy
 - D. Using hydroelectric dams that generate power from flowing water
- 10. What does consumption-based emissions accounting focus on?**
- A. Accounting for emissions from transportation
 - B. Emissions from industrial processes
 - C. Emissions based on the consumption of goods and services
 - D. Emissions produced in specific geographic areas

Answers

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

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Explanations

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1. What does the term carbon footprint refer to?

- A. The amount of oxygen consumed
- B. The total greenhouse gases emitted by an individual**
- C. The number of trees planted
- D. The size of an individual's home

The term carbon footprint specifically refers to the total amount of greenhouse gases emitted directly or indirectly by an individual, organization, event, or product over a certain period, typically expressed in equivalent tons of carbon dioxide (CO₂e). This measurement encompasses all activities that contribute to greenhouse gas emissions, such as transportation, energy consumption, waste production, and dietary choices. Understanding a carbon footprint is crucial because it captures the cumulative impact of human activities on climate change, allowing for a clearer perspective on how lifestyle choices and consumption patterns affect the environment. It is a valuable metric used to assess and mitigate one's impact on global warming and supports efforts to identify areas where emissions can be reduced.

2. What is one outcome of using fossil fuels as an energy source?

- A. Zero emissions
- B. Destruction of ozone layer
- C. Increased greenhouse gases**
- D. Production of clean energy

Using fossil fuels as an energy source substantially increases the concentration of greenhouse gases in the atmosphere, primarily carbon dioxide (CO₂) and methane (CH₄). When fossil fuels, such as coal, oil, and natural gas, are burned for energy production, they release these gases as byproducts of combustion. The increased levels of greenhouse gases are a major contributor to climate change, as they trap heat in the Earth's atmosphere, leading to global warming. This outcome is significant in environmental science as it directly relates to the challenges of climate change and the pressing need to transition to alternative energy sources that produce lower emissions. Understanding this relationship emphasizes the importance of developing sustainable energy solutions that minimize greenhouse gas emissions and mitigate their impact on our climate and environment.

3. What environmental issue is primarily linked to the combustion of fossil fuels?

- A. Desertification
- B. Air pollution**
- C. Ocean acidification
- D. Overfishing

The combustion of fossil fuels is primarily linked to air pollution due to the release of various harmful pollutants into the atmosphere. When fossil fuels such as coal, oil, and natural gas are burned for energy, they produce carbon dioxide (CO₂), nitrogen oxides (NO_x), sulfur dioxide (SO₂), and particulate matter. These emissions contribute to the formation of smog, respiratory problems, and other health issues, as well as affecting the environment through the degradation of air quality. Air pollution from fossil fuel combustion can also lead to acid rain, which further impacts ecosystems, water quality, and soil health. The extensive use of fossil fuels in transportation, industry, and electricity generation enhances the concentration of these pollutants, making air pollution one of the most significant environmental concerns associated with fossil fuel usage. Other options listed, such as desertification, ocean acidification, and overfishing, stem from different causes associated with land use, carbon dioxide absorption in oceans, and fishing practices, respectively, but are not directly linked to the direct emissions from fossil fuel combustion.

4. Which of the following is a consequence of increased greenhouse gas emissions?

- A. Decreased global temperatures
- B. Increased polar bear populations
- C. Rising global temperatures**
- D. More stable climate patterns

Rising global temperatures result from increased greenhouse gas emissions due to the greenhouse effect. Greenhouse gases, such as carbon dioxide and methane, trap heat in the Earth's atmosphere, preventing it from escaping into space. This process leads to an increase in the average global temperature over time, contributing to climate change. As the concentration of greenhouse gases continues to rise due to human activities like burning fossil fuels, deforestation, and industrial processes, the enhanced greenhouse effect exacerbates warming trends. The implications of rising temperatures are extensive, leading to various environmental issues, including melting ice caps, rising sea levels, and more frequent extreme weather events. In contrast, decreased global temperatures, increased polar bear populations, and more stable climate patterns do not accurately reflect the current scientific understanding of the impacts of greenhouse gas emissions. Instead, they misrepresent the relationship between emissions and climatic outcomes.

5. What type of energy generation can result from photolysis?

- A. Heating energy
- B. Electrical energy
- C. Chemical energy in the form of hydrogen fuel**
- D. Wind energy

Photolysis involves the breaking down of molecules through the absorption of light energy, typically ultraviolet light. In the context of energy generation, photolysis is particularly relevant to processes that convert solar energy into chemical energy. During photolysis, water molecules can be split into oxygen and hydrogen, which can then be harnessed as hydrogen fuel. This transformation signifies a conversion from light energy (solar energy) into stored chemical energy in the form of hydrogen. Chemical energy, especially hydrogen fuel, serves as a clean energy carrier that can be used in fuel cells to produce electricity or as a direct fuel source. The process underscores the potential of solar energy in facilitating energy storage through chemical means, which is pivotal in developing sustainable energy solutions. In contrast to the other choices, heating energy mainly involves thermal processes and does not directly correlate with photolysis. Although electrical energy can be generated from various sources, photolysis specifically leads to the formation of chemical compounds. Wind energy, derived from the movement of air and kinetic energy, is unrelated to the photochemical processes that drive photolysis. Therefore, focusing on the conversion of light energy into chemical energy elucidates why the generation of chemical energy in the form of hydrogen fuel is the most relevant result of phot

6. What is the approximate value of solar energy received at the Earth's surface?

- A. 1360 W/m²
- B. 500 W/m²
- C. 900 W/m²
- D. 2000 W/m²

The approximate value of solar energy received at the Earth's surface is close to 1000 W/m² when the sun is directly overhead at noon in clear weather conditions. This value can fluctuate based on several factors such as latitude, season, atmospheric conditions, and time of day. However, the figure 1360 W/m² represents the solar constant, which is the average solar energy received per unit area at the outer edge of the Earth's atmosphere, not at the surface itself. While solar energy values at various moments and locations can be lower, the other choices presented do not accurately reflect the average solar energy hitting the Earth's surface under optimal conditions. Thus, while the correct answer approximates the amount of energy available for conversion by solar panels and other technologies, it is important to understand that variations can occur due to real-world conditions.

7. What is the importance of public awareness in addressing climate change?

- A. It discourages action towards sustainability
- B. It fosters individual and collective action for change
- C. It limits policy changes
- D. It focuses only on government action

Public awareness plays a crucial role in addressing climate change because it fosters individual and collective action for change. When people are informed about the impacts of climate change—such as extreme weather events, sea-level rise, and ecological disruptions—they are more likely to understand the urgency of the situation and feel empowered to take action. This heightened awareness can lead to changes in personal behavior, such as reducing energy consumption, utilizing public transportation, or supporting sustainable products. Furthermore, informed individuals are more likely to participate in community initiatives and advocate for policies that support environmental sustainability. This collective grassroots movement can influence local, national, and even global policies aimed at combating climate change. The power of a well-informed public lies in its ability to demand accountability from leaders and institutions while promoting sustainable practices within communities, ultimately paving the way for significant systemic changes necessary to tackle climate change effectively.

8. What phenomenon can result from changes in habitats due to climate change?

- A. Increased biodiversity
- B. Species extinction**
- C. Enhanced predator-prey relationships
- D. Equal distribution of species

Changes in habitats due to climate change can lead to species extinction as a direct result of the stress that altered conditions place on living organisms. Climate change influences various environmental factors such as temperature, precipitation patterns, and sea levels. As these factors shift, many species may be unable to adapt quickly enough to the new conditions, resulting in declines in population or complete local extinctions. Habitat loss due to rising temperatures, changing ecosystems, and increased frequency of extreme weather events can further exacerbate the challenges faced by species. For example, species that are specialized for particular conditions might find their habitats becoming unsuitable or fragmented, making it hard for them to find food, mates, or suitable breeding grounds. In contrast, options like increased biodiversity or enhanced predator-prey relationships would imply a positive outcome from climate change, which is generally not supported by the evidence. Climate change typically disrupts existing ecosystems rather than creating balance or diversity. Similarly, equal distribution of species is unlikely since climate change tends to favor some species over others, often leading to imbalances and loss of species diversity. Therefore, species extinction is a more accurate representation of the potential outcomes of habitat changes caused by climate change.

9. How is wind energy harnessed?

- A. Using solar panels that convert light into electricity
- B. Using wind turbines that convert kinetic energy from wind into electrical energy**
- C. Using geothermal systems that convert heat from the earth into energy
- D. Using hydroelectric dams that generate power from flowing water

Wind energy is harnessed effectively through the use of wind turbines, which function by converting the kinetic energy present in the movement of air (wind) into electrical energy. When the wind blows, it causes the blades of the wind turbine to rotate. This rotational motion is connected to a generator within the turbine. As the blades turn, they drive the generator, thereby producing electricity. This method is highly efficient for renewable energy generation because it utilizes a naturally occurring resource—wind—that is abundant and sustainable, producing no greenhouse gas emissions during operation. The advancements in turbine design and technology over the years have also increased the efficiency and the amount of electricity that can be generated by wind energy systems.

10. What does consumption-based emissions accounting focus on?

- A. Accounting for emissions from transportation
- B. Emissions from industrial processes
- C. Emissions based on the consumption of goods and services**
- D. Emissions produced in specific geographic areas

Consumption-based emissions accounting specifically emphasizes the emissions produced as a result of the consumption of goods and services by individuals or organizations. This approach accounts for greenhouse gas emissions that are indirectly generated from the manufacturing, transportation, and disposal of products consumed, rather than focusing only on the emissions created within a specific geographic area or by a certain industry. By focusing on consumption, this method provides a more comprehensive view of the carbon footprint associated with demand for products and services, helping to illustrate how individual behaviors and consumption patterns contribute to overall emissions. It encourages accountability and awareness regarding how lifestyle choices, purchasing decisions, and consumption habits impact climate change, fostering a mindset geared towards sustainable consumption. In contrast, other approaches like accounting solely for emissions from transportation or industrial processes do not capture the full picture of how consumer behavior influences total emissions. Similarly, emissions produced in specific geographic areas may overlook contributions from goods consumed that are produced elsewhere. Understanding consumption-based emissions is crucial for creating effective policies aimed at reducing an overall carbon footprint at the consumer level.

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:

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

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