

Climate Change Practice Test (Sample)

Study Guide



Everything you need from our exam experts!

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Table of Contents

Copyright 1

Table of Contents 2

Introduction 3

How to Use This Guide 4

Questions 5

Answers 8

Explanations 10

Next Steps 16

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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. If ocean temperatures continue to rise, which process could lead to a rapid rise in atmospheric methane?**
 - A. Melting of clathrates on the ocean floor**
 - B. Increased methane oxidation in the atmosphere**
 - C. Decreased microbial activity in sediments**
 - D. Lower solar radiation absorption by the ocean**

- 2. Which atmospheric layer contains the weather and shows a decrease in temperature with height?**
 - A. The troposphere**
 - B. The stratosphere**
 - C. The mesosphere**
 - D. The thermosphere**

- 3. What are two common examples of naturally occurring greenhouse gases?**
 - A. Carbon dioxide and water vapor**
 - B. Methane and chlorofluorocarbons**
 - C. Oxygen and Nitrogen**
 - D. Hydrogen and Helium**

- 4. Which two types of solar radiation are greenhouse gases unable to absorb?**
 - A. Visible light and shortwave infrared radiation**
 - B. Longwave infrared radiation and ultraviolet**
 - C. Visible light and ultraviolet**
 - D. Longwave infrared radiation and visible**

- 5. Which of the following best describes the effect of deforestation on atmospheric CO₂?**
 - A. It reduces the amount of CO₂ absorbed and often releases stored carbon if the trees are burned**
 - B. It increases CO₂ absorption by oceans**
 - C. It has no impact on CO₂ levels**
 - D. It reduces methane emissions only**

- 6. Which statement correctly describes the energy balance mechanism that keeps Earth's surface warmer than it would be otherwise?**
- A. The greenhouse effect, by trapping heat through greenhouse gases**
 - B. The albedo effect, by reflecting all sunlight away**
 - C. The ozone layer, by absorbing all UV**
 - D. Ocean currents, by cooling the surface**
- 7. Identify a primary human-driven cause of modern climate warming.**
- A. Burning fossil fuels**
 - B. Natural orbital changes**
 - C. Volcanic eruptions**
 - D. Ocean current shifts**
- 8. Which natural phenomenon can temporarily offset warming by cooling the planet?**
- A. Dust and ash from volcanic eruptions**
 - B. Deforestation**
 - C. Ocean acidification**
 - D. El Niño**
- 9. What would happen to the state of Earth's oceans if the greenhouse effect ceased to exist?**
- A. They would freeze over due to lower temperatures.**
 - B. They would boil away due to higher energy**
 - C. They would become highly acidic**
 - D. They would have no change in state**
- 10. Which gas is primarily responsible for the natural warming of the lower atmosphere?**
- A. Methane**
 - B. Water vapor (H₂O)**
 - C. Carbon dioxide**
 - D. Nitrous oxide**

Answers

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

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Explanations

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1. If ocean temperatures continue to rise, which process could lead to a rapid rise in atmospheric methane?

- A. Melting of clathrates on the ocean floor**
- B. Increased methane oxidation in the atmosphere**
- C. Decreased microbial activity in sediments**
- D. Lower solar radiation absorption by the ocean**

Rising ocean temperatures threaten the stability of methane hydrates on the seafloor. These hydrates are methane trapped in a lattice of water ice under high pressure and low temperature. When the water warms, the hydrates dissociate and release methane gas into the surrounding sediments and seawater. If a large amount reaches the atmosphere, methane acts as a very powerful greenhouse gas, potentially creating a positive feedback that drives a rapid rise in atmospheric methane. While some of this methane can be oxidized in the water or consumed by microbes, a rapid or substantial release could overwhelm these sinks and lead to more methane entering the air. Other factors would work against a rapid rise: increased methane oxidation would remove methane from the atmosphere, not add to it; decreased microbial activity in sediments would reduce methane production; and lower solar radiation absorption by the ocean affects energy balance broadly but doesn't directly trigger a significant methane release.

2. Which atmospheric layer contains the weather and shows a decrease in temperature with height?

- A. The troposphere**
- B. The stratosphere**
- C. The mesosphere**
- D. The thermosphere**

Weather occurs in the lowest part of the atmosphere, where most of the air mass and all the moisture live. In this layer, temperature generally falls as you go higher because the air becomes thinner and expands, cooling as it rises. That cooling with height helps drive air movement, cloud formation, and storms—the processes we recognize as weather. Above this layer, different patterns appear. In the next layer, temperature climbs with height due to heating by the ozone layer, so it doesn't display the cooling trend that fuels weather. In the layer after that, temperature again drops with height, but the air is so thin that weather phenomena don't occur there. Further up, temperatures rise with height due to solar heating, but the air is extremely sparse, so weather isn't present there either. So, the combination of containing weather and the cooling with height points to the troposphere.

3. What are two common examples of naturally occurring greenhouse gases?

- A. Carbon dioxide and water vapor**
- B. Methane and chlorofluorocarbons**
- C. Oxygen and Nitrogen**
- D. Hydrogen and Helium**

Greenhouse gases are those in the atmosphere that absorb infrared radiation and trap heat, helping keep the surface warmer than it would be otherwise. Two common gases that occur naturally and play this role are carbon dioxide and water vapor. Water vapor is the most abundant natural greenhouse gas and acts as a climate feedback: when temperatures rise, more water evaporates, adding more heat-trapping gas and amplifying warming. Carbon dioxide comes from natural processes like respiration, decay, volcanic activity, and weathering, and it's present in the atmosphere even without human activities, though human emissions add to it. The other options mix gases that aren't both naturally occurring greenhouse gases: chlorofluorocarbons are human-made compounds, and while oxygen and nitrogen are the dominant atmospheric gases, they are not the primary greenhouse gases considered in climate contexts; hydrogen and helium are not greenhouse gases. So carbon dioxide and water vapor are the best examples of naturally occurring greenhouse gases.

4. Which two types of solar radiation are greenhouse gases unable to absorb?

- A. Visible light and shortwave infrared radiation**
- B. Longwave infrared radiation and ultraviolet**
- C. Visible light and ultraviolet**
- D. Longwave infrared radiation and visible**

Greenhouse gases trap heat by absorbing infrared radiation emitted by Earth's surface. The Sun's energy arriving at Earth is mostly in the visible range, with some near-infrared and a bit of ultraviolet. These gases are largely transparent to visible light and ultraviolet radiation, so those wavelengths pass through the atmosphere with little absorption. Therefore, the two types of solar radiation they cannot absorb significantly are visible light and ultraviolet radiation. Their strong absorption bands are in the longwave infrared part of the spectrum, which is what keeps heat near the surface. (Some near-infrared absorption can occur for certain molecules, but it is the longwave infrared absorption that drives the greenhouse effect.)

5. Which of the following best describes the effect of deforestation on atmospheric CO₂?

- A. It reduces the amount of CO₂ absorbed and often releases stored carbon if the trees are burned**
- B. It increases CO₂ absorption by oceans
- C. It has no impact on CO₂ levels
- D. It reduces methane emissions only

Deforestation disrupts the land-based carbon sink. Forests store large amounts of carbon in trees and soils, and through photosynthesis remove CO₂ from the atmosphere. When forests are cleared or burned, that stored carbon is released back as CO₂, and with fewer trees to absorb CO₂, the net removal from the atmosphere drops. The result is higher atmospheric CO₂ concentrations. The option that captures this is that deforestation reduces the amount of CO₂ absorbed and often releases stored carbon when the trees are burned. The idea that ocean absorption would automatically pick up more CO₂, or that there's no impact, isn't correct, and deforestation involves more than just methane changes.

6. Which statement correctly describes the energy balance mechanism that keeps Earth's surface warmer than it would be otherwise?

- A. The greenhouse effect, by trapping heat through greenhouse gases**
- B. The albedo effect, by reflecting all sunlight away
- C. The ozone layer, by absorbing all UV
- D. Ocean currents, by cooling the surface

The energy balance keeping Earth's surface warmer is the greenhouse effect. Sunlight reaches Earth and heats the surface, which then radiates heat as infrared energy. Greenhouse gases in the atmosphere—like water vapor, carbon dioxide, and methane—are good absorbers of that infrared radiation. They trap a portion of the heat, re-radiating it back toward the surface as well as within the lower atmosphere. This trapping of infrared energy means less heat escapes to space, so the surface settles at a warmer temperature than it would if the atmosphere were transparent to infrared. Understanding the other options helps clarify why they're not the primary mechanism here. The albedo effect would cool the planet by reflecting more sunlight away before it even warms the surface, not keep it warmer. The ozone layer mainly protects against ultraviolet radiation and isn't the main driver of surface warming. Ocean currents redistribute heat around the globe, influencing regional climates, but they don't create the baseline energy-trapping mechanism that makes the average surface temperature higher.

7. Identify a primary human-driven cause of modern climate warming.

- A. Burning fossil fuels**
- B. Natural orbital changes**
- C. Volcanic eruptions**
- D. Ocean current shifts**

The main idea is that human activities are increasing the atmosphere's greenhouse gases, and that is what drives modern warming. When we burn fossil fuels—coal, oil, and natural gas—we release large amounts of carbon dioxide and other heat-trapping gases. These gases are effective at absorbing infrared radiation, and CO₂ stays in the atmosphere for many decades to centuries, so its concentration rises steadily. That boosted greenhouse effect traps more heat near the Earth's surface, leading to the observed warming. Natural orbital changes unfold over tens of thousands of years and can't explain the rapid, long-term warming seen in the last century. Volcanic eruptions tend to inject aerosols that cool the climate for a short time, not produce sustained warming. Ocean current shifts can modulate climate but don't account for the consistent, human-emission-driven trend. So, burning fossil fuels is the primary human-driven cause of modern climate warming.

8. Which natural phenomenon can temporarily offset warming by cooling the planet?

- A. Dust and ash from volcanic eruptions**
- B. Deforestation**
- C. Ocean acidification**
- D. El Niño**

Dust and ash from volcanic eruptions can temporarily offset warming by cooling the planet. When a large eruption injects sulfur dioxide high into the atmosphere, it forms sulfate aerosols that reflect sunlight back into space. This extra reflection reduces the solar energy reaching Earth's surface for months to a few years, depending on how long the aerosols stay in the stratosphere. The cooling is short-lived because those particles eventually settle out and temperatures can resume rising as greenhouse gases continue to trap heat. By contrast, deforestation tends to worsen warming by reducing carbon uptake and altering surface properties, ocean acidification affects ocean chemistry rather than temperature, and El Niño typically enhances warming rather than offsetting it.

9. What would happen to the state of Earth's oceans if the greenhouse effect ceased to exist?

- A. They would freeze over due to lower temperatures.**
- B. They would boil away due to higher energy**
- C. They would become highly acidic**
- D. They would have no change in state**

The main idea is that the greenhouse effect keeps a significant amount of heat near Earth's surface by trapping infrared radiation in the lower atmosphere. If the greenhouse effect vanished, the atmosphere would no longer trap that heat, so more energy escapes to space and the global average temperature would fall. With global temperatures dropping, the ocean—the planet's largest heat reservoir—would cool, and surface waters would reach freezing temperatures in many areas. Over time, widespread sea-ice formation would occur, effectively making large parts of the oceans ice-covered. The other options don't fit because removing heat-trapping would not cause boiling (that requires more heat, not less), wouldn't inherently make oceans more acidic, and would certainly lead to a change in the state of the oceans as they cool and freeze.

10. Which gas is primarily responsible for the natural warming of the lower atmosphere?

- A. Methane**
- B. Water vapor (H₂O)**
- C. Carbon dioxide**
- D. Nitrous oxide**

Water vapor is the main driver of natural warming in the lower atmosphere because it is present in the highest amounts among greenhouse gases and is very effective at absorbing infrared radiation. When the surface warms for any reason, evaporation increases, adding more water vapor to the air. Since water vapor itself traps heat, this extra amount creates a positive feedback: more warming leads to more water vapor, which leads to even more warming in the troposphere. Other gases like methane, carbon dioxide, and nitrous oxide do contribute to warming, but their overall influence is smaller in this natural warming context due to lower concentrations and less potent feedback compared to water vapor.

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://climatechange.examzify.com>

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

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