

NICET Construction Materials Testing Concrete Level I Practice Test (Sample)

Study Guide



Everything you need from our exam experts!

This is a sample study guide. To access the full version with hundreds of questions,

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Table of Contents

Copyright	1
Table of Contents	2
Introduction	3
How to Use This Guide	4
Questions	6
Answers	9
Explanations	11
Next Steps	17

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. Don't worry about getting everything right, 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, and take breaks to retain information better.

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.

7. Use Other Tools

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!

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Questions

- 1. In soundness testing, which material is commonly used to determine the loss of quality?**
 - A. Cement paste**
 - B. Gypsum**
 - C. Sodium sulfate**
 - D. Sand**
- 2. Which equipment is commonly used for mixing concrete?**
 - A. Concrete vibrators.**
 - B. Concrete pump.**
 - C. Concrete mixer.**
 - D. Concrete saw.**
- 3. To what precision should bulk density be reported?**
 - A. To the nearest 0.5 LB/ft³**
 - B. To the nearest 2 LB/ft³**
 - C. To the nearest 1 LB/ft³**
 - D. To the nearest 0.1 LB/ft³**
- 4. What is the method used to measure the yield of concrete?**
 - A. Applying a load to a cube sample until failure**
 - B. Determining the volume of concrete produced against the quantities of ingredients used**
 - C. Calculating the weight of the delivered mix**
 - D. Using a moisture meter on fresh concrete**
- 5. What are the typical signs of improper curing?**
 - A. Increased vibrancy of color.**
 - B. Cracks, surface scaling, and reduced strength.**
 - C. Improved workability.**
 - D. Uniform texture throughout the surface.**
- 6. What is the typical size of concrete test cylinders?**
 - A. 4 inches by 8 inches**
 - B. 6 inches by 12 inches**
 - C. 8 inches by 10 inches**
 - D. 10 inches by 14 inches**

- 7. What is indicated by a reduction in concrete strength?**
- A. Improved curing practices.**
 - B. Excessive water content in the mix.**
 - C. Correct material proportions.**
 - D. Efficient mixing techniques.**
- 8. What is an essential characteristic of high-performance concrete?**
- A. Higher water content than regular concrete**
 - B. Enhanced durability, workability, and strength compared to standard concrete**
 - C. Lower cost compared to conventional concrete mixtures**
 - D. Reduced setting time regardless of environmental conditions**
- 9. Why should concrete be tested before placing on site?**
- A. To determine color consistency**
 - B. To ensure it meets specified performance requirements**
 - C. To estimate drying time**
 - D. To check for aggregate size**
- 10. What factors contribute to the setting time of concrete?**
- A. Temperature, humidity, and mix design**
 - B. Workability, strength, and cost**
 - C. Cement type, aggregate size, and color**
 - D. Mixing time, rain, and wind speed**

Answers

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

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Explanations

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1. In soundness testing, which material is commonly used to determine the loss of quality?

- A. Cement paste**
- B. Gypsum**
- C. Sodium sulfate**
- D. Sand**

In soundness testing, sodium sulfate is commonly utilized because it is effective in simulating the potential expansion of concrete materials when subjected to moisture and temperature fluctuations. The primary goal of soundness testing is to assess the ability of aggregate particles to maintain their integrity under these conditions. Sodium sulfate specifically reacts with the components in the concrete or aggregate, leading to expansion that can cause cracking or other forms of deterioration. This reaction helps to quantify the material's resistance to such degrading factors, which is crucial for ensuring long-term durability in concrete structures. The other materials listed do not serve the same purpose in the context of soundness testing. Cement paste may provide insights into the properties of the binder but does not specifically relate to the evaluation of aggregate soundness. Gypsum is often used in conjunction with cement but is not the standard for testing soundness. Sand, though a significant component of concrete, is not used in its pure form for assessing soundness; instead, it's typically part of a larger aggregate mix. Thus, sodium sulfate stands out as the appropriate choice for soundness testing.

2. Which equipment is commonly used for mixing concrete?

- A. Concrete vibrators.**
- B. Concrete pump.**
- C. Concrete mixer.**
- D. Concrete saw.**

A concrete mixer is specifically designed for combining concrete ingredients—cement, water, aggregates, and, in some cases, admixtures—into a homogeneous mix. The mixer's primary function is to ensure that all components are thoroughly blended, which is crucial for achieving the desired strength and durability in the final concrete structure. Depending on its type, a concrete mixer can be portable or stationary, and it often features rotating drums to facilitate even mixing. In contrast, concrete vibrators are utilized to eliminate air bubbles and ensure proper compaction of the mixed concrete within forms. A concrete pump is employed for transporting the mixed concrete to the location where it is needed, particularly in hard-to-reach areas or for high-rise construction. Meanwhile, a concrete saw is used for cutting cured concrete, not for the mixing process. Therefore, the only equipment among the options provided that is directly associated with mixing concrete is the concrete mixer.

3. To what precision should bulk density be reported?

- A. To the nearest 0.5 LB/ft³
- B. To the nearest 2 LB/ft³
- C. To the nearest 1 LB/ft³**
- D. To the nearest 0.1 LB/ft³

Bulk density is a critical measurement in concrete testing, as it influences various aspects of material performance and structural integrity. The correct precision for reporting bulk density is to the nearest 1 pound per cubic foot (LB/ft³). This level of precision strikes a balance between accuracy and practicality in the field, allowing for sufficient resolution without excess complexity. When reporting to the nearest 1 LB/ft³, testers can effectively communicate relevant information without being overwhelmed by excessive decimal places that may not significantly impact practical applications. Values reported with too much precision, such as 0.1 LB/ft³, could suggest a level of accuracy that is typically not achievable in field conditions. Similarly, rounding to 2 LB/ft³ would not provide the necessary detail needed for concrete density evaluation and could lead to misinterpretations in design or quality control processes. Thus, reporting bulk density to the nearest 1 LB/ft³ supports effective communication of data while remaining consistent with industry standards and practices.

4. What is the method used to measure the yield of concrete?

- A. Applying a load to a cube sample until failure
- B. Determining the volume of concrete produced against the quantities of ingredients used**
- C. Calculating the weight of the delivered mix
- D. Using a moisture meter on fresh concrete

The method used to measure the yield of concrete is determined by assessing the volume of concrete produced against the quantities of ingredients used. This approach allows for an evaluation of how effectively the ingredients—such as cement, aggregates, water, and any admixtures—are combined to produce the final concrete mix. Yield measurement is crucial in ensuring that the right proportions are maintained, which affects the concrete's strength and performance. By calculating yield in relation to the input materials, you can ensure that the mix design is being correctly followed and that no discrepancies exist between expected and actual outputs. This practice is fundamental in concrete production because it supports quality control, helps with cost estimation, and ensures the appropriate mix design is consistently achieved. Other methods, while useful in other contexts, do not directly measure yield. Applying a load to a cube sample until failure assesses the compressive strength of cured concrete rather than yield. Calculating the weight of the delivered mix may offer insights into density or batching accuracy but does not directly evaluate yield relative to the input quantities. Lastly, using a moisture meter on fresh concrete mainly measures moisture content rather than providing information about concrete yield.

5. What are the typical signs of improper curing?

- A. Increased vibrancy of color.
- B. Cracks, surface scaling, and reduced strength.**
- C. Improved workability.
- D. Uniform texture throughout the surface.

Improper curing of concrete is a critical issue that can significantly affect its performance and durability. The typical signs of improper curing include cracks, surface scaling, and reduced strength. When concrete is not cured correctly, it doesn't maintain adequate moisture, which is essential for the hydration process of cement. Insufficient moisture can lead to the formation of cracks as the concrete shrinks during the drying process. Surface scaling can occur when there is a lack of moisture or if the surface of the concrete dries too quickly, often exacerbated by temperature extremes or direct sunlight. These conditions can lead to the top layer of concrete flaking off or deteriorating, known as scaling. Furthermore, when curing is inadequate, the overall strength of the concrete is compromised due to incomplete or insufficient hydration of the cement particles, which results in a weaker structure. In contrast, options that suggest improved vibrancy of color, workability, or uniform texture are not associated with improper curing. Increased vibrancy in color could be a sign of increased moisture or specific admixtures, while improved workability is typically achieved with proper testing and mixing techniques rather than through curing methods. A uniform texture is indicative of good finishing practices, not necessarily a lack of proper curing.

6. What is the typical size of concrete test cylinders?

- A. 4 inches by 8 inches
- B. 6 inches by 12 inches**
- C. 8 inches by 10 inches
- D. 10 inches by 14 inches

The typical size of concrete test cylinders used in standard testing is 6 inches in diameter and 12 inches in height. This size is chosen because it provides a good representation of the concrete's strength and consistency, allowing for reliable and standardized results when performing compressive strength tests. The dimensions are established by standards such as ASTM C31 and ASTM C39, which are commonly referenced in the testing of concrete samples. The 6 by 12 inch cylinders are preferred for their ease of handling and the ability to produce sufficient material volume for multiple tests, should it be necessary. The size also ensures that there is adequate space for the concrete to develop its properties without interference from external factors. In contrast, the other sizes listed, such as 4 by 8 inches, while also in use in some contexts, are not the industry standard for most compressive strength evaluations.

7. What is indicated by a reduction in concrete strength?

- A. Improved curing practices.
- B. Excessive water content in the mix.**
- C. Correct material proportions.
- D. Efficient mixing techniques.

A reduction in concrete strength is primarily indicated by excessive water content in the mix. When too much water is added to the concrete, it can lead to a condition known as "water-cement ratio" imbalance. The water-cement ratio is crucial because it influences the hydration process, bonding, and ultimately, the strength of the cured concrete. If the water content is too high, it increases the porosity of the concrete, making it weaker and more susceptible to cracking and other structural failures. While improved curing practices, correct material proportions, and efficient mixing techniques are important for achieving strong concrete, they do not directly relate to the reduction in strength caused by excess water. Proper practices in these areas would typically contribute to maintaining or enhancing the strength of the concrete rather than diminishing it.

8. What is an essential characteristic of high-performance concrete?

- A. Higher water content than regular concrete
- B. Enhanced durability, workability, and strength compared to standard concrete**
- C. Lower cost compared to conventional concrete mixtures
- D. Reduced setting time regardless of environmental conditions

High-performance concrete is defined by its superior qualities, which include enhanced durability, workability, and strength compared to standard concrete mixtures. This type of concrete is engineered to achieve specific performance criteria that make it suitable for demanding applications, such as structures exposed to harsh environmental conditions or where extended longevity is required. The enhanced durability refers to the concrete's ability to resist various forms of degradation, such as freeze-thaw cycles, chemical attack, and cracking. Increased workability allows for easier placement and finishing, particularly in complicated forms or with intricate designs. Finally, the strength attributes of high-performance concrete surpass those of conventional mixtures, enabling the construction of more resilient infrastructure while potentially reducing the amount of material needed. The other options do not accurately capture the essence of high-performance concrete. For instance, having higher water content than regular concrete is contrary to the design principles of high-performance concrete, which often requires lower water-to-cement ratios to achieve its unique properties. Lower cost is generally not a characteristic of high-performance concrete, as its advanced materials and processing can lead to higher costs. Lastly, reduced setting time is not a defining feature, as setting time can vary based on several factors including mix design and environmental conditions but is not inherently linked to performance characteristics.

9. Why should concrete be tested before placing on site?

- A. To determine color consistency
- B. To ensure it meets specified performance requirements**
- C. To estimate drying time
- D. To check for aggregate size

Testing concrete before placing it on site is essential to ensure that it meets the specified performance requirements. This includes evaluating its strength, durability, workability, and other properties that are critical for the intended use of the concrete. By confirming that the concrete meets these standards, you can prevent potential issues that could affect the safety and longevity of the structure. Performance requirements are typically outlined in project specifications and include factors like compressive strength, slump, air content, and resistance to freeze-thaw cycles, among others. Testing allows for adjustments to the mix design if necessary, ensuring the concrete will perform adequately under the expected conditions. While factors such as color consistency, drying time, and aggregate size are important considerations in specific situations, they do not directly address the critical performance-related aspects that testing aims to fulfill. Thus, the primary goal of concrete testing is to verify compliance with the designated performance criteria essential for structural integrity and serviceability.

10. What factors contribute to the setting time of concrete?

- A. Temperature, humidity, and mix design**
- B. Workability, strength, and cost
- C. Cement type, aggregate size, and color
- D. Mixing time, rain, and wind speed

The setting time of concrete is primarily influenced by several key environmental and material factors, which are correctly identified in the first choice. Temperature plays a significant role because it affects the rate of the chemical reactions occurring during the hydration of cement. Higher temperatures can accelerate these reactions, leading to quicker setting times, while lower temperatures tend to slow them down. Humidity also impacts the setting time. In high humidity conditions, moisture is more readily available, which can slow down the evaporation of water from the surface of the concrete, potentially leading to a longer setting time. Conversely, low humidity can increase water evaporation and lead to quicker setting. Mix design is crucial as well because it entails the proportions of various components (like cement, water, aggregates, and additives) in the concrete mixture. Different mixtures will have varying properties; for instance, a mix with more cement typically sets faster than a mix with less. While other choices mention relevant aspects—such as mixing time or specific properties like workability and strength—they do not directly capture the critical elements that control the setting time of concrete, making the first choice the most comprehensive and accurate.

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://nicetconstmatconcretelv11.examzify.com>

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