

NICET CONSTRUCTION MATERIALS TESTING SOILS LEVEL I 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. What indicates high plasticity in soils?**
 - A. High moisture content.
 - B. Small particle size.
 - C. Absence of gravel.
 - D. Ability to retain shape under pressure.
- 2. What is the main objective of knowing the particle size distribution of materials?**
 - A. To understand soil moisture levels
 - B. To develop relationships concerning porosity and packing
 - C. To ensure compliance with safety regulations
 - D. To analyze chemical composition
- 3. What is the purpose of a California Bearing Ratio (CBR) test?**
 - A. To measure soil saturation
 - B. To evaluate the strength of the subgrade soil for road construction
 - C. To assess groundwater levels
 - D. To determine soil permeability
- 4. What is the significance of a soil's specific gravity?**
 - A. It determines the total volume of soil.
 - B. It helps determine the density and void ratios of soils.
 - C. It indicates the organic content of the soil.
 - D. It evaluates the plasticity index of the soil.
- 5. What type of soil is most susceptible to shrink-swell behavior?**
 - A. Sand
 - B. Silt
 - C. Clay soil
 - D. Gravel

- 6. What should not be done to a sample after it is obtained unless required for testing?**
- A. Document the sample location
 - B. Further crushing or manual reduction
 - C. Label the sample properly
 - D. Store the sample in a cool place
- 7. Which procedure is recommended for use unless otherwise specified in C117?**
- A. Procedure B
 - B. Procedure C
 - C. Procedure D
 - D. Procedure A
- 8. What is the maximum particle size allowed in test method D1140?**
- A. 50 mm (2 inch)
 - B. 75 mm (3 inch)
 - C. 100 mm (4 inch)
 - D. 25 mm (1 inch)
- 9. To what value should measured or calculated values be rounded?**
- A. The nearest whole number
 - B. The nearest decimal or significant digit
 - C. The nearest 0.1 unit
 - D. The nearest 0.5 unit
- 10. Which test would be best for assessing soil bearing capacity?**
- A. Standard Proctor test
 - B. California Bearing Ratio (CBR) test
 - C. Grain size analysis
 - D. Atterberg limits test

Answers

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

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Explanations

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1. What indicates high plasticity in soils?

- A. High moisture content.
- B. Small particle size.
- C. Absence of gravel.
- D. Ability to retain shape under pressure.**

High plasticity in soils is indicated by the ability to retain shape under pressure. This characteristic is a key property of plastic soils, which includes clays that can be molded when wet and retain their form once they dry or are compacted. The ability to maintain a stable shape without cracking or breaking shows that the soil has sufficient cohesion and plasticity, making it suitable for various engineering applications. While high moisture content can contribute to the plasticity of a soil by making it more malleable, it is not a definitive indicator of plasticity on its own. Small particle size is associated with increased surface area and can enhance plasticity, but it is the behavior of the soil under pressure that ultimately defines its plasticity. Similarly, the absence of gravel can influence the overall composition of the soil; however, the presence of cohesive particles such as clay is what primarily determines plasticity. Therefore, the ability to retain shape under pressure is the most direct and relevant indicator of high plasticity in soils.

2. What is the main objective of knowing the particle size distribution of materials?

- A. To understand soil moisture levels
- B. To develop relationships concerning porosity and packing**
- C. To ensure compliance with safety regulations
- D. To analyze chemical composition

Understanding the particle size distribution of materials is essential for several reasons, but one of the main objectives is to develop relationships concerning porosity and packing. Particle size distribution significantly influences how soil or other granular materials compact and the void spaces present in a given volume. This directly affects the porosity of the material, which is critical for various engineering and construction applications. In terms of soil behavior, different particle sizes will lead to varying degrees of compaction, and analyzing the distribution allows engineers to predict how a material will behave under load, how water will drain through it, and how it will react to environmental changes. A well-graded material will typically have better packing characteristics and lower void ratios than poorly graded material, which is vital for ensuring stability and strength in construction. Understanding soil moisture levels relates to various other factors such as porosity, but it is not the primary reason for analyzing particle size distribution. While compliance with safety regulations and analyzing chemical composition are essential aspects of material testing, they do not focus directly on the physical characteristics and behavior imparted by particle size distribution. Therefore, the emphasis on porosity and packing relationships stands as the focal point for understanding the particle size distribution of materials.

3. What is the purpose of a California Bearing Ratio (CBR) test?

- A. To measure soil saturation
- B. To evaluate the strength of the subgrade soil for road construction**
- C. To assess groundwater levels
- D. To determine soil permeability

The California Bearing Ratio (CBR) test is specifically designed to evaluate the strength of subgrade soil, which is crucial for the design and construction of roadways and other paved surfaces. The test measures the penetration resistance of the soil when subjected to a standard load, allowing engineers to determine the relative strength of the soil compared to a standard crushed rock material. By assessing the CBR value, engineers can gauge how well the soil will support traffic loads, which directly affects the thickness and type of pavement necessary for a given roadway. Ensuring that the subgrade soil is adequately evaluated helps in preventing future structural issues related to inadequate support, thus maintaining the integrity and durability of road constructions. The other options do not align with the primary purpose of the CBR test, which focuses on the strength aspect rather than saturation, groundwater levels, or permeability. The test does not measure saturation levels of the soil, which are more suitably assessed by other methods; groundwater assessment requires different testing methodologies; and soil permeability is evaluated through separate tests designed to measure water movement through soil.

4. What is the significance of a soil's specific gravity?

- A. It determines the total volume of soil.
- B. It helps determine the density and void ratios of soils.**
- C. It indicates the organic content of the soil.
- D. It evaluates the plasticity index of the soil.

The significance of a soil's specific gravity primarily lies in its ability to help determine the density and void ratios of soils. Specific gravity is a measure of the ratio of the density of a substance to the density of a reference substance, typically water. In the context of soils, it provides valuable information about the solid particles within the soil and is essential for calculating various properties related to soil behavior, such as the particle density, the overall density of the soil mass, and the volume of voids present in the soil. By knowing the specific gravity, one can calculate the void ratio, which indicates the relative volume of voids (spaces filled with air or water) to the volume of solids. This information is critical for understanding how soil will behave under different loading conditions, its compressibility, and its stability, all of which are crucial factors in construction and geotechnical engineering. The other options do not correctly represent the primary role of specific gravity; while some may relate to soil characteristics, they do not directly link to the determination of density and void ratios as effectively as specific gravity does.

5. What type of soil is most susceptible to shrink-swell behavior?

- A. Sand
- B. Silt
- C. Clay soil**
- D. Gravel

Clay soil is most susceptible to shrink-swell behavior due to its unique properties. When clay is wet, it absorbs water and expands significantly, leading to swelling. This process occurs because clay particles are flat and plate-like, which allows them to hold water in between their layers. When the moisture content decreases, the clay loses water and contracts, resulting in shrinkage. This cyclic behavior can cause serious issues for structures and foundations built on or in clay-rich soils, as it can lead to ground movement and shifting. Other types of soil such as sand, silt, and gravel typically do not exhibit the same degree of shrink-swell behavior. Sand, for example, has larger particle sizes and a coarse texture, which allows it to drain quickly and reduces the water retention that contributes to expansion and contraction. Silt can retain some moisture but does not swell as much as clay. Gravel has a very coarse structure with large particles that also do not retain water effectively, further minimizing any potential for shrink-swell action. Thus, clay soil is the most affected by this phenomenon, making it the correct answer.

6. What should not be done to a sample after it is obtained unless required for testing?

- A. Document the sample location
- B. Further crushing or manual reduction**
- C. Label the sample properly
- D. Store the sample in a cool place

After a soil sample is obtained, it is essential to preserve its original properties as much as possible until testing can be conducted. Further crushing or manual reduction of the sample before testing can alter its physical characteristics, such as particle size distribution and moisture content. This alteration may lead to inaccurate test results, as the sample's natural state is essential for reliable evaluations. On the other hand, documenting the sample location, labeling the sample properly, and storing it in a cool place are practices that help maintain the integrity of the sample and ensure that the testing process is well organized and reliable. Proper documentation and labeling prevent confusion and allow for traceability, while appropriate storage conditions help prevent any changes in moisture levels or temperature that could affect the sample's characteristics.

7. Which procedure is recommended for use unless otherwise specified in C117?

- A. Procedure B
- B. Procedure C
- C. Procedure D
- D. Procedure A**

The recommended procedure, unless otherwise specified in the standard outlined by C117, is Procedure A. This procedure generally serves as the default method for the determination of certain properties in soil testing, ensuring a consistent and widely accepted approach. It is essential in laboratory testing for materials such as soils, since adopting a standard method helps maintain uniformity in results and enables comparison across different tests and projects. When referring to standards like C117, it is common for specific procedures to be designed for particular types of testing or to cater to various conditions. However, Procedure A is frequently defaulted to because it provides a fundamental methodology that is applicable under a variety of conditions and is generally accepted in the field. Adopting this standard helps ensure that technicians and labs are working with a common understanding, which is crucial for reliability and accuracy in testing.

8. What is the maximum particle size allowed in test method D1140?

- A. 50 mm (2 inch)
- B. 75 mm (3 inch)**
- C. 100 mm (4 inch)
- D. 25 mm (1 inch)

In test method D1140, which is used to determine the specific gravity and absorption of coarse aggregates using a water displacement method, the maximum particle size allowed is 75 mm (3 inches). This specification ensures that the test can be performed accurately, as larger aggregates would make it challenging to measure the water displacement accurately and could lead to inconsistent results. Smaller aggregate sizes would fall within the acceptable range for the test method but would not align with the requirements established for optimal testing. This standard helps maintain uniformity and reliability in test conditions, ensuring that the results can be replicated and compared effectively across various samples.

9. To what value should measured or calculated values be rounded?

- A. The nearest whole number
- B. The nearest decimal or significant digit**
- C. The nearest 0.1 unit
- D. The nearest 0.5 unit

The correct rounding approach involves using the nearest decimal or significant digit for measured or calculated values to ensure precise reporting of data. In scientific and engineering contexts, particularly within construction materials testing, the accuracy and precision of measurements are vital for reliability and compliance with standards. Using the nearest decimal or significant digit allows for differentiation between the levels of precision inherent in the measurement. It accommodates the inherent uncertainties in measurements, enabling the meaningful representation of data without overstating the precision beyond what the measuring instruments can accurately convey. This method aids in maintaining consistency in data recording, particularly when various measurements are taken under different conditions or with different instruments. Therefore, rounding values to the nearest decimal or significant digit supports clarity in reporting and ensures that data remains comparable and usable in further analysis.

10. Which test would be best for assessing soil bearing capacity?

- A. Standard Proctor test
- B. California Bearing Ratio (CBR) test**
- C. Grain size analysis
- D. Atterberg limits test

The California Bearing Ratio (CBR) test is specifically designed to assess the strength of soil and its bearing capacity, which is critical for determining how much weight the soil can support without experiencing deformation or failure. This test involves measuring the pressure required to penetrate a soil sample with a standard-sized piston. The results provide a ratio of the soil's strength compared to a standard base material, which is essential for applications such as pavement design and other structural applications where the soil's load-bearing capabilities must be evaluated. The other options, while important in their own right, do not provide direct measurements of soil bearing capacity. The Standard Proctor test focuses on determining the optimal moisture content and maximum dry density of soil, which helps in compaction analysis but does not assess bearing capacity directly. Grain size analysis identifies the distribution of different particle sizes within a soil sample, which informs on drainage characteristics and soil behavior but does not directly evaluate how much load the soil can support. The Atterberg limits test measures the plasticity characteristics of fine-grained soils, which offers insight into the soil's behavior under varying moisture conditions but is not a direct indicator of its bearing capacity. Thus, the CBR test is the most appropriate choice for assessing soil bearing capacity.

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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