

ACI CONCRETE FIELD TESTING TECHNICIAN - GRADE I PRACTICE EXAM (SAMPLE)

STUDY GUIDE



SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

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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 is the approximate depth of concrete after placing the second layer of the slump test?**
 - A. 2 1/8 in. [55 mm]
 - B. 6 1/8 in. [160 mm]
 - C. 5 in. [125 mm]
 - D. 7 in. [175 mm]
- 2. If the concrete contains aggregate larger than allowed for the slump test, how should the large aggregate be handled?**
 - A. Removed by dry sieving
 - B. Removed by wet sieving
 - C. Left as is
 - D. Crumble before sampling
- 3. When rodding a standard 6 by 12 in [150 mm by 300 mm] cylinder, how many times must each layer be rodded?**
 - A. 15 times
 - B. 25 times
 - C. 35 times
 - D. 45 times
- 4. If the concrete sample contains oversized aggregate, what must be done?**
 - A. Dry sift through a 1-inch sieve
 - B. Wet sieved over a 1-inch sieve
 - C. Crush the oversized aggregate
 - D. Remove oversized aggregate manually
- 5. When using internal vibration for a standard flexural strength test specimen, what is the maximum distance between vibrator insertions along the beam center line?**
 - A. 4 in. [100 mm]
 - B. 5 in. [125 mm]
 - C. 6 in. [150 mm]
 - D. 8 in. [200 mm]

- 6. What is the specified size of the mallet required when the measuring bowl has a capacity of 14 L (0.5 ft³) or less?**
- A. 0.30 ± 0.15 kg (0.66 ± 0.33 lb.)
 - B. 0.60 ± 0.25 kg (1.25 ± 0.50 lb.)
 - C. 1.00 ± 0.50 kg (2.20 ± 1.10 lb.)
 - D. 1.50 ± 0.25 kg (3.31 ± 0.55 lb.)
- 7. When sampling from a stationary mixer, how often must the batch be sampled during discharge?**
- A. At least 1 interval
 - B. At least 2 intervals
 - C. At least 3 intervals
 - D. At least 4 intervals
- 8. Where should cylinders that are going to be field cured be stored?**
- A. In a controlled laboratory environment
 - B. In or on the structure near the point of concrete deposit
 - C. In a separate curing room away from the site
 - D. In a shaded area protected from direct sunlight
- 9. What action is taken if the slump mold is too wet before use?**
- A. It should be dried completely
 - B. It is acceptable to use as is
 - C. It should be filled with concrete first
 - D. It should be rinsed with water
- 10. What is the minimum outside diameter of the vibrating element used in the slump test?**
- A. 0.50 in. [13 mm]
 - B. 0.75 in. [19 mm]
 - C. 1.00 in. [25 mm]
 - D. 1.25 in. [32 mm]

Answers

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

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Explanations

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1. What is the approximate depth of concrete after placing the second layer of the slump test?

- A. 2 1/8 in. [55 mm]
- B. 6 1/8 in. [160 mm]**
- C. 5 in. [125 mm]
- D. 7 in. [175 mm]

In the slump test, the procedure involves filling a standardized cone in two layers. Each layer is given a specified depth to ensure consistency and accuracy in measuring the workability of the concrete mix. The proper depth for the second layer of the slump cone typically aims to achieve an overall height that allows for effective measuring once the cone is removed. The total depth of the concrete filling after placing the second layer should be approximately 6 1/8 inches (160 mm). This height is essential in establishing a uniform standard across tests, ensuring that all tests are comparable. The other depth options do not conform to the established practices for the slump test, which specifies the need for a complete filling of the cone to the designated height. This standard maintains consistency in measuring and interpreting the slump results, which are critical indicators of workability in concrete mixes.

2. If the concrete contains aggregate larger than allowed for the slump test, how should the large aggregate be handled?

- A. Removed by dry sieving
- B. Removed by wet sieving**
- C. Left as is
- D. Crumble before sampling

The appropriate method for handling large aggregate in concrete, when conducting a slump test, is through wet sieving. This technique is used because it allows for the effective separation of oversized aggregate particles while minimizing the risk of aggregate segregation and dust generation. Wet sieving helps ensure that the representative sample used for the slump test reflects the actual proportions of fine and coarse materials present in the mix. By using water, the particles are effectively agitated and can be separated based on size. This method is not only efficient but also ensures that the testing conditions remain consistent with those specified in standard testing procedures. The integrity of the slump test results is highly dependent on the correct handling of the aggregate, making wet sieving the best practice in this scenario. In contrast, using dry sieving may not adequately consider the interaction of moisture with the aggregate, potentially leading to inaccurate sampling. Additionally, leaving the aggregate as is could result in skewed test results, while crumbling the aggregate could alter its properties, both of which can negatively impact the reliability of the slump test outcome.

3. When rodding a standard 6 by 12 in [150 mm by 300 mm] cylinder, how many times must each layer be rodded?

- A. 15 times
- B. 25 times**
- C. 35 times
- D. 45 times

When rodding a standard 6 by 12 inch cylinder, the correct process involves rodding each layer of concrete precisely to ensure proper consolidation and to minimize air pockets. Each layer of concrete should be thoroughly compacted through careful rodding. For a cylinder of this size, the accepted standard practice is to rod each layer 25 times. This number is based on procedures outlined in ASTM specifications, which dictate the testing and preparation methods for concrete samples. Rodding is done in a specific manner—uniformly distributing the strokes in a way that effectively compacts the concrete while not disturbing the layers previously placed. The rationale behind the importance of this specific number of roddings is to achieve a uniform density in the specimen, which is critical for accurate measurement of the concrete's properties later in testing. If too few roddings are performed, the concrete may not be adequately compacted, leading to unreliable test results. Therefore, performing 25 roddings for each layer strikes the right balance for effective consolidation in the creation of the concrete cylinder, ensuring the integrity of the test is maintained.

4. If the concrete sample contains oversized aggregate, what must be done?

- A. Dry sift through a 1-inch sieve
- B. Wet sieved over a 1-inch sieve**
- C. Crush the oversized aggregate
- D. Remove oversized aggregate manually

When dealing with oversized aggregate in a concrete sample, wet sieving over a 1-inch sieve is the correct approach. This process involves using water to ensure that the finer particles of aggregate are separated effectively from the larger ones. Wet sieving prevents dust and fine particles from adhering to the larger aggregates, which can be a challenge in dry sieving methods. In this context, performing wet sieving not only helps to accurately categorize the aggregate sizes but also provides a more thorough assessment of the sample, ensuring that the proportions of the materials used in the concrete mix are precise. This is crucial for quality control and meeting project specifications. The other options, while they might seem practical at first glance, do not adequately address the requirement for proper separation and assessment of the oversized aggregate. For instance, dry sifting may not adequately clean the aggregates as moisture can help dislodge fine particles. Crushing oversized aggregates could alter their size distribution and affect the sample's integrity. Manual removal, while it can address the issue, is often impractical for larger volumes and may not ensure comprehensive removal of all oversized pieces.

5. When using internal vibration for a standard flexural strength test specimen, what is the maximum distance between vibrator insertions along the beam center line?

- A. 4 in. [100 mm]
- B. 5 in. [125 mm]
- C. 6 in. [150 mm]**
- D. 8 in. [200 mm]

The maximum distance between vibrator insertions along the beam center line during internal vibration is crucial for achieving uniform consolidation of the concrete. It ensures that air pockets are minimized and that the concrete mix achieves proper density and strength. The correct choice of 6 inches [150 mm] aligns with standard practices that aim not to exceed this distance, as it is a balance between effective consolidation and the physical constraints of handling the equipment and the mix itself. Using this specified distance helps technicians maintain an optimal flow of vibrations throughout the beam, particularly in areas that might otherwise be prone to segregation or incomplete consolidation. It reflects guidelines designed to produce reliable and consistent results in flexural strength testing, vital for assessing the material's performance in structural applications. The other distances provided may not sufficiently ensure this level of effectiveness in consolidation.

6. What is the specified size of the mallet required when the measuring bowl has a capacity of 14 L (0.5 ft³) or less?

- A. 0.30 ± 0.15 kg (0.66 ± 0.33 lb.)
- B. 0.60 ± 0.25 kg (1.25 ± 0.50 lb.)**
- C. 1.00 ± 0.50 kg (2.20 ± 1.10 lb.)
- D. 1.50 ± 0.25 kg (3.31 ± 0.55 lb.)

The specified size of the mallet for a measuring bowl with a capacity of 14 liters (0.5 cubic feet) or less is designed to ensure that the concrete is adequately compacted during testing. A mallet of 0.60 ± 0.25 kg (1.25 ± 0.50 lb.) strikes the right balance in weight and ease of use. This weight allows the technician to effectively compact the concrete mixture without causing damage to the measuring bowl or overstressing the material being tested. It provides sufficient force to achieve the desired density and consistency while maintaining control during the compaction process. Using a mallet that is too heavy could lead to improper testing results either by over-compacting the mix or by causing breakage, while a mallet that is too light may not effectively compact the concrete, leading to unreliable results. Therefore, this specific weight range is critical for achieving accurate field testing outcomes.

7. When sampling from a stationary mixer, how often must the batch be sampled during discharge?

- A. At least 1 interval
- B. At least 2 intervals**
- C. At least 3 intervals
- D. At least 4 intervals

When sampling from a stationary mixer, it is required to take samples during the discharge process. The practice of sampling at least two intervals ensures a more representative sample of the batch. This is important because, during the mixing and discharging process, the consistency of the concrete can vary due to factors such as material segregation or variations in the mix. By taking samples at multiple intervals, you can assess the uniformity of the mix and identify any discrepancies that may occur throughout the discharge. This helps in ensuring that the concrete being tested truly reflects the properties and performance of the entire batch, leading to more accurate and reliable testing results. Sampling at just one interval could give a skewed representation, and more than two intervals might not be necessary for maintaining efficiency while still achieving a representative sample. Thus, sampling at two intervals strikes a balance between representativeness and practicality during the testing process.

8. Where should cylinders that are going to be field cured be stored?

- A. In a controlled laboratory environment
- B. In or on the structure near the point of concrete deposit**
- C. In a separate curing room away from the site
- D. In a shaded area protected from direct sunlight

Cylinders that are going to be field cured should be stored in or on the structure near the point of concrete deposit. This method allows the cured specimens to closely match the conditions that the concrete in the structure experiences, including temperature and humidity levels. By curing the cylinders in the same environmental conditions, you can ensure that the strength and durability tests performed on them will accurately reflect the performance of the actual concrete in the field. Storing cylinders in the same environment as the freshly poured concrete also minimizes the risk of discrepancies in moisture loss and temperature variations, which could affect the hydration process of the concrete. This is important for obtaining reliable test results that accurately represent the on-site conditions and performance of the concrete.

9. What action is taken if the slump mold is too wet before use?

- A. It should be dried completely**
- B. It is acceptable to use as is
- C. It should be filled with concrete first
- D. It should be rinsed with water

If the slump mold is too wet before use, it should be dried completely. This is important because the presence of excess moisture within the mold can influence the results of the slump test. Adding water from a wet mold to the concrete can alter the water-to-cement ratio, leading to inaccurate test results. Ensuring that the mold is dry helps maintain consistency and reliability in measuring the workability of the concrete mix being tested. Proper preparation of the slump mold is crucial to adhere to standardized testing procedures, which ensures that the results reflect the true properties of the concrete mix. The other actions do not adequately address the problem of excess moisture and could compromise the integrity of the testing process. Using a mold as is when it's wet may skew results, filling it with concrete could compound the issue, and rinsing it with water would simply increase the wetness. Therefore, drying the mold completely is the most appropriate action to ensure accurate slump testing.

10. What is the minimum outside diameter of the vibrating element used in the slump test?

- A. 0.50 in. [13 mm]
- B. 0.75 in. [19 mm]**
- C. 1.00 in. [25 mm]
- D. 1.25 in. [32 mm]

The minimum outside diameter of the vibrating element used in the slump test is 0.75 inches [19 mm]. This specification is critical in ensuring that the device is sufficiently sized to provide accurate and consistent results when measuring the consistency of fresh concrete. A vibrating element with the appropriate diameter allows for effective engagement with the concrete sample, thus contributing to reliable test outcomes. Using a smaller diameter vibrating element could lead to inadequate vibration effects on the concrete, potentially impacting the test results and the overall assessment of the mix's workability. Ensuring that the vibrating element meets this minimum size requirement is part of the standard procedures to maintain uniformity and reliability in concrete testing.

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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://aci-i.examzify.com>

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

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