

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. 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
- 2. 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
- 3. What is the maximum allowable deviation for a supporting surface's level where specimens are stored?**
 - A. 1/2 in. per ft.
 - B. 1/4 in. per ft.
 - C. 1/8 in. per ft.
 - D. No deviation allowed
- 4. When rodding the bottom layer, how should the tamping rod be positioned?**
 - A. Vertical
 - B. Slightly inclined
 - C. Horizontal
 - D. Perpendicular
- 5. Vibration of a concrete sample is prohibited when the slump exceeds how many millimeters?**
 - A. 50 mm
 - B. 75 mm
 - C. 100 mm
 - D. 125 mm

- 6. The temperature and moisture environment for field cured cylinders must be consistent with what?**
- A. The surrounding environment
 - B. The structural work
 - C. The laboratory conditions
 - D. The curing room specifications
- 7. What is an essential precaution during the transportation of concrete test specimens?**
- A. Avoiding solely vertical placement
 - B. Protecting against moisture loss
 - C. Keeping them in ambient temperatures
 - D. Using light vehicles only
- 8. What is the minimum allowable capacity of the measuring bowl used in the related testing method?**
- A. 3 L (0.10 ft³)
 - B. 6 L (0.20 ft³)
 - C. 12 L (0.40 ft³)
 - D. 15 L (0.50 ft³)
- 9. During transportation, test specimens must be protected from which of the following?**
- A. Vibrations, cold temperatures, and moisture loss
 - B. Jarring, freezing temperatures, and moisture loss
 - C. Heat, rain, and jarring
 - D. Wind, cold temperatures, and jarring
- 10. When should compressive strength tests be performed on concrete samples?**
- A. Immediately after casting
 - B. At established curing ages, typically 7 and 28 days
 - C. Only when visual defects are noticed
 - D. After the concrete has been used in a project

Answers

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

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Explanations

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1. 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.

2. 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.

3. What is the maximum allowable deviation for a supporting surface's level where specimens are stored?

- A. 1/2 in. per ft.
- B. 1/4 in. per ft.**
- C. 1/8 in. per ft.
- D. No deviation allowed

The maximum allowable deviation for a supporting surface's level where specimens are stored is set at 1/4 inch per foot. This standard is critical to ensure that concrete specimens are not subjected to untoward stresses that may arise from improper support, which can lead to inaccurate test results. A level surface facilitates uniform curing and consolidates the integrity of the specimens, promoting consistent and reliable testing outcomes. Setting the maximum deviation at 1/4 inch per foot strikes a balance between practical tolerances in construction and the need for precision in concrete testing. If the deviation were tighter, such as 1/8 inch per foot, it could introduce unnecessary complications in the placement and handling of forms or molds. Conversely, allowing a larger deviation may compromise the quality and reliability of the results, as uneven surfaces could distort the specimens' shape or lead to defects. The other options either set parameters that are too strict or too lenient for practical applications in the field, thus highlighting the importance of adhering to the established standard of 1/4 inch per foot for specimen storage.

4. When rodding the bottom layer, how should the tamping rod be positioned?

- A. Vertical
- B. Slightly inclined**
- C. Horizontal
- D. Perpendicular

When rodding the bottom layer, the tamping rod should be positioned slightly inclined. This angle allows for the most effective compaction of the concrete mix without causing segregation of the aggregates. When the rod is inclined, it creates an effective motion that helps in displacing the air pockets trapped in the concrete, ensuring a denser and more homogenous sample. Using a perfectly vertical or horizontal position might not achieve the same level of effectiveness in compaction. A vertical rod could lead to ineffective penetration into the mix, while a horizontal rod would not allow for the necessary movement to consolidate the concrete properly. The slight inclination strikes a balance, enabling better interaction with the concrete and achieving the desired density.

5. Vibration of a concrete sample is prohibited when the slump exceeds how many millimeters?

- A. 50 mm
- B. 75 mm**
- C. 100 mm
- D. 125 mm

The prohibition of vibration for concrete samples with a slump that exceeds 75 millimeters is based on the need to maintain the integrity and true representation of the concrete's workability. When the slump is greater than this threshold, the concrete mix is considered to be more fluid or workable, which can lead to segregation if it is vibrated. Vibration is used to eliminate air pockets and ensure uniformity in less workable mixtures. However, in high-slump mixes, the additional vibration can cause the heavier aggregates to settle and lead to separation of the components, resulting in a misleading slump test result. Therefore, adhering to this guideline is essential for producing reliable and consistent concrete testing outcomes.

6. The temperature and moisture environment for field cured cylinders must be consistent with what?

- A. The surrounding environment
- B. The structural work**
- C. The laboratory conditions
- D. The curing room specifications

The correct answer emphasizes the importance of ensuring that the temperature and moisture environment for field-cured cylinders is consistent with the structural work being performed. This is critical because the conditions under which concrete is cured can significantly affect its properties, such as strength and durability. When field curing cylinders, it is essential that the conditions mimic those of the actual concrete in place to provide a meaningful assessment of the concrete's performance. By aligning the curing environment of the test specimens with that of the structure, it ensures that any tests conducted on the cylinders accurately reflect the concrete that will be in service. Field-cured specimens subjected to different curing conditions may yield results that do not correlate with the actual in-situ concrete. Thus, maintaining consistency with the structural work allows for reliable comparison and evaluation of the concrete's expected behavior and performance over time.

7. What is an essential precaution during the transportation of concrete test specimens?

- A. Avoiding solely vertical placement
- B. Protecting against moisture loss**
- C. Keeping them in ambient temperatures
- D. Using light vehicles only

Protecting against moisture loss is crucial when transporting concrete test specimens. Concrete is a hydrophilic material, meaning it requires moisture to maintain its strength and integrity. During transportation, if the concrete specimens are exposed to air, they can lose moisture rapidly, leading to surface cracking or a change in properties that can skew testing results. Maintaining adequate moisture ensures that the specimens cure properly and reflect the true performance characteristics of the concrete mix. This is particularly important for tests that assess the strength and durability of concrete, as any loss of moisture before testing could result in inaccurate results. The other options, while they may seem relevant, do not address the primary concern of moisture retention during transportation. For example, avoiding solely vertical placement might relate to how specimens are positioned, but it doesn't directly impact moisture levels. Similar logic applies to the ambient temperature and vehicle choice; while some of these factors might influence concrete's overall condition, the immediate concern during transport is ensuring that the specimens do not dry out.

8. What is the minimum allowable capacity of the measuring bowl used in the related testing method?

- A. 3 L (0.10 ft³)
- B. 6 L (0.20 ft³)**
- C. 12 L (0.40 ft³)
- D. 15 L (0.50 ft³)

The minimum allowable capacity of the measuring bowl used in the related testing method is critical for ensuring accuracy and consistency in concrete testing procedures. In this context, a measuring bowl with a capacity of 6 liters (0.20 cubic feet) is typically appropriate for achieving the required test standards. This size allows for the necessary volume of concrete to be tested for various properties, such as slump and density, while accommodating enough material to provide a reliable sample. Using a bowl that meets or exceeds this minimum capacity ensures that the sample represents the batch being tested accurately. It also enables effective mixing and prevents issues that could arise from insufficient material volume, such as variations in test results. Testing methods often have specific requirements that dictate the minimum sizes needed to maintain test integrity and allow for proper handling during the testing process. When using a 6-liter measuring bowl, technicians can perform their evaluations with confidence in adhering to industry standards, ensuring that all measurements are taken from an adequately sized sample that reflects the concrete's characteristics.

9. During transportation, test specimens must be protected from which of the following?

- A. Vibrations, cold temperatures, and moisture loss
- B. Jarring, freezing temperatures, and moisture loss**
- C. Heat, rain, and jarring
- D. Wind, cold temperatures, and jarring

The correct choice emphasizes the critical aspects of protecting test specimens during transportation to ensure their integrity and reliability when it comes to testing. Jarring can cause physical damage to the specimens, such as cracking or breaking, which compromises the test results. Particularly for concrete specimens that need to maintain their form and strength characteristics, any sudden impact during transport can lead to inconsistent or invalid results. Freezing temperatures present another significant risk, especially for fresh concrete specimens. If these specimens freeze, it can severely alter their properties, making the results of any subsequent tests unreliable. Thus, avoiding exposure to freezing conditions is crucial for maintaining the accuracy of test outcomes. Moisture loss is equally important to consider. For concrete, evaporation can lead to changes in the water-cement ratio as the specimen dries out, which can affect its strength and durability. Proper moisture preservation is essential to maintain the physical and chemical characteristics intended for testing. In combination, these factors highlight the need for careful handling and transportation procedures that mitigate risks associated with jarring, freezing temperatures, and moisture loss, ensuring that the integrity of the specimens is preserved until testing occurs.

10. When should compressive strength tests be performed on concrete samples?

- A. Immediately after casting
- B. At established curing ages, typically 7 and 28 days**
- C. Only when visual defects are noticed
- D. After the concrete has been used in a project

Compressive strength tests should be performed on concrete samples at established curing ages, typically at 7 and 28 days. This is crucial because concrete continues to gain strength as it cures, and these specific time intervals are standard benchmarks that correspond to the majority of concrete's strength development. Testing at these ages provides a reliable measure of the concrete's performance for use in construction, ensuring that it meets the structural requirements for the project. Waiting until the concrete has matured to these specified points allows for an accurate assessment of its compressive strength, which is essential for determining if the concrete mix design is adequate for the intended application. Testing immediately after casting would not provide a valid measure, as the concrete has not had enough time to cure and develop its strength. Testing only when visual defects are noted is reactive rather than proactive, potentially leading to issues if the concrete is found to be insufficient after it has already been used. Lastly, performing tests after the concrete has been used does not help in making informed decisions about its structural integrity during the construction phase.

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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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