NATIONAL HIGHWAY INSTITUTE (NHI) SAFETY INSPECTION OF IN-SERVICE BRIDGES FINAL ASSESSMENT 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.

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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!

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Questions

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1. Which feature is an inlet on a bridge designed to receive water and is covered by a grate to keep out large debris?

A. Deck Drains

B. Scupper

C. Weep holes

D. Downspout

2. Which lighting is used to alert aircraft that a hazard exists below?

A. Aerial obstruction lighting

B. Navigation lighting

C. Warning signs

D. Scupper

3. The D-meter is described as a mini UT device used to detect what?

A. Ultrasonic

B. D-meter

C. Radiography Testing

D. Dye Penetrant

4. A pachometer is used to determine the position of reinforcement and the adequacy of concrete cover. Which description best fits this instrument?

A. A device that measures air temperature

B. A magnetic device to determine the position of reinforcement

C. A method that measures surface roughness

D. An instrument used for detecting delaminations in asphalt

5. Pourable joint seal is composed of which materials and supports what movement?

A. made of three materials (backing material, joint filler, and a poured joint sealant) and can only accommodate movement of 1/4 inch. Used on short spans

B. a single epoxy material

C. neoprene with no filler

D. asphalt-based sealant

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6. Pot bearing arrangement includes which features?

A. A deformable core with no padding.

B. A neoprene pad or disk; low profile, high capacity.

C. Lubricated steel plates with no neoprene.

D. Solid metal block.

7. Which statement about steel box-girder or box-beam bridges is true?

A. they lack any stiffeners

B. they rely solely on external frames

C. a floor system between girders

D. internal stiffeners are present

8. Roller and rocker bearings are characterized by:

A. A curved bearing surface allows for longitudinal movement and rotation.

B. They require constant lubrication.

C. They provide a fixed, non-movable joint.

D. They are composed of sliding metal plates.

9. During Dive Inspection Level I, which condition may necessitate tactile inspection?

A. tactile inspection may be necessary if water clarity is poor

B. close-visual inspection at arm's length

C. some cleaning

D. detailed enough to detect major damage, deterioration

10. The transition between the approach guardrail system and the bridge railing is intended to:

A. Allow pedestrians to cross

B. A flexible joint that must be replaced after winter

C. Reduce noise

D. The transition is the connection between the approach guardrail system and the bridge railing

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Answers

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

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Explanations

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1. Which feature is an inlet on a bridge designed to receive water and is covered by a grate to keep out large debris?

A. Deck Drains

B. Scupper

C. Weep holes

D. Downspout

Understanding how bridge drainage openings are designed to collect surface water while keeping debris out is essential for inspection. A scupper is an opening in the edge of the bridge deck or parapet that receives surface water and allows it to drain over the edge to the exterior. These openings are typically fitted with a grate or screen to keep large debris from entering the drainage path, preventing clogs and water backup on the deck. This combination of water entry at the deck edge and a protective grate matches the description in the question. In contrast, deck drains are usually embedded in the deck and feed into interior pipes; weep holes are small vents for moisture and do not serve as a primary edge drainage inlet with a grate; downspouts carry water away via vertical pipes from gutters, not from the deck edge. So the feature described is best identified as a scupper.

2. Which lighting is used to alert aircraft that a hazard exists below?

A. Aerial obstruction lighting

B. Navigation lighting

C. Warning signs

D. Scupper

Obstruction lighting is used to warn pilots about hazards that extend into the airspace. By placing lights on tall structures such as bridges, towers, or cranes, the obstacle becomes visible to aircraft, especially at night or in poor visibility, giving pilots time to adjust course and avoid collision. Navigation lighting serves routing and position-cue purposes for aircraft, not specifically to alert about something below. Warning signs are static ground indicators, not lighting. A scupper is simply a drainage opening, unrelated to warning aircraft.

3. The D-meter is described as a mini UT device used to detect what?

A. Ultrasonic

B. D-meter

C. Radiography Testing

D. Dye Penetrant

In Ultrasonic Testing, a D-meter is described as a compact, portable instrument used to sense ultrasonic energy in the material. Its job is to pick up and interpret high-frequency sound waves that travel through the metal and reflect back from flaws, boundaries, or other features. By detecting these ultrasonic signals, inspectors can determine whether there are discontinuities and, in some cases, estimate flaw size or locate interfaces. Because the D-meter is specifically framed as a mini UT device, it is the tool designed to detect ultrasonic energy, not X-rays, dye indications, or surface-breaking features associated with other nondestructive methods. The other options correspond to different inspection techniques (radiography and dye penetrant) and are not what this instrument is intended to detect.

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4. A pachometer is used to determine the position of reinforcement and the adequacy of concrete cover. Which description best fits this instrument?

A. A device that measures air temperature

B. A magnetic device to determine the position of reinforcement

C. A method that measures surface roughness

D. An instrument used for detecting delaminations in asphalt

A pachometer is a non-destructive instrument used to locate reinforcing bars inside concrete and to gauge the concrete cover over the steel. It works on magnetic principles, acting as a magnetic device that detects the presence and position of ferrous reinforcement. When you sweep the tool over a concrete surface, changes in the magnetic field indicate where rebar lies, allowing you to map the reinforcement layout and estimate how far the cover is between the surface and the bars. This helps assess corrosion risk and plan repairs or cores. This is not about measuring air temperature, surface roughness, or detecting delaminations in asphalt, so those options don't fit.

5. Pourable joint seal is composed of which materials and supports what movement?

A. made of three materials (backing material, joint filler, and a poured joint sealant) and can only accommodate movement of 1/4 inch. Used on short spans

B. a single epoxy material

C. neoprene with no filler

D. asphalt-based sealant

Pourable joint seal is a three-part system that combines backing material, a joint filler, and a poured joint sealant. The backing material sits in the joint to control depth and provide a base, the filler fills most of the joint and acts as a compressible buffer to absorb movement, and the poured sealant forms the flexible, watertight outer layer. This arrangement allows the joint to move within a limited range, typically about 1/4 inch, which is appropriate for short spans where movements are small. The combination of these three components and the modest movement capacity is what makes this option the best fit for pourable joints on short spans. The other descriptions omit essential components or specify materials that don't match how pourable joints are designed to work.

6. Pot bearing arrangement includes which features?

A. A deformable core with no padding.

B. A neoprene pad or disk; low profile, high capacity.

C. Lubricated steel plates with no neoprene.

D. Solid metal block.

Pot bearing arrangements rely on a deformable elastomer element, such as a neoprene pad or disk, placed between steel components. This elastomer provides elasticity and damping, allowing the bearing to carry vertical loads while permitting rotation and some horizontal movement without metal-to-metal contact. The neoprene pad enables a low-profile, high-capacity configuration, meaning the bearing can be relatively compact in height yet support large loads. Without padding, a rigid core would transmit loads with little tolerance for movement, causing higher stresses and potential damage. Using lubricated steel plates with no neoprene would create metal-to-metal sliding with minimal damping, which is not how pot bearings are designed to function. A solid metal block offers neither the flexibility to accommodate movement nor the damping provided by elastomer, making it unsuitable for typical pot bearing use.

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7. Which statement about steel box-girder or box-beam bridges is true?

A. they lack any stiffeners

B. they rely solely on external frames

C. a floor system between girders

D. internal stiffeners are present

In a steel box-girder or box-beam bridge, the main load-carrying member is a hollow box made from thin walls. Those thin webs are prone to buckling under compression, so internal stiffeners are placed inside the box at intervals to keep the webs from buckling, to transfer shear between the top and bottom flanges, and to maintain the overall shape and rigidity of the cross-section as the bridge bends and twists. This internal reinforcement is a key feature that enables the box girder to carry bending and shear loads effectively over long spans. External frames alone don't provide all the stiffness, and a floor system between girders is part of the deck support rather than evidence of no stiffeners. Hence, internal stiffeners being present is the correct description.

8. Roller and rocker bearings are characterized by:

A. A curved bearing surface allows for longitudinal movement and rotation.

B. They require constant lubrication.

C. They provide a fixed, non-movable joint.

D. They are composed of sliding metal plates.

The main idea is how these bearings handle movement at the bridge support. Roller and rocker bearings are designed with curved contact surfaces or rolling elements so the joint can accommodate movement along the span while still allowing some rotation. As the bridge expands, contracts, or shifts under load, the weight rolls or slides along that curved surface, letting the girder move longitudinally and rotate a bit without binding. This reduces friction and keeps the structure stable through temperature changes and other loads. Constant lubrication is important for maintenance, but it isn't what defines roller and rocker bearings. They aren't fixed, non-movable joints, which would prevent necessary movement. And they aren't simply sliding metal plates—the curved/rolling interface is the key characteristic that enables both longitudinal movement and rotation.

9. During Dive Inspection Level I, which condition may necessitate tactile inspection?

A. tactile inspection may be necessary if water clarity is poor

B. close-visual inspection at arm's length

C. some cleaning

D. detailed enough to detect major damage, deterioration

When diving for Level I inspection, visibility underwater is key to spotting defects. If the water is not clear, you can't rely on sight alone to reveal cracks, corrosion, or surface irregularities. In those situations, tactile inspection—feeling the surface with your hands—becomes necessary to detect issues that visuals might miss. You can feel for rough patches, delamination, loose coatings, or other changes that indicate deterioration, helping you assess the structure despite poor visibility. Close-visual inspection at arm's length is still visual and can be limited by murky water, so it doesn't address the visibility problem as effectively. Some cleaning or making the inspection more detailed isn't directly about the condition that triggers tactile inspection, and aiming for a level of detail focused on detecting major damage is more about scope than the environmental constraint.

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10. The transition between the approach guardrail system and the bridge railing is intended to:

A. Allow pedestrians to cross

B. A flexible joint that must be replaced after winter

C. Reduce noise

D. The transition is the connection between the approach guardrail system and the bridge railing

The transition is meant to create a continuous safety barrier where the approach guardrail meets the bridge railing. By tying the two railing systems together, there's no gap or misalignment that could let a vehicle snag, slip through, or experience an abrupt change in protection as it moves from the approach into the bridge. This connection allows load transfer and deflection to occur smoothly across the transition, maintaining the guardrail's effectiveness and preventing a weak point at the joint. Pedestrian crossing, seasonal flexible joints, or noise reduction aren't the primary purpose here; the key idea is linking the guardrail and bridge railing into one integrated safety system.

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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://nhi-buildings.examzify.com

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

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