

National Council of Examiners for Engineering and Surveying (NCEES) Fundamentals of Engineering (FE) Other Disciplines Practice Exam (Sample)

Study Guide



Everything you need from our exam experts!

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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

- 1. What does the stress formula ($\sigma = P / A$) represent?**
 - A. Pressure over area**
 - B. Force over area**
 - C. Energy over volume**
 - D. Weight over mass**
- 2. What does the term 'wetted perimeter' refer to in fluid mechanics?**
 - A. The total length of the surface in contact with the fluid**
 - B. The area of fluid exposed to air**
 - C. The volume of fluid in motion**
 - D. The perimeter of a solid object**
- 3. What is the primary purpose of a Safety Data Sheet (SDS)?**
 - A. To provide marketing information about chemicals**
 - B. To offer information for workplace chemical management**
 - C. To detail the production process of chemicals**
 - D. To list the ingredients of chemical formulations**
- 4. Which material property describes its resistance to deformation under shear stress?**
 - A. Elastic modulus**
 - B. Tensile strength**
 - C. Shear modulus**
 - D. Compressive strength**
- 5. Licensees are prohibited from falsifying qualifications of other licensees to:**
 - A. Enhance professional reputation**
 - B. Secure more projects**
 - C. Compete fairly in the market**
 - D. Improve client relations**

- 6. How is risk defined in terms of hazards?**
- A. The potential for danger only**
 - B. The combination of hazard and exposure**
 - C. The relationship between safety measures and harm**
 - D. The potential for economic loss**
- 7. What must engineers include when signing and sealing documents?**
- A. Only their name**
 - B. All relevant and pertinent information**
 - C. A promotional statement about their company**
 - D. Confidential client details**
- 8. In the context of structural mechanics, what is the sign associated with tension?**
- A. Negative**
 - B. Zero**
 - C. Positive**
 - D. Both Positive and Negative**
- 9. How can radians be converted into degrees?**
- A. $X \text{ radians} * (360 \text{ degrees} / 2 \pi)$**
 - B. $X \text{ radians} * (180 \text{ degrees} / \pi)$**
 - C. $X \text{ radians} * (360 \text{ degrees} / \pi)$**
 - D. $X \text{ radians} * (180 \text{ degrees} / 2 \pi)$**
- 10. What does the term Threshold Limit Value (TLV) signify?**
- A. The maximum allowable exposure without adverse effects**
 - B. The minimum effective dose of a chemical**
 - C. The highest concentration of a chemical in the atmosphere**
 - D. The average concentration of healthy individuals**

Answers

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

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Explanations

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1. What does the stress formula ($\sigma = P / A$) represent?

- A. Pressure over area
- B. Force over area**
- C. Energy over volume
- D. Weight over mass

The formula for stress, represented as $\sigma = P / A$, characterizes the internal forces that develop within a material when subjected to an external load. In this formula, σ denotes stress, P is the applied force, and A is the area over which that force is distributed. The essence of the formula lies in understanding that stress is defined as the ratio of the internal force (or load) acting on a material to the cross-sectional area over which that force acts. Therefore, the correct interpretation is "force over area." This reveals how concentrated the forces are on a given area within a material, which is critical in evaluating its structural integrity and performance under various conditions. Understanding this relationship is fundamental in fields such as mechanical engineering, civil engineering, and materials science, where assessing the strength and behavior of materials under different loads is essential for safe and effective design.

2. What does the term 'wetted perimeter' refer to in fluid mechanics?

- A. The total length of the surface in contact with the fluid**
- B. The area of fluid exposed to air
- C. The volume of fluid in motion
- D. The perimeter of a solid object

The term 'wetted perimeter' in fluid mechanics refers to the total length of the surface that is in contact with the fluid. This is a critical concept, especially in the analysis of open channel flow, where the wetted perimeter is used to determine flow characteristics such as flow area and hydraulic radius. The wetted perimeter is significant because it affects resistance to flow and influences calculations related to the velocity of the fluid, the friction factor, and various other hydraulic parameters. By understanding the surface area in contact with the fluid, engineers can better predict how the fluid will behave as it moves, which is essential for designing efficient fluid transport systems. The other definitions do not accurately capture the concept. The area of fluid exposed to air refers to a different context, emphasizing surface interaction rather than contact length. The volume of fluid in motion pertains to the quantity of the fluid rather than its contact dimensions. Lastly, the perimeter of a solid object describes its outline but does not specifically define the interaction with the fluid in question. This makes the understanding of wetted perimeter vital for fluid mechanics applications.

3. What is the primary purpose of a Safety Data Sheet (SDS)?

- A. To provide marketing information about chemicals
- B. To offer information for workplace chemical management**
- C. To detail the production process of chemicals
- D. To list the ingredients of chemical formulations

The primary purpose of a Safety Data Sheet (SDS) is to offer information for workplace chemical management. An SDS is a crucial document that contains detailed information about the properties of a chemical, including its hazards, safe handling practices, health effects, and emergency measures. It plays a vital role in ensuring that employees are aware of the risks associated with chemicals they may encounter in their work environment and provides guidance on how to handle these substances safely. Through the SDS, employers and employees can access critical data necessary to implement proper safety measures, conduct risk assessments, and comply with health and safety regulations. This comprehensive information aids in creating safe working conditions, effectively managing chemical exposure, and ensuring that emergency response procedures are appropriate and ready to be executed if needed. In contrast, the other options do not capture the core function of an SDS. Marketing information, production details, and the listing of ingredients, while potentially useful, are secondary to the overarching goal of workplace safety and chemical risk management that the Safety Data Sheet is designed to support.

4. Which material property describes its resistance to deformation under shear stress?

- A. Elastic modulus
- B. Tensile strength
- C. Shear modulus**
- D. Compressive strength

The property that describes a material's resistance to deformation under shear stress is known as the shear modulus. This property quantifies how much a material will deform when subjected to shear forces, which cause layers of the material to slide past each other. Specifically, the shear modulus is defined as the ratio of shear stress to the corresponding shear strain within the elastic limit of the material. Understanding shear stress and shear strain is crucial in fields such as structural engineering and materials science because it helps engineers predict how materials will behave under various loading conditions. A higher shear modulus indicates a material is stiffer and will deform less when subjected to shear forces, while a lower value suggests that the material will be more prone to deformation under similar conditions. Other material properties mentioned, such as the elastic modulus, tensile strength, and compressive strength, pertain to different types of stresses (normal stress, axial loads) and do not directly address deformation due to shear forces. Therefore, the shear modulus is the most relevant measure for assessing a material's behavior when subjected to shear stress.

5. Licensees are prohibited from falsifying qualifications of other licensees to:

- A. Enhance professional reputation**
- B. Secure more projects**
- C. Compete fairly in the market**
- D. Improve client relations**

Falsifying qualifications of other licensees is fundamentally about integrity and ethical conduct in the engineering profession. When someone engages in this behavior, it undermines trust and transparency, which are essential for maintaining a credible profession. The correct focus, in this case, is how such actions can lead to securing more projects. By presenting inflated or false qualifications of peers, an individual can mislead clients and stakeholders into believing that their projects will be in capable hands, ultimately attempting to gain unfair advantages in the bidding or selection process. This not only compromises the principles of fair competition but also puts public safety at risk if unqualified individuals are engaged to perform critical tasks. Maintaining a truthful representation of qualifications ensures that everyone competes based on their actual abilities, which promotes ethical standards across the industry. This principle aligns with ensuring that the integrity of the engineering profession is upheld and that all practitioners are evaluated based on their real qualifications and merits.

6. How is risk defined in terms of hazards?

- A. The potential for danger only**
- B. The combination of hazard and exposure**
- C. The relationship between safety measures and harm**
- D. The potential for economic loss**

Risk, in the context of hazards, is defined as the combination of hazard and exposure. This definition highlights that risk is not simply the existence of a hazard; it also encompasses the degree to which that hazard can affect individuals or assets based on the level of exposure. A hazard represents a source of potential harm or adverse effect, while exposure refers to the conditions under which people or things might come into contact with that hazard. Therefore, understanding risk requires evaluating both how dangerous a hazard is and how likely it is that people or property will encounter that hazard. This dual focus allows for a more comprehensive assessment of risk, enabling better decision-making concerning safety measures and mitigation strategies. For instance, in an area prone to flooding, the hazard is the floodwater itself, but the risk would consider how many people live in the floodplain and how frequently the flooding occurs. Thus, risk is not only about potential dangers but also about the contextual factors that influence the likelihood and consequences of those dangers manifesting.

7. What must engineers include when signing and sealing documents?

A. Only their name

B. All relevant and pertinent information

C. A promotional statement about their company

D. Confidential client details

Engineers are required to include all relevant and pertinent information when signing and sealing documents to ensure that the work is presented accurately and responsibly. This includes relevant details such as the engineer's name, license number, the date of the document, and the scope of work being certified. The sealing of a document indicates that the engineer takes professional responsibility for its contents and that it adheres to the applicable standards and regulations. Including pertinent information is crucial for maintaining the integrity of the engineering profession and providing clarity to anyone dealing with the document. This practice helps ensure that other engineers, regulatory bodies, and the public can understand the implications and the scope of the engineering work represented in those documents. It reinforces accountability and promotes ethical standards within the engineering field.

8. In the context of structural mechanics, what is the sign associated with tension?

A. Negative

B. Zero

C. Positive

D. Both Positive and Negative

In structural mechanics, tension refers to the axial force that is transmitted through a material when it is subjected to stretching or pulling. This force acts outward along the direction of the member, effectively trying to elongate the material. The sign convention used in structural analysis typically categorizes tension as a positive force. This is consistent across various engineering disciplines, where a positive value indicates forces that are pulling or extending a member, while negative values would indicate compressive forces that are pushing inward. Thus, by defining tension as positive, it aligns with the foundational principles of equilibrium and analysis in structures, allowing engineers to correctly apply methods such as static equilibrium equations, moment calculations, and material stress assessments. Understanding this positive sign associated with tension helps in accurately predicting member behavior under loading conditions, ensuring structural integrity.

9. How can radians be converted into degrees?

- A. $X \text{ radians} * (360 \text{ degrees} / 2 \pi)$
- B. $X \text{ radians} * (180 \text{ degrees} / \pi)$**
- C. $X \text{ radians} * (360 \text{ degrees} / \pi)$
- D. $X \text{ radians} * (180 \text{ degrees} / 2 \pi)$

To convert radians into degrees, you can use the relationship that (180) degrees is equivalent to (π) radians. This means that for every (1) radian, there are $(\frac{180}{\pi})$ degrees. Therefore, when converting a value (X) from radians to degrees, you multiply (X) by $(\frac{180}{\pi})$. This conversion factor ensures that the radian measure is accurately expressed in degrees. As a result, using this formula allows you to convert the angle measured in radians directly into its equivalent degree measure, which is crucial in various engineering applications where different angle measurements are used. The other options utilize incorrect factors for conversion, either mixing the degrees in relation to radians or misrepresenting the ratio between them. Specifically, the correct relationship established by the choice leads to a straightforward and universally accepted method for such conversions.

10. What does the term Threshold Limit Value (TLV) signify?

- A. The maximum allowable exposure without adverse effects**
- B. The minimum effective dose of a chemical
- C. The highest concentration of a chemical in the atmosphere
- D. The average concentration of healthy individuals

The term Threshold Limit Value (TLV) signifies the maximum allowable exposure to a hazardous substance that a worker can experience without experiencing adverse health effects. TLVs are set by organizations such as the American Conference of Governmental and Industrial Hygienists (ACGIH) and are designed to protect workers by providing guidelines on safe exposure levels to various chemical agents in the workplace. The significance of TLVs lies in their role in occupational health and safety, where they help ensure a safe working environment by establishing limits that reduce the risk of long-term health problems, acute effects, and other safety concerns associated with exposure to toxic substances. By adhering to TLVs, employers can implement appropriate safety measures and monitoring to protect their workforce. The other concepts related to the options do not encapsulate the essence of TLV. For example, a minimum effective dose refers to a pharmacological context rather than workplace exposure limits. The highest concentration of a chemical might be relevant in different scenarios, including emergency response situations, but it does not address the aspect of adverse health effects from prolonged exposure. Similarly, the average concentration of healthy individuals does not define a safe exposure level for hazardous substances.

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://ncees-fe-otherdisciplines.examzify.com>

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