

NATIONAL COUNCIL OF EXAMINERS FOR ENGINEERING AND SURVEYING (NCEES) FUNDAMENTALS OF ENGINEERING (FE) OTHER DISCIPLINES PRACTICE EXAM (SAMPLE) STUDY GUIDE



SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

**VISIT US ONLINE FOR
THE FULL VERSION STUDY GUIDE**

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



Copyright © 2026 by Examzify - A Kaluba Technologies Inc. product.

ALL RIGHTS RESERVED.

No part of this book may be reproduced or transferred in any form or by any means, graphic, electronic, or mechanical, including photocopying, recording, web distribution, taping, or by any information storage retrieval system, without the written permission of the author.

Notice: Examzify makes every reasonable effort to obtain accurate, complete, and timely information about this product from reliable sources.

SAMPLE

Table of Contents

Copyright	1
Table of Contents	2
Introduction	3
How to Use This Guide	4
Questions	5
Answers	8
Explanations	10
Next Steps	16

SAMPLE

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

SAMPLE

1. Where does a rod or cylinder experience the most torque?
 - A. At its midpoint
 - B. At its outermost edge
 - C. Evenly throughout
 - D. At its connection point
2. The licensee is obligated to notify their employer or client when what happens?
 - A. They must sign a new project
 - B. Professional judgment is overruled or public is in danger
 - C. They accept a bribe from a client
 - D. They complete a project ahead of schedule
3. Where can a couple be placed on a rigid body for an equivalent effect?
 - A. At the center of mass only
 - B. At any point on the rigid body
 - C. Only at the supports of the body
 - D. At the edges of the body only
4. 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
5. What does a chilling value refer to in safety standards?
 - A. The minimum safe exposure
 - B. The maximum safe exposure
 - C. The average safe exposure
 - D. The threshold exposure

6. What condition is indicated by the statement "the structure is statically determinate"?
- A. The # of members = # of joints - 1
 - B. The # of members = 2(# of joints) - 3
 - C. The structure can only support static loads
 - D. The # of members = # of joints
7. What is a common method used to analyze stability in geotechnical engineering?
- A. Soil permeability testing
 - B. Factor of safety analysis
 - C. Load-bearing capacity testing
 - D. Settlement analysis
8. What is a common method for calculating the structural integrity of a steel beam?
- A. The shear stress formula
 - B. The bending stress formula
 - C. The axial stress formula
 - D. The moment of inertia calculation
9. What does the Voltage Divider Rule calculate?
- A. $V_{out} = V_{in} * (R1 + R2)$
 - B. $V_{out} = V_{in} * (R2 / (R1 + R2))$
 - C. $V_{out} = V_{in} * (R1 / R2)$
 - D. $V_{out} = V_{in} / (R1 + R2)$
10. What does Newton's Third Law state?
- A. Objects in motion stay in motion
 - B. Force equals mass divided by acceleration
 - C. For every action, there is an equal and opposite reaction
 - D. Energy is conserved in an isolated system

Answers

SAMPLE

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

SAMPLE

Explanations

SAMPLE

1. Where does a rod or cylinder experience the most torque?

- A. At its midpoint
- B. At its outermost edge**
- C. Evenly throughout
- D. At its connection point

A rod or cylinder experiences the most torque at its outermost edge due to the relationship between torque, force, and distance from the point of rotation. Torque is defined as the product of the force applied and the lever arm, which is the perpendicular distance from the line of action of the force to the axis of rotation. When force is applied at the outermost edge, the lever arm is at its maximum length, which maximizes the torque produced. This principle is foundational in mechanics and applies to rotating bodies where the distribution of forces plays a crucial role in determining the effectiveness of applied loads. To clarify why the other options are less accurate: the midpoint would not maximize the distance from the rotation axis, and while torque can be distributed along the length of the rod or cylinder, it does not experience the maximum value at this point or evenly throughout. The connection point, typically regarded as the axis of rotation, also does not register maximum torque because the lever arm in this situation is effectively zero, leading to no torque produced at that specific location. Thus, the outermost edge is indeed where the maximum torque occurs.

2. The licensee is obligated to notify their employer or client when what happens?

- A. They must sign a new project
- B. Professional judgment is overruled or public is in danger**
- C. They accept a bribe from a client
- D. They complete a project ahead of schedule

The obligation of a licensee to notify their employer or client arises primarily in situations concerning public safety or integrity in professional judgment. When a licensee's professional judgment is overruled, or when there is a risk to public safety, it is critical to ensure that all parties involved are aware of the potential implications. This duty is grounded in ethical codes that emphasize the protection of the public and the necessity for transparency in professional practices. In scenarios where a licensee's expertise is challenged or disregarded, they must communicate this to pertinent stakeholders to address potential risks or changes in project direction. This aligns with the principles of responsibility and accountability that engineers and professionals in related fields are expected to uphold. The other situations presented do not carry the same ethical weight regarding public safety or professional conduct. Accepting a bribe, while a serious matter and generally punishable under law and ethics, does not specifically invoke a notification requirement as outlined in standard codes of ethics. Completing a project ahead of schedule might reflect positively on a professional's efficiency but does not necessitate a notification about the integrity of the work or public safety concerns. Signing a new project is a standard part of professional duties that doesn't typically trigger an obligation to report. Therefore, the emphasis on safety and ethical

3. Where can a couple be placed on a rigid body for an equivalent effect?

- A. At the center of mass only
- B. At any point on the rigid body**
- C. Only at the supports of the body
- D. At the edges of the body only

A couple can be placed at any point on a rigid body while maintaining the same equivalent effect because a couple is defined as two forces, equal in magnitude, opposite in direction, and separated by a distance. The key characteristic of a couple is that it creates a moment or torque about any point in the body, and this moment will remain the same regardless of where the couple is applied. When the couple is moved to a different position on the rigid body, it does not change the magnitude or direction of the forces involved; therefore, it still produces the same rotational effect. This principle is crucial in structural analysis and mechanics, as it allows engineers and designers to analyze systems flexibly. The other options specify limitations on where the couple can be placed, which contradicts the fundamental property of how couples behave in physics. The notion that a couple can only act at the center of mass, at specific supports, or only at the edges does not align with the understanding that the effect of a couple is independent of its location on the rigid body. Thus, stating that a couple can only be effective at certain points is incorrect.

4. 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.

5. What does a chilling value refer to in safety standards?

- A. The minimum safe exposure
- B. The maximum safe exposure**
- C. The average safe exposure
- D. The threshold exposure

A chilling value in safety standards refers to the maximum safe exposure level to a particular hazardous substance or condition that individuals should not exceed to avoid adverse health effects. This means that beyond this value, the risk of injury or negative health consequences increases significantly. It is crucial in establishing safety protocols and guidelines to ensure that workers or customers are not exposed to levels that could lead to harmful effects. In this context, the chilling value serves as a critical benchmark for evaluating safety risks and is used by regulatory agencies to develop limits for exposure in various environments, including workplaces and public settings. This concept helps in protecting individuals by defining safe boundaries and encouraging preventive measures when approaching these limits.

6. What condition is indicated by the statement "the structure is statically determinate"?

- A. The # of members = # of joints - 1
- B. The # of members = 2(# of joints) - 3**
- C. The structure can only support static loads
- D. The # of members = # of joints

A structure being described as "statically determinate" means that the internal forces and reactions can be determined solely from the equations of static equilibrium. This can be expressed mathematically through a specific relationship between the number of members, joints, and the overall stability of the structure. In the context of planar structures, a statically determinate structure adheres to the formula: the number of members equals two times the number of joints minus three. This accounts for the fact that each joint can provide two reactions (typically in the x and y directions), and three equations of equilibrium apply to the whole structure: summing forces in the x-direction, summing forces in the y-direction, and summing moments. Choosing the other answer options may reflect common misconceptions. While the relationship of members and joints in the first option suggests a static equilibrium, it does not capture the necessary conditions for a statically determinate structure. The statement that a structure can only support static loads directly focuses on load types rather than the determinate nature of structural forces. Lastly, while stating that members equal joints may hold for some trivial structures, it does not encompass the more complex considerations of structural relationships necessary for determining static determinacy. Thus, the correct choice directly aligns with the

7. What is a common method used to analyze stability in geotechnical engineering?

- A. Soil permeability testing
- B. Factor of safety analysis**
- C. Load-bearing capacity testing
- D. Settlement analysis

In geotechnical engineering, factor of safety analysis is a widely used method to evaluate stability. This approach involves assessing the stability of slopes, bearing capacity of foundations, and other geotechnical structures by comparing the available strength of soil or rock to the applied stresses or loads. The factor of safety is calculated by taking the ratio of the resisting forces (or moments) to the driving forces (or moments). A factor of safety greater than one indicates that the resisting forces are sufficient to maintain stability under given conditions, while a factor of safety less than one suggests potential failure. This method is fundamental because it provides a quantitative measure of safety and is used to determine whether an engineering design will be stable under expected loads. It takes into account uncertainties in both the material properties and external loads, making it a critical aspect of geotechnical analysis. Other methods, such as soil permeability testing, load-bearing capacity testing, and settlement analysis, are important in their respective contexts but do not directly serve as comprehensive measures of stability. Soil permeability testing assesses the ease with which water can flow through soil, while load-bearing capacity testing evaluates how much load a soil can support without failure. Settlement analysis investigates how much a structure will settle over time under loading conditions, which is

8. What is a common method for calculating the structural integrity of a steel beam?

- A. The shear stress formula
- B. The bending stress formula**
- C. The axial stress formula
- D. The moment of inertia calculation

The bending stress formula is commonly used for calculating the structural integrity of a steel beam because beams are primarily subjected to bending loads during their service life. When a load is applied to the beam, it causes the beam to deform, resulting in tension on one side of the beam and compression on the other. The bending stress formula provides a way to quantify the stress distribution that occurs due to this bending in relation to factors like the applied moment, the beam's moment of inertia, and the distance from the neutral axis. This approach allows engineers to assess whether the beam can safely withstand the applied loads without exceeding the material's yield strength. Additionally, the bending stress formula helps ensure that safety factors are incorporated into design considerations for structural applications, making it essential in evaluating beam performance. While the other methods mentioned are also important in certain contexts—such as shear stress for assessing shear forces or axial stress for evaluating forces along the length of a structural member—the bending stress formula is particularly crucial for beams because their primary function is to resist bending moments.

9. What does the Voltage Divider Rule calculate?

- A. $V_{out} = V_{in} * (R1 + R2)$
- B. $V_{out} = V_{in} * (R2 / (R1 + R2))$**
- C. $V_{out} = V_{in} * (R1 / R2)$
- D. $V_{out} = V_{in} / (R1 + R2)$

*The Voltage Divider Rule is a fundamental principle in electrical engineering used to calculate the output voltage across a specific resistor in a series circuit. The rule states that the voltage across a resistor in a series circuit is proportional to its resistance relative to the total resistance of the circuit. In the context of the provided answer, $V_{out} = V_{in} * (R2 / (R1 + R2))$ accurately represents this relationship. Here, V_{out} is the output voltage measured across the resistor $R2$, V_{in} is the total input voltage applied across the series combination of resistors $R1$ and $R2$, and $R1$ and $R2$ are the resistances of the respective resistors in series. The formula illustrates that the voltage drop across $R2$ is determined by the fraction of $R2$ in relation to the total resistance ($R1 + R2$). Thus, this formula provides a straightforward method for determining the voltage across $R2$ given the total voltage and the values of the resistors. This rule is widely applicable in circuit analysis involving resistors in series, making it a crucial concept for understanding how voltage is distributed within such circuits.*

10. What does Newton's Third Law state?

- A. Objects in motion stay in motion
- B. Force equals mass divided by acceleration
- C. For every action, there is an equal and opposite reaction
- D. Energy is conserved in an isolated system

Newton's Third Law states that for every action, there is an equal and opposite reaction. This law highlights the fundamental principle that forces always occur in pairs. When one object exerts a force on a second object, the second object exerts a force of equal magnitude, but in the opposite direction, back onto the first object. This principle is essential in understanding interactions in mechanics, as it explains how objects move in response to forces acting upon them. For example, when you push against a wall, you exert a force on the wall, and the wall exerts an equal force back on you. This is not just a conceptual idea; it activates throughout various phenomena in physics, from the way rockets propel themselves by expelling gas downwards to how animals move by pushing against the ground. The other options denote other principles of physics. The statement about objects in motion staying in motion refers to Newton's First Law, which deals with inertia, while the force-mass-acceleration relationship describes Newton's Second Law. Finally, the conservation of energy pertains to the principles of thermodynamics and is unrelated to Newton's laws. Recognizing these distinctions helps in grasping the broader concepts in physics.

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!

SAMPLE