

NCEES Fundamentals of Surveying (FS) Practice Exam (Sample)

Study Guide



Everything you need from our exam experts!

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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

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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. Geodetic heights obtained with satellite surveys are measured concerning which reference?**
 - A. The geoid**
 - B. Geocentric coordinates**
 - C. State plane coordinates**
 - D. The ellipsoid**

- 2. What is the primary purpose of using differential leveling in construction projects?**
 - A. To measure the area of land**
 - B. To establish a flat foundation**
 - C. To create topographic maps**
 - D. To analyze soil types**

- 3. Why is differential leveling important in surveying?**
 - A. It determines the quality of soil**
 - B. It identifies topographic features**
 - C. It provides precise elevation differences between points**
 - D. It helps calculate land area**

- 4. What is included in the consideration portion of a valid contract?**
 - A. Ability to sign for an entity**
 - B. Legal subject matter**
 - C. Names of the parties**
 - D. Value**

- 5. What is the purpose of a deed of trust?**
 - A. conditional conveyance of an estate as a pledge of security of a debt**
 - B. deed for excess acreage**
 - C. conveyance held in the hands of another for safekeeping**
 - D. conveyance made to a charitable organization**

- 6. Which entity provides measurements and coordinates for national geographic standards in the United States?**
- A. National Society of Professional Surveyors**
 - B. United States Geological Survey**
 - C. National Geodetic Survey**
 - D. National Bureau of Standards**
- 7. What is the formula for calculating the volume of a prism?**
- A. Volume = height × width × length**
 - B. Volume = base area × height**
 - C. Volume = perimeter × height**
 - D. Volume = base area × perimeter**
- 8. What is meant by "standing order" in geodetic surveying?**
- A. A fixed payment schedule for surveying work**
 - B. Continuous monitoring of geodetic control point coordinates**
 - C. A standard protocol for surveying methods**
 - D. A list of established surveying points**
- 9. What is an advantage of an Invar leveling rod?**
- A. Low coefficient of expansion**
 - B. More visible graduations**
 - C. Top portion of rod can be detached**
 - D. Visibility at longer distances**
- 10. Which of the following is a warranty deed?**
- A. Possession insurance**
 - B. A Torrens title**
 - C. A title guarantee**
 - D. An agreement between owners to fix a boundary line**

Answers

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

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Explanations

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1. Geodetic heights obtained with satellite surveys are measured concerning which reference?

- A. The geoid**
- B. Geocentric coordinates**
- C. State plane coordinates**
- D. The ellipsoid**

Geodetic heights obtained from satellite surveys are measured concerning the ellipsoid. An ellipsoid represents a mathematically defined surface that approximates the shape of the Earth, which is slightly flattened at the poles and bulging at the equator. This ellipsoidal model is essential in satellite geodesy because it allows for uniform height measurements that can be applied globally. The heights measured relative to the ellipsoid are known as ellipsoidal heights. These measurements are crucial for various applications in surveying and mapping, as they provide a standardized way to express elevation above or below the reference surface. The ellipsoid serves as a consistent reference for calculating coordinates in three-dimensional space and is utilized in conjunction with Global Navigation Satellite Systems (GNSS) for determining positions accurately. The distinction between ellipsoidal heights and other height measurements, such as orthometric heights referenced to the geoid, is important in geodesy. While the geoid represents mean sea level and is used for determining elevations in practical surveying contexts, satellite measurements primarily relate to the ellipsoidal model, which provides a global framework for positional accuracy. Understanding this relationship helps clarify the fundamental concepts in surveying and the significance of the ellipsoid in geodetic measurements.

2. What is the primary purpose of using differential leveling in construction projects?

- A. To measure the area of land**
- B. To establish a flat foundation**
- C. To create topographic maps**
- D. To analyze soil types**

The primary purpose of using differential leveling in construction projects is to establish a flat foundation. Differential leveling is a precise method used to determine the height differences between points on the ground. In construction, having a level foundation is crucial to ensure that structures can be built safely and effectively; it helps maintain structural integrity by providing a stable base free from undue stress caused by uneven settling. This technique allows surveyors to accurately measure and control elevation differences over distances, enabling accurate grading and the establishment of reference points for the design and construction of foundations. Ensuring that the foundation is flat prevents issues such as water pooling and structural misalignment, which can lead to costly repairs or safety hazards in the future. While there are many other surveying techniques and practices that serve different purposes—such as measuring land area, creating topographic maps, or analyzing soil types—differential leveling is specifically aimed at confirming elevations and establishing flatness crucial for foundation work in construction.

3. Why is differential leveling important in surveying?

- A. It determines the quality of soil
- B. It identifies topographic features
- C. It provides precise elevation differences between points**
- D. It helps calculate land area

Differential leveling is a critical process in surveying because it provides precise elevation differences between points. This technique involves using a leveling instrument to measure the height of the instrument above a known benchmark and then taking readings at various points, allowing surveyors to determine the relative vertical positions of different locations accurately. Understanding elevation differences is essential in many surveying applications, such as construction projects, road design, and drainage planning. By knowing how much higher or lower one point is compared to another, surveyors can make informed decisions about grading, ensuring proper water flow, and maintaining building standards. It helps facilitate accurate designs, avoiding potential future issues related to elevation discrepancies. Other options may pertain to related aspects of surveying but do not directly relate to the fundamental purpose and pivotal importance of differential leveling, which is fundamentally about establishing accurate vertical relationships between points.

4. What is included in the consideration portion of a valid contract?

- A. Ability to sign for an entity
- B. Legal subject matter
- C. Names of the parties
- D. Value**

In the context of contract law, consideration refers to something of value that is exchanged between the parties involved in a contract. This is essential for a contract to be considered valid and enforceable. Consideration can take various forms, such as money, services, goods, or even a promise to refrain from doing something. The inclusion of value is crucial as it demonstrates that both parties are providing something in exchange, which is a foundational principle of contracts. Without consideration, a contract may be deemed unenforceable because there is no mutual agreement or exchange, which is necessary for the contract's validity. The other options, while important in their own right, do not pertain directly to consideration. The ability to sign for an entity involves the authority to engage in a contractual agreement but does not constitute the exchange of value. Legal subject matter refers to the requirement that a contract's purpose must be lawful, and the names of the parties help identify those involved but do not create the element of value essential for consideration. Thus, value stands out as the core component of consideration in a valid contract.

5. What is the purpose of a deed of trust?

- A. conditional conveyance of an estate as a pledge of security of a debt**
- B. deed for excess acreage**
- C. conveyance held in the hands of another for safekeeping**
- D. conveyance made to a charitable organization**

A deed of trust serves a specific function in real estate transactions, primarily related to securing a loan. It acts as a conditional conveyance whereby the borrower (trustor) transfers legal title of a property to a third party (trustee) for the benefit of the lender (beneficiary). This arrangement allows the lender to have a security interest in the property, ensuring that in the event of default on the loan, the lender can enforce their claim through the trustee without the need to go through the court system. This mechanism helps facilitate the lending process by providing assurance to the lender that there is a legal claim they can pursue if the borrower fails to meet their repayment obligations. The deed of trust essentially outlines the terms under which the property is held and stipulates the conditions under which the trustee can act to recover the debt, typically through foreclosure. The other options, while they involve deeds in some capacity, do not capture the primary purpose of a deed of trust as effectively. For example, deeds for excess acreage focus on land and property size issues, while conveyances for safekeeping and those made to charitable organizations depict different forms of real estate transactions unrelated to the security of a debt. Thus, the function of a deed of trust in securing a loan

6. Which entity provides measurements and coordinates for national geographic standards in the United States?

- A. National Society of Professional Surveyors**
- B. United States Geological Survey**
- C. National Geodetic Survey**
- D. National Bureau of Standards**

The National Geodetic Survey (NGS) is the entity responsible for providing accurate measurements and coordinates that support national geographic standards in the United States. The NGS plays a vital role in establishing and maintaining the National Spatial Reference System (NSRS), which provides a consistent framework for positioning in the U.S. This system includes geodetic control points that surveyors and other professionals rely on for accurate land measurement and mapping. By utilizing precise coordinates and elevations, the NGS supports various applications, including mapping, infrastructure development, and environmental studies. Their work ensures consensus on geographic data, which is essential for land and resource management. The NGS also engages in creating models and tools that enhance the accuracy and reliability of geospatial data used throughout the country. The other entities mentioned provide valuable services, but they focus on different aspects of survey or standards. The National Society of Professional Surveyors advocates for the surveying profession and represents the interests of surveying professionals rather than providing geographic standards directly. The United States Geological Survey focuses primarily on natural resources and hazard assessments, while the National Bureau of Standards (now part of the National Institute of Standards and Technology) is more concerned with developing measurement standards rather than geographic coordinates specifically.

7. What is the formula for calculating the volume of a prism?

A. Volume = height × width × length

B. Volume = base area × height

C. Volume = perimeter × height

D. Volume = base area × perimeter

The formula for calculating the volume of a prism is based on the relationship between the base area and the height of the prism. In this case, selecting the option that states the volume is equal to the base area multiplied by the height is correct. This reflects the geometric principle that the volume of any three-dimensional shape, like a prism, is derived from how much space it occupies. For prisms, which have two parallel faces (the bases) that are congruent and the same shape, the volume calculation involves determining the area of one of these bases (which can take on various shapes, such as rectangular, triangular, or any polygon) and then extending that area throughout the height of the prism. This relationship illustrates that the volume not only depends on the size of the base but also on how tall the prism extends from one base to the other. Consequently, using the base area together with the height provides an accurate measure of space contained within the prism, while the other options do not adhere to the fundamental geometry principles governing the calculation of a prism's volume.

8. What is meant by "standing order" in geodetic surveying?

A. A fixed payment schedule for surveying work

B. Continuous monitoring of geodetic control point coordinates

C. A standard protocol for surveying methods

D. A list of established surveying points

In geodetic surveying, "standing order" specifically refers to the continuous monitoring of geodetic control point coordinates over time. This entails tracking the movement and stability of these points, which helps in understanding shifts in the Earth's crust, such as those caused by tectonic activity or subsidence. By maintaining a standing order, surveyors can collect data that is crucial for applications such as precise positioning, environmental studies, and infrastructure development. This continuous monitoring is essential for maintaining the accuracy of geodetic measurements and ensuring that the reference points used in surveying remain reliable over long periods. It involves regular observations and adjustments to account for any changes that may occur at these control points, which is vital for projects that require high precision.

9. What is an advantage of an Invar leveling rod?

- A. Low coefficient of expansion**
- B. More visible graduations**
- C. Top portion of rod can be detached**
- D. Visibility at longer distances**

The advantage of an Invar leveling rod primarily lies in its low coefficient of thermal expansion. Invar is a special iron-nickel alloy that exhibits minimal changes in length with varying temperatures. This property is particularly significant in surveying, where precision is crucial. When survey measurements are taken, even slight variations in rod length due to thermal changes can lead to inaccuracies in leveling and other measurements. Utilizing an Invar leveling rod helps maintain greater accuracy by ensuring that the measurements remain consistent regardless of temperature fluctuations, allowing for reliable and precise leveling over extended periods and varying environmental conditions. In contrast to the other options, while visibility and detachment features may provide practical benefits, they do not directly relate to the fundamental characteristic that ensures the precision necessary in surveying work.

10. Which of the following is a warranty deed?

- A. Possession insurance**
- B. A Torrens title**
- C. A title guarantee**
- D. An agreement between owners to fix a boundary line**

A warranty deed is a specific type of legal document used in real estate transactions that provides a guarantee from the seller (grantor) to the buyer (grantee) regarding the title of the property. When a warranty deed is executed, it ensures that the seller holds clear title to the property and has the right to sell it. Furthermore, the seller warrants that the property is free from any encumbrances or claims, except those explicitly stated in the deed. In this context, a title guarantee is closely associated with a warranty deed because it provides an assurance of the ownership and the rights associated with the property. This guarantee functions to protect the buyer from issues that might arise concerning the title, such as claims or liens that could affect ownership. Possession insurance does not pertain to property ownership or title guarantees, as it focuses on insuring the physical possession of the property rather than the legal title itself. A Torrens title system involves a method of land registration that certifies the ownership of property, but it isn't categorized specifically as a warranty deed. Finally, an agreement between owners to fix a boundary line is related to property boundaries and disputes but does not involve the concept of a warranty deed or guarantee of the title itself.

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-fundamentalsofsurveying.examzify.com>

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

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