

GEODETC ENGINEERS PRE-BOARD PRACTICE TEST (SAMPLE)

STUDY GUIDE



**SAMPLE STUDY GUIDE
WITH LIMITED QUESTIONS**

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

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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. How is orthometric height defined in geodesy?**
 - A. Height reference from the highest mountain
 - B. Height of a point measured from the geoid
 - C. Elevation above sea level
 - D. Height based on local datum
- 2. What is the formula for calculating true azimuth in an afternoon observation?**
 - A. $A + \text{observed horizontal angle}$
 - B. $A + (360 \text{ degrees} - \text{observed horizontal angle})$
 - C. $360 \text{ degrees} - \text{observed horizontal angle}$
 - D. $A + \text{observed elevation angle}$
- 3. How is photoscale determined in surveying practices?**
 - A. By measuring the area of the photo
 - B. By dividing the photo distance by its ground distance
 - C. By comparing multiple photos for accuracy
 - D. By assessing the camera's resolution
- 4. What does "ephemeris" refer to in GPS technology?**
 - A. A tool for measuring distance
 - B. A set of data related to satellite positions
 - C. A type of GPS satellite
 - D. A method of survey calculation
- 5. The height measurement that considers the geoid is known as?**
 - A. Ellipsoidal height
 - B. Orthometric height
 - C. Measured height
 - D. Absolute height
- 6. What is a culvert used for in road design?**
 - A. Allowing water to pass under a road
 - B. Supporting the road structure
 - C. Measuring road alignment
 - D. Providing a place for traffic signs

7. What does NPD correction refer to in surveying?

- A. The adjustment for deviations due to curvature of the earth
- B. The correction calculation for morning solar observation
- C. The recalibration of instruments after use
- D. The correction for errors due to atmospheric pressure

8. In GPS measurements, what does accuracy refer to?

- A. The closeness of measurements to a standard
- B. The precision of the GPS instrument
- C. The degree to which the measured value corresponds to the true value
- D. The speed of data gathering

9. How is it possible to determine photoscale accuracy?

- A. By verifying ground control points
- B. By using an electronic measuring device
- C. By comparing distances on the photo and actual ground
- D. By utilizing multiple survey methods

10. What purpose does a cadastral map serve?

- A. Shows geological formations in a given area
- B. Map size uniformity specified for cadastral purposes
- C. Indicates transportation routes
- D. Displays topographical features

Answers

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

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Explanations

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1. How is orthometric height defined in geodesy?

- A. Height reference from the highest mountain
- B. Height of a point measured from the geoid**
- C. Elevation above sea level
- D. Height based on local datum

Orthometric height is specifically defined as the height of a point above the geoid, which is an equipotential surface that represents mean sea level across the globe. This definition is rooted in the principles of geodesy, where the geoid serves as a reference for measuring elevations in a consistent manner that accounts for variations in gravitational forces. Choosing the geoid as the reference allows for a standard measurement of height that reflects the true shape of the Earth, as opposed to just a flat reference like sea level or arbitrary datums. Therefore, orthometric height provides a practical insight into how far above or below a point is relative to this recognized surface, making it crucial for accurate elevation studies and applications in mapping, surveying, and navigation. Although other definitions might relate to elevations above sea level or local datums, these do not align with the precise, universally applicable definition provided in the context of geodesy for orthometric height. This focus on the geoid distinguishes orthometric height as a valuable measure that integrates gravitational effects, yielding more accurate results in various engineering and geodetic applications.

2. What is the formula for calculating true azimuth in an afternoon observation?

- A. $A + \text{observed horizontal angle}$
- B. $A + (360 \text{ degrees} - \text{observed horizontal angle})$**
- C. $360 \text{ degrees} - \text{observed horizontal angle}$
- D. $A + \text{observed elevation angle}$

The formula for calculating true azimuth in an afternoon observation involves adjusting the observed horizontal angle relative to the true north direction. In the afternoon, the sun is typically located in the southern hemisphere of the sky, which means that if the observed horizontal angle is measured, it must be adjusted to find the true azimuth. By taking A , which represents the initial azimuth angle, and adding $(360 \text{ degrees} - \text{observed horizontal angle})$, you are effectively converting the angle measured into a true azimuth that accounts for the sun's position. This adjustment properly aligns the measurement within the 360-degree framework of azimuth, allowing the observed angle to be converted correctly to true azimuth with respect to north. This approach is particularly relevant during afternoon observations when the local coordinate systems can differ significantly from true geographic directions, thereby necessitating such calculations for accurate mapping and navigation purposes.

3. How is photoscale determined in surveying practices?

- A. By measuring the area of the photo
- B. By dividing the photo distance by its ground distance**
- C. By comparing multiple photos for accuracy
- D. By assessing the camera's resolution

The determination of photoscale in surveying practices is fundamentally done by dividing the photo distance by its corresponding ground distance. This process allows surveyors to establish a scale that can be used to interpret measurements taken from aerial photographs or images accurately. When a photograph is taken, the distances within that image (photo distance) need to be translated into real-world distances (ground distance) for practical applications in mapping and surveying. By calculating the ratio of these two distances, one can derive the scale of the photo, which indicates how much the real-world distance has been reduced to fit on the photograph. This scale is essential for tasks such as creating accurate maps or conducting geological surveys. In this context, measuring the area of the photo, comparing multiple photos for accuracy, or assessing the camera's resolution are not direct methods for determining photoscale. While these aspects may contribute to the quality or reliability of the images and surveys, they do not provide the specific measurement relationship needed to calculate the scale as clearly as dividing photo distance by ground distance does. Understanding this relationship is crucial for effective surveying and interpretation of photographic data.

4. What does "ephemeris" refer to in GPS technology?

- A. A tool for measuring distance
- B. A set of data related to satellite positions**
- C. A type of GPS satellite
- D. A method of survey calculation

The term "ephemeris" in GPS technology refers to a set of data that provides the positions of satellites at specific times. This data is crucial for the accurate calculation of a GPS receiver's position on Earth, as it allows the receiver to know where each satellite is located in its orbit at any given moment. GPS satellites continuously transmit their ephemeris data, which includes information on their orbital parameters and timing, enabling the receiver to determine distance through time delays in signal transmission. Understanding satellite positions is fundamental to achieving accurate positioning and navigation results in GPS technology.

5. The height measurement that considers the geoid is known as?

- A. Ellipsoidal height
- B. Orthometric height**
- C. Measured height
- D. Absolute height

The height measurement that takes into account the geoid is referred to as orthometric height. Orthometric height is derived by measuring the distance from a point on the Earth's surface to the geoid, which represents the mean sea level extended across the Earth's surface. This measurement is crucial in geodesy as it reflects the gravitational potential differences and provides a reference for elevations that can be used in practical applications such as mapping and construction. In contrast, ellipsoidal height is the measurement from a point to the mathematical ellipsoid, which does not account for the Earth's gravitational field or the physical shape of the Earth. Measured height and absolute height may refer to different contexts or standards in measurement but do not specifically denote the consideration of the geoid, making them less relevant to the question about height measurement that incorporates geoidal effects. Thus, orthometric height is the correct term that aligns with the notion of referencing the geoid in height measurements.

6. What is a culvert used for in road design?

- A. Allowing water to pass under a road**
- B. Supporting the road structure
- C. Measuring road alignment
- D. Providing a place for traffic signs

A culvert serves a crucial purpose in road design by allowing water to pass under the road. This is important for managing drainage and mitigating the risk of flooding, especially in areas where water runoff from rainfall or nearby bodies of water is significant. By providing a dedicated pathway for water to flow, culverts help preserve the integrity of the road structure and ensure safe passage for vehicles. In road design, effective drainage is essential to prevent water accumulation on the road surface, which can lead to damage over time. Culverts are typically constructed from materials like concrete, metal, or plastic and are placed below roadways at strategic points, ensuring that natural water flow is maintained without obstructing traffic or creating hazardous conditions. The other potential functions listed—supporting road structure, measuring road alignment, and providing a place for traffic signs—are not the primary roles of a culvert. Supporting the road structure is typically the role of the roadbed and supporting materials, while measuring road alignment involves surveying techniques, and traffic signs have designated installations that are separate from culvert functions. Thus, a culvert primarily and effectively serves the essential function of facilitating water passage beneath roads.

7. What does NPD correction refer to in surveying?

- A. The adjustment for deviations due to curvature of the earth
- B. The correction calculation for morning solar observation**
- C. The recalibration of instruments after use
- D. The correction for errors due to atmospheric pressure

NPD correction, which stands for "Noon Position Displacement correction," involves adjustments made during solar observations in surveying. Specifically, it accounts for the differences observed in solar angle caused primarily by the position of the sun in the sky at the time of observation. This correction is essential for accurate measurements, as solar observations must consider the changing angle of sunlight due to the curvature of the Earth and the Earth's rotation. In surveying practice, accurate angular measurements are critical for determining positions and distances, and this correction aids in improving the precision of solar observation results. The need for such corrections reflects the dynamic nature of atmospheric conditions and solar path variations that can affect measurements if not accurately corrected. Understanding NPD correction helps surveyors enhance the reliability of their data collection processes when relying on solar angles for positioning and surveying tasks.

8. In GPS measurements, what does accuracy refer to?

- A. The closeness of measurements to a standard
- B. The precision of the GPS instrument
- C. The degree to which the measured value corresponds to the true value**
- D. The speed of data gathering

Accuracy in GPS measurements specifically pertains to the degree to which the measured value corresponds to the true value. This means that if a GPS device is providing location data, accuracy is evaluated based on how close that data is to the actual physical location on the Earth. For instance, if a GPS signal shows that a point is at a certain latitude and longitude, accuracy assesses how closely those coordinates match the real coordinates of the point. High accuracy implies that the GPS device's readings are very near to the actual measurements, which is crucial for various applications such as surveying, navigation, and mapping. While other options may touch on related concepts, such as precision or the speed of data gathering, they do not directly define accuracy in the context of GPS. Precision refers to the repeatability of measurements, but it does not guarantee that those measurements are close to the true value. Similarly, the speed of data gathering is about how quickly data can be collected, which is separate from how accurately that data reflects reality. Thus, the emphasis on the correspondence to the true value solidifies why this choice correctly defines accuracy in GPS measurements.

9. How is it possible to determine photoscale accuracy?

- A. By verifying ground control points
- B. By using an electronic measuring device
- C. By comparing distances on the photo and actual ground**
- D. By utilizing multiple survey methods

Determining photoscale accuracy involves assessing the relationship between measurements taken on a photograph and the actual distances on the ground. When you compare distances measured on the photo to their corresponding actual ground distances, you can establish how accurately the photo represents reality. This comparison provides a direct method to evaluate the scale of the image and identify any scale distortion that may have occurred due to factors like camera elevation, lens characteristics, or perspective distortion. This method relies on accurate ground truthing, where known distances can be confirmed against measurements taken from the photo. Consistency between these measurements indicates a reliable photoscale. Utilizing this approach also allows for quantifying the precision of the photo's geometric representation. Other methods to assess accuracy may involve ground control points and electronic measuring devices, but these methods generally serve to enhance or verify the accuracy rather than directly offer a comparative analysis of photo measurements against actual terrain. Similarly, employing multiple survey methods can improve overall measurement reliability but does not specifically determine photoscale accuracy. Thus, comparing photo distances to actual measurements remains the most direct and effective means of assessing photoscale accuracy.

10. What purpose does a cadastral map serve?

- A. Shows geological formations in a given area
- B. Map size uniformity specified for cadastral purposes**
- C. Indicates transportation routes
- D. Displays topographical features

A cadastral map primarily focuses on defining and representing the boundaries of land parcels and property ownership within a specific area. The essential purpose of this type of map is to provide a clear and precise depiction of land parcels, which includes details such as property lines, ownership, and sometimes the dimensions of the parcels. In the context of uniformity in map size specified for cadastral purposes, this aspect helps ensure consistency and standardization in land documentation, making it easier to interpret and manage property records effectively. Uniform map sizes allow for orderly filing, referencing, and comparisons among different areas and parcels. Options that discuss geological formations, transportation routes, or topographical features do not align with the primary goals of cadastral mapping. These aspects may be covered by other types of maps (like geological maps, transportation maps, or topographical maps) but are not the central focus of cadastral maps. Thus, the idea of map size uniformity being crucial for cadastral purposes is accurate, as it supports clarity and organization in managing land ownership and related legal matters.

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://geodeticcegnrspreboard.examzify.com>

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

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