Geodesy Refresher Practice Exam (Sample)

Study Guide

Everything you need from our exam experts!

Sample study guide. For the full version with hundreds of questions, visit: https://geodesyrefresher.examzify.com

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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. **For a first-order geodetic control network, station spacing in traverse should not be less than how many kilometers?**

   A. 5.00 kilometers

   B. 7.50 kilometers

   C. 12.00 kilometers

   D. 10.00 kilometers

2. **Normal sections can be used to characterize the curvature of a surface at a point.**

   A. True

   B. False

   C. They can be used to characterize curvature, though not in all directions

   D. They only exist on cylindrical surfaces

3. **Which term describes the equipotential surface oceans would align with under gravity and rotation?**

   A. Geoid

   B. Topographic surface

   C. Bathymetric surface

   D. Ocean surface

4. **What is the minimum triangulation station spacing for a third-order network consisting of class I and II?**

   A. 0.50 km

   B. 5.00 km

   C. 10.00 km

   D. 15.00 km

5. **Which procedure would NOT be executed by the GPS control segment?**

   A. Generating precise ephemeris data to the user community

   B. Uploading satellite clock corrections

   C. Providing precise ephemeris data to the user community

   D. Monitoring satellite health

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6. For first-order triangulation, the strength of figure R (between bases) should not exceed which value?

A. 25

B. 15

C. 20

D. 30

7. Approximately how much do Block II GPS satellites weigh in final orbit?

A. 1000 kg

B. 350 kg

C. 500 kg

D. 845 kg

8. In celestial coordinates, the angular distance north or south of the celestial equator is called the _____.

A. latitude

B. longitude

C. declination

D. altitude

9. Who suggested that the Earth is spherical on the basis that the sphere is a perfect shape, not from observations?

A. Pythagoras

B. Aristotle

C. Eratosthenes

D. Newton

10. In third-order, class II geodetic control, the maximum triangle closure should not exceed how many arcseconds?

A. 3 arcseconds

B. 5 arcseconds

C. 10 arcseconds

D. 1 arcsecond

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Answers

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

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Explanations

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1. For a first-order geodetic control network, station spacing in traverse should not be less than how many kilometers?

A. 5.00 kilometers

B. 7.50 kilometers

C. 12.00 kilometers

D. 10.00 kilometers

In a first-order geodetic control network, the strength and reliability of the traverse depend on the geometry created by how stations are spaced. If stations are too close together, the lines become short and the network geometry can become weakly conditioned, with directions clustering and less leverage to constrain the unknown coordinates. That makes the adjustment more sensitive to measurement errors and harder to tie the network to a stable reference frame. Setting a practical minimum spacing—about 10 kilometers—gives longer, better-distributed baselines and diverse directions, which improves the conditioning of the least-squares adjustment and helps distribute observational errors more evenly across the network. This balance keeps the network accurate without adding unnecessary redundancy or cost. Therefore, the recommended minimum is 10 kilometers.

2. Normal sections can be used to characterize the curvature of a surface at a point.

A. True

B. False

C. They can be used to characterize curvature, though not in all directions

D. They only exist on cylindrical surfaces

A normal section is formed by slicing the surface with a plane that contains the surface normal at the point. The curvature of that intersection curve at the point equals the normal curvature of the surface in the tangent direction of that curve. By rotating the slicing plane around the normal, you obtain normal sections in all possible directions in the tangent plane, so you can read off the normal curvature for any direction. However, a single normal section only gives curvature in one direction; to know curvature in all directions you need the full family of normal sections. The principal curvatures arise as the maximum and minimum normal curvatures among those directions.

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3. Which term describes the equipotential surface oceans would align with under gravity and rotation?

A. Geoid

B. Topographic surface

C. Bathymetric surface

D. Ocean surface

An equipotential surface of gravity plus the centrifugal potential from Earth's rotation is what the oceans would align with when water is in equilibrium. Water seeks a level surface where the total potential energy is the same everywhere, so the free surface of the ocean conforms to a constant potential. This surface, extended across the globe and through the continents, is defined as the geoid. It essentially represents mean sea level and serves as the reference surface for vertical measurements. While the actual ocean surface varies locally due to tides, winds, and currents, the geoid is the smooth, underlying shape that the oceans would follow in the absence of dynamic effects. The other terms refer to physical topography or the actual water surface, not the constant-potential surface that the oceans would align with.

4. What is the minimum triangulation station spacing for a third-order network consisting of class I and II?

A. 0.50 km

B. 5.00 km

C. 10.00 km

D. 15.00 km

Triangulation station spacing is about balancing the geometry of the network with the precision of angle measurements. In a third-order network using class I and II stations, the spacing should be just enough to keep the triangles well conditioned while not demanding impractical density. About five kilometers between stations hits that balance: it's small enough to maintain good angular accuracy for the network's scale and instrument capabilities, yet not so dense as to be unnecessarily costly for a third-order network. Spacing much smaller, like half a kilometer, would be overly dense for this order, while spacing much larger, such as ten or fifteen kilometers, would risk degrading the network's overall accuracy for these classes.

5. Which procedure would NOT be executed by the GPS control segment?

A. Generating precise ephemeris data to the user community

B. Uploading satellite clock corrections

C. Providing precise ephemeris data to the user community

D. Monitoring satellite health

The GPS control segment's job is to keep the system accurate and reliable by generating the navigation data that satellites broadcast (including ephemeris) and by uploading satellite clock corrections, as well as monitoring satellite health. It does not directly hand out precise ephemeris data to end users; such precise orbit data are produced by separate analysis centers and distributed to users through different channels, not by the control segment itself. So providing precise ephemeris data to the user community is not a function of the GPS control segment.

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6. For first-order triangulation, the strength of figure R (between bases) should not exceed which value?

A. 25

B. 15

C. 20

D. 30

In triangulation, the figure strength between bases measures how well the geometry can carry and limit errors during adjustment. For first-order work, you want that geometry to be robust enough to prevent excessive error transfer, so the maximum allowable strength between the bases is set at 25. Keeping figure R at or below this value ensures the network remains well-conditioned and within the first-order accuracy requirements. If the strength were higher, errors could propagate more freely and degrade accuracy; the other numbers either impose too strict or different-order criteria, so they don't apply to this specific first-order between-bases situation.

7. Approximately how much do Block II GPS satellites weigh in final orbit?

A. 1000 kg

B. 350 kg

C. 500 kg

D. 845 kg

Block II GPS satellites have a relatively compact bus, and their on-orbit mass after deployment is around 845 kilograms. This reflects the mass that remains aboard once the satellite reaches its final orbit and uses some propellant for maneuvers, leaving roughly eight to nine hundred kilograms on orbit. The other options are either noticeably lighter or heavier than the documented on-orbit mass for this satellite class, so 845 kg best matches the actual payload and propulsion mass retained in final orbit.

8. In celestial coordinates, the angular distance north or south of the celestial equator is called the _____.

A. latitude

B. longitude

C. declination

D. altitude

Declination is the angular distance north or south of the celestial equator in the celestial coordinate system. It mirrors latitude on the sky, measured in degrees with 0° at the celestial equator, +90° at the north celestial pole, and -90° at the south celestial pole. The celestial equator is the projection of Earth's equator onto the celestial sphere. Altitude is the height above the horizon (observer-dependent), and longitude (in celestial terms) corresponds to right ascension along the equatorial plane, not north-south position. So the term for this north-south distance is declination.

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9. Who suggested that the Earth is spherical on the basis that the sphere is a perfect shape, not from observations?

A. Pythagoras

B. Aristotle

C. Eratosthenes

D. Newton

This question tests the idea that the belief in a spherical Earth can come from a philosophical sense that a sphere is the most perfect form, rather than from measurements or observations. Pythagoras and his followers argued that the sphere embodies harmony and perfection, and this view extended to the cosmos, with the Earth (and the heavens) being described as spherical because that shape was considered the ideal. That explains why the suggestion attributing a spherical Earth to the perfection of the sphere fits with Pythagorean thinking. By contrast, later figures grounded their ideas in observation: Aristotle used observable phenomena like the way ships disappear hull-first over the horizon and lunar eclipses as evidence; Eratosthenes measured shadows at different places to estimate Earth's size; Newton offered a physical explanation in terms of gravity shaping bodies into round forms. So the reasoning tied to the sphere's perfection points to Pythagoras as the source.

10. In third-order, class II geodetic control, the maximum triangle closure should not exceed how many arcseconds?

A. 3 arcseconds

B. 5 arcseconds

C. 10 arcseconds

D. 1 arcsecond

Triangle closure is about how well the measured interior angles around a triangle of control points add up to 180 degrees. Because observations have errors, the sum often deviates a little, and that deviation is expressed in arcseconds as the triangle misclosure. For a third-order, class II geodetic control network, this misclosure is allowed to be up to ten arcseconds per triangle. This threshold strikes a practical balance: it accommodates typical observational precision while keeping the network consistent enough for reliable coordinates. Making the limit much tighter would push you toward higher-order control or require much more effort, whereas ten arcseconds provides a reasonable tolerance for this class of network. Therefore, the maximum allowed triangle closure is ten arcseconds.

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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://geodesyrefresher.examzify.com

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

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