ARIZONA STATE UNIVERSITY (ASU) GIS205 GEOGRAPHIC INFORMATION SCIENCE I FINAL PRACTICE EXAM (SAMPLE)

STUDY GUIDE



SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

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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. Which segment of GPS deals with broadcasts from space?

A. Control Segment

B. User Segment

C. Space Segment

D. Signal Segment

2. What does 3D trilateration determine about a location?

A. Location's altitude only

B. Location on Earth's surface based on three satellites

C. Distance to the nearest satellite only

D. Geometric mean of satellite distances

3. What do we call the intentional degradation of GPS signals by the U.S. military?

A. Selective Availability (SA)

B. Multipath error

C. DGPS

D. PDOP

4. What is the main consequence of Rayleigh scattering?

A. It causes light to absorb more energy

B. It affects the color of the sky

C. It enhances thermal radiation

D. It results in a decrease of visible light

5. Which of the following best describes an aerial photo with uniform scale?

A. It has been enhanced for clarity

B. It is known as an orthophoto

C. It is a regular photograph

D. It lacks any color definition

6. Which of the following best describes z-values in a digital terrain model?

A. The graphical representation of temperature variations

B. A numerical value representing elevation

C. Fixed coordinates for urban planning

D. The index values for geographical applications

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7. What role does 'sun azimuth' play in geographic modeling?

A. A value that indicates the Sun's position in the sky

B. A numerical value representing horizontal distances

C. A constant used to denote temperature variations

D. A reflection of moisture levels in the terrain

8. What is an important consequence of multipath error in GPS systems?

A. It enhances signal clarity

B. It leads to inaccurate location readings

C. It improves satellite positioning

D. It reduces signal range

9. What does PDOP stand for in GPS terminology?

A. Position Dilution of Precision

B. Precision Determination of Location

C. Projected Dilution of Position

D. Position Data Optimization Protocol

10. What is the wavelength range of thermal infrared (TIR)?

A. 0.7-1.0 micrometers

B. 1.3-3.0 micrometers

C. 3.0-14.0 micrometers

D. 14.0-30.0 micrometers

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Answers

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

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Explanations

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1. Which segment of GPS deals with broadcasts from space?

A. Control Segment

B. User Segment

C. Space Segment

D. Signal Segment

The space segment of GPS is essential because it refers to the satellites that orbit the Earth and transmit signals to GPS receivers on the ground. The satellites in this segment are responsible for providing the precise timing and positioning information necessary for GPS functionality. They continuously broadcast the necessary data, including their location and the precise time the signals were sent, which allows GPS receivers to calculate their own position on Earth. This role is distinct from the control segment, which involves ground stations that monitor and manage the satellites, and the user segment, which pertains to the GPS receivers used by the end-user. The signal segment is not a standard term used in GPS terminology, making it less relevant in this context. Understanding the specific functions of each segment highlights the importance of the space segment in enabling accurate and reliable navigation and positioning services.

2. What does 3D trilateration determine about a location?

A. Location's altitude only

B. Location on Earth's surface based on three satellites

C. Distance to the nearest satellite only

D. Geometric mean of satellite distances

3D trilateration is a method used to determine the precise location of a point in three-dimensional space based on distance measurements from at least three, and preferably four, reference points (usually satellites in the case of GPS). When employing 3D trilateration, the process calculates the intersection of spheres whose radii are determined by the distances to the satellites. In this method, three satellites provide their relative distances to a receiver. The intersection of the spheres created by these distances yields a specific point on the Earth's surface, which includes both the horizontal position (latitude and longitude) and altitude (elevation). Therefore, the location determined by 3D trilateration is not merely the altitude or distance to one satellite but a comprehensive geographic location that accounts for all three dimensions. This choice captures the essence of 3D trilateration perfectly, as the intersection of the data provided by three satellites indeed determines the position on the Earth's surface in a 3D context.

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3. What do we call the intentional degradation of GPS signals by the U.S. military?

A. Selective Availability (SA)

B. Multipath error

C. DGPS

D. PDOP

The intentional degradation of GPS signals by the U.S. military is referred to as Selective Availability (SA). This was a technique used to introduce errors into the GPS signals accessible to civilian users, thereby enhancing the accuracy of GPS for military applications while preventing adversaries from having access to precise location data. By intentionally degrading the GPS signals for unencrypted civilian use, the military could maintain operational security and ensure that critical navigation capabilities were reserved for authorized users. Selective Availability was discontinued in 2000, making civilian GPS signals significantly more accurate and reliable. This change allowed worldwide users to access GPS data with much higher precision and has led to the widespread use of GPS in various applications beyond military purposes, such as within mapping, agriculture, and navigation technologies. The other options refer to different aspects related to GPS but do not pertain to intentional signal degradation. Multipath error involves inaccuracies that occur when GPS signals bounce off objects before reaching the receiver, DGPS (Differential GPS) improves GPS accuracy by using a network of fixed ground-based reference stations, and PDOP (Position Dilution of Precision) refers to a measure of the geometric configuration of the satellites used in GPS, affecting the overall accuracy.

4. What is the main consequence of Rayleigh scattering?

A. It causes light to absorb more energy

B. It affects the color of the sky

C. It enhances thermal radiation

D. It results in a decrease of visible light

Rayleigh scattering is a phenomenon that occurs when light passes through the atmosphere and interacts with small particles, such as gas molecules. The primary consequence of this scattering is its effect on the color of the sky. During the day, when the sun is high in the sky, shorter wavelengths of light, such as blue, are scattered more than longer wavelengths, resulting in a blue sky. Conversely, during sunrise and sunset, the light travels a longer distance through the atmosphere, scattering shorter wavelengths even more and allowing the longer wavelengths, like reds and oranges, to dominate the sky's color. This scattering is critical to our perception of sunlight and atmospheric conditions, affecting how we define and perceive color in the environment. The other choices do not accurately describe the main impact of Rayleigh scattering; they focus on different physical processes or consequences unrelated directly to atmospheric color perception.

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5. Which of the following best describes an aerial photo with uniform scale?

A. It has been enhanced for clarity

B. It is known as an orthophoto

C. It is a regular photograph

D. It lacks any color definition

An aerial photo with uniform scale is best described as an orthophoto because this type of image has been geometrically corrected (orthorectified) to ensure that the scale is consistent across the entire image. This means that distances measured on the photo correspond accurately to true distances on the ground, regardless of variations in terrain or perspective that might distort scale in other types of aerial photographs. This uniformity is crucial for applications in GIS, cartography, and land use planning, as it allows for precise measurements and spatial analysis. Orthophotos retain the details of the imagery while providing a reliable basis for geographic information systems, making them valuable tools in various professional fields. Other options, while potentially related to photography, do not convey the significance of uniform scale in geospatial analysis as effectively as orthophotos do.

6. Which of the following best describes z-values in a digital terrain model?

A. The graphical representation of temperature variations

B. A numerical value representing elevation

C. Fixed coordinates for urban planning

D. The index values for geographical applications

Z-values in a digital terrain model refer to numerical values that represent elevation or height above a reference point, typically sea level. These values are crucial in geospatial analysis as they provide the third dimension in a three-dimensional model, allowing for the representation of terrain relief. This elevation data is essential for various applications, including modeling water flow, analyzing land suitability for construction, and assessing visibility from a given point in geographical studies. The other options do not accurately describe z-values: temperature variations relate more to thermal modeling, urban planning requires a broader set of data beyond fixed coordinates, and index values can denote a variety of data types but don't specifically refer to elevation in a terrain context. Thus, the numerical value representing elevation is the defining characteristic of z-values in a digital terrain model.

7. What role does 'sun azimuth' play in geographic modeling?

A. A value that indicates the Sun's position in the sky

B. A numerical value representing horizontal distances

C. A constant used to denote temperature variations

D. A reflection of moisture levels in the terrain

Sun azimuth is a critical component in geographic modeling as it provides a specific angle that indicates the position of the Sun in relation to an observer's location on the Earth's surface. It is measured in degrees, with 0° representing North, 90° East, 180° South, and 270° West. This information is essential for understanding solar radiation patterns, which can influence various environmental factors. Accurate knowledge of sun azimuth allows researchers and planners to assess solar exposure for building design, agriculture (like crop direction for maximum sunlight), and forestry (determining light availability for growth). Understanding how sunlight interacts with landscapes can also impact climate modeling and habitat suitability assessments. Therefore, sun azimuth serves as a fundamental parameter in geographic analysis and helps inform decisions in numerous fields, from urban planning to environmental management.

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8. What is an important consequence of multipath error in GPS systems?

A. It enhances signal clarity

B. It leads to inaccurate location readings

C. It improves satellite positioning

D. It reduces signal range

Multipath error occurs in GPS systems when satellite signals bounce off surfaces, such as buildings or trees, before they reach the GPS receiver. This phenomenon causes the receiver to calculate its position based on several delayed signals rather than the direct line-of-sight signal, leading to discrepancies. As a result, the location readings are distorted, causing the GPS to report an inaccurate position. This error is particularly problematic in urban environments or areas with smooth reflective surfaces, where signals may take multiple paths to reach the receiver. Understanding multipath error is crucial for accurate GPS measurements, and impacts applications ranging from navigation to precise location tracking.

9. What does PDOP stand for in GPS terminology?

A. Position Dilution of Precision

B. Precision Determination of Location

C. Projected Dilution of Position

D. Position Data Optimization Protocol

PDOP stands for Position Dilution of Precision, which is a key term in GPS technology. It refers to a measure of the effect of satellite geometry on the accuracy of the position solution provided by a GPS receiver. A lower PDOP value indicates that the satellites used for triangulating the position are well spaced apart in the sky, which typically results in a more accurate position fix. This concept is crucial for understanding how satellite configurations can impact the reliability of GPS data, as well as for planning operations that require precise location information. The other options, while sounding plausible in the context of GPS terminology, do not correctly define PDOP. For instance, Precision Determination of Location and Position Data Optimization Protocol do not reflect the specific metrics used in GPS accuracy assessment. Additionally, Projected Dilution of Position is not an established term in GIS or GPS literature, thus making Position Dilution of Precision the only accurate definition among the choices presented.

10. What is the wavelength range of thermal infrared (TIR)?

A. 0.7-1.0 micrometers

B. 1.3-3.0 micrometers

C. 3.0-14.0 micrometers

D. 14.0-30.0 micrometers

The wavelength range of thermal infrared (TIR) radiation encompasses 3.0 to 14.0 micrometers. This range is significant in remote sensing and environmental studies as it corresponds to the energy emitted by objects at typical terrestrial temperatures. In the thermal infrared range, sensors can detect the heat emitted from surfaces, providing insights into land use, vegetation health, soil moisture, and other ecological and atmospheric properties. In remote sensing applications, the ability to capture thermal infrared data enables the identification of heat signatures, which is essential for various analyses such as urban heat island research, agricultural monitoring, and climate change studies. Understanding this specific wavelength range helps in the selection and use of appropriate sensors for capturing thermal data, thus facilitating effective analysis in GIS and environmental science.

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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:

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

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