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.

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

1. Which code is accessible only by the military and is broadcast on the L1 and L2 frequencies?

A. C/A code

B. P code

C. Y code

D. PDOP

2. What is the principle behind across-track scanning?

A. Using a linear array to gather data along the satellite's path

B. Employing a rotating mirror to sweep back and forth across the swath

C. Utilizing multiple wavelength sensors for enhanced data capture

D. Adopting a fixed position imaging strategy

3. Which component describes the network and configuration of satellites in GNSS?

A. Grid

B. System

C. Constellation

D. Framework

4. Non-selective scattering involves scattering caused by what type of particles?

A. Particles smaller than the wavelength

B. Particles the same size as the wavelength

C. Particles larger than the wavelength

D. Electromagnetic waves

5. What is the name of the industry standard data format used for lidar data?

A. 3DEP

B. DGN

C. GeoJSON

D. LAS

6. What does "tone" refer to in visual image interpretation?

A. The process of measuring aerial photos

B. The representation of how sections relate

C. The grayscale levels or intensity of color in an image

D. The arrangement of patterns

7. Which term refers to the center point of an aerial photograph?

A. Principal point

B. Central axis

C. Focus point

D. Reference point

8. A digital surface model is primarily used to represent what?

A. Only ground elevations

B. Only structures on the ground

C. Both ground elevations and objects

D. Imaginary terrain models

9. How many meters does one micrometer represent?

A. One thousandth of a meter

B. One millionth of a meter

C. One hundred millionth of a meter

D. One billionth of a meter

10. What is a collar in the context of topographic maps?

A. A graphic representation of elevation changes

B. The white information-filled border around a topographic map

C. A section of the map with insets for additional information

D. A feature indicating the scale of the map

Answers

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

Explanations

1. Which code is accessible only by the military and is broadcast on the L1 and L2 frequencies?

A. C/A code

B. P code

C. Y code

D. PDOP

The P code, also known as the precise code, is a type of GPS signal that is encrypted and exclusively available to authorized military users. It operates on the L1 and L2 frequencies. The P code provides high-precision positioning information, which is critical for military applications. It allows for greater accuracy and resistance against jamming compared to the civilian code, enabling the military to maintain operational integrity in various environments. The C/A code is the civilian accessible code, which does not offer the same level of precision as the P code. The Y code is another type of encrypted signal primarily used with advanced military GPS receivers but is not universally recognized in the same context as the P code. PDOP, or Position Dilution of Precision, is a measure of the geometrical strength of the GPS satellite configuration and is not a code transmitted by GPS satellites. Thus, the P code is the correct answer regarding a signal exclusive to military use broadcast on the L1 and L2 frequencies.

2. What is the principle behind across-track scanning?

A. Using a linear array to gather data along the satellite's path

B. Employing a rotating mirror to sweep back and forth across the swath

C. Utilizing multiple wavelength sensors for enhanced data capture

D. Adopting a fixed position imaging strategy

The principle behind across-track scanning involves the use of a rotating mirror that sweeps back and forth across the swath being imaged. This technique allows the sensor onboard a satellite to capture data over a wide area while the satellite moves along its orbit. By employing a rotating mirror, the sensor can cover different sections of the ground as it passes overhead, facilitating the collection of imagery from various angles and improving the ability to create a continuous image of the Earth's surface. This method contrasts with other approaches, such as utilizing a linear array to gather data solely along the satellite's path, which would limit the breadth of the imagery. Additionally, across-track scanning does not specifically focus on employing multiple wavelength sensors, which would instead relate to spectral data collection rather than the scanning mechanism itself. Lastly, a fixed position imaging strategy would imply that the sensor does not move to capture data across a wider area, which contradicts the dynamic nature of across-track scanning. Overall, the rotating mirror system is key to enabling comprehensive and versatile data collection in this scanning method.

3. Which component describes the network and configuration of satellites in GNSS?

A. Grid

B. System

C. Constellation

D. Framework

The term that describes the network and configuration of satellites in a Global Navigation Satellite System (GNSS) is "constellation." In a GNSS context, a constellation refers to the specific arrangement and operational satellites that work together to provide comprehensive coverage for positioning, navigation, and timing. Each satellite in the constellation sends signals to receivers on the Earth's surface, allowing for accurate determination of location. The constellation's configuration, including the number of satellites and their orbits, is crucial because it affects the accuracy and reliability of the positioning information provided to users. A well-designed constellation will ensure that at least four satellites are in view from any point on Earth, which is necessary for three-dimensional positioning and precise timing. While the other terms presented may relate to different aspects of navigation or mapping systems, they do not specifically denote the arrangement of satellites. For instance, "system" could refer to the overall GNSS framework but not specifically the satellites alone, and "grid" and "framework" refer to structures or organizational schemes that do not encapsulate the satellite configuration aspect. Thus, "constellation" is the accurate and specific term used in this context.

4. Non-selective scattering involves scattering caused by what type of particles?

A. Particles smaller than the wavelength

B. Particles the same size as the wavelength

C. Particles larger than the wavelength

D. Electromagnetic waves

Non-selective scattering is a phenomenon that occurs when particles are larger than the wavelength of incoming electromagnetic radiation, such as light. This type of scattering happens because the size of the particles significantly influences how they interact with the incoming waves. When particles are larger than the wavelength, they scatter all wavelengths of light rather uniformly, leading to a scattering effect that does not preferentially favor certain wavelengths over others. This is in contrast to selective scattering, which occurs when particles are comparable in size to the wavelength or smaller, resulting in different wavelengths being scattered by different amounts. For example, Rayleigh scattering, which explains why the sky appears blue, happens due to smaller particles and affects shorter wavelengths more than longer ones. In the case of non-selective scattering, such as that produced by large particles (like those found in fog or certain aerosols), the particles will scatter light across the spectrum in a relatively uniform manner, leading to a different visual effect, such as a whitish or gray appearance. This principle is important in various fields, including meteorology and environmental science, as it relates to how different atmospheric conditions influence visibility and color in the environment.

5. What is the name of the industry standard data format used for lidar data?

A. 3DEP

B. DGN

C. GeoJSON

D. LAS

The industry standard data format used for lidar data is known as LAS. This format was developed specifically for the storage and exchange of lidar point cloud data, providing a means to handle large volumes of data that includes elevation points, RGB values, and other attributes. The LAS format facilitates interoperability between different software platforms and enables efficient data processing and analysis in geographic information systems (GIS). Using LAS allows users to preserve the integrity of the lidar data while providing the necessary metadata, which is crucial for applications such as terrain modeling, floodplain analysis, and forestry assessments. Its widespread acceptance across various sectors, including environmental science, urban planning, and resource management, underscores its importance as the go-to format when working with lidar-derived datasets.

6. What does "tone" refer to in visual image interpretation?

A. The process of measuring aerial photos

B. The representation of how sections relate

C. The grayscale levels or intensity of color in an image

D. The arrangement of patterns

In visual image interpretation, "tone" specifically relates to the grayscale levels or intensity of color in an image. Tone describes the brightness or darkness of a particular area and indicates how light or dark a particular pixel or region appears in the image. This aspect is crucial because various tones can help identify different features and structures within the scene being analyzed when interpreting aerial photographs or satellite images. The contrast in tone can reveal boundaries, highlight changes in land cover, or indicate variations in material (for instance, water appears darker than land), which is essential for effective analysis and interpretation in Geographic Information Systems (GIS). Understanding tone allows practitioners to make informed decisions about the characteristics and composition of the landscape being studied based on how the tones interact and differ across the image. This knowledge is fundamental to tasks such as land use classification, environmental monitoring, and urban planning.

7. Which term refers to the center point of an aerial photograph?

A. Principal point

B. Central axis

C. Focus point

D. Reference point

The term that refers to the center point of an aerial photograph is the principal point. The principal point is defined as the point in the photograph that represents the position of the camera's optical center at the time the image was taken. It is crucial in photogrammetry and aerial mapping, as it serves as a reference for measurements and aligns the aerial image with ground control points. The accuracy of various measurements derived from the photograph depends on identifying the principal point correctly. In aerial photography, the principal point is typically located at the intersection of the image's axes. This makes it foundational for creating accurate maps and for processes that rely on the geometric correction of images. The concept is vital for mapping and analysis tasks that involve the extraction of spatial information from aerial imagery.

8. A digital surface model is primarily used to represent what?

A. Only ground elevations

B. Only structures on the ground

C. Both ground elevations and objects

D. Imaginary terrain models

A digital surface model (DSM) is designed to represent both ground elevations and the physical structures found above the ground, such as buildings, trees, and other objects. This comprehensive representation is essential for various applications, including urban planning, forestry, and landscape analysis, as it captures the topography of the land along with the intricate details of the built environment. In contrast to other models, such as a digital terrain model (DTM) which only represents ground elevations without any objects above, the DSM provides a complete view of the surface features. This capability is particularly important for tasks that involve assessing visibility, analyzing solar potential for buildings, or creating 3D visualizations. By including both ground elevations and structures, the DSM serves as a crucial tool in geographic information systems and spatial analysis.

9. How many meters does one micrometer represent?

A. One thousandth of a meter

B. One millionth of a meter

C. One hundred millionth of a meter

D. One billionth of a meter

One micrometer is defined as one millionth of a meter, which is equivalent to \(1 \times 10^{-6}\) meters. This measurement is particularly important in fields such as biology and materials science, where it is commonly used to describe dimensions at the microscale, such as the size of cells or the wavelength of certain types of light. In contrast, the other options reflect different orders of magnitude in the metric system. For instance, one thousandth of a meter refers to a millimeter, one hundred millionth of a meter corresponds to a nanometer, and one billionth of a meter also describes a nanometer, indicating how precise measurements can vary based on the prefixes used in the metric system. Understanding these distinctions is essential for accurately communicating and interpreting measurements in scientific contexts.

10. What is a collar in the context of topographic maps?

A. A graphic representation of elevation changes

B. The white information-filled border around a topographic map

C. A section of the map with insets for additional information

D. A feature indicating the scale of the map

In the context of topographic maps, a collar refers specifically to the white border that surrounds the map. This collar typically contains important information about the map, such as the title, scale, legend, coordinates, and other essential details that provide context and assistance for understanding the geographic area represented. The inclusion of this information is crucial for users to interpret the map accurately and to serve as a quick reference for important features. While the other options relate to elements important in map reading and representation, identifying the collar as the white information-filled border is accurate and highlights its role as a vital component of the overall map layout. The collar enhances usability by ensuring key details are readily accessible, thus improving the user's ability to effectively navigate and analyze the topographic information presented on the map.

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://asu-gis205final.examzify.com

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