Fundamentals of Surveying (FS) Practice Exam (Sample)

Study Guide

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Questions

1. What does unwritten transfer of title to property imply?

- **A. Transfer by a holographic will**
- **B. Transfer of property via an oral agreement**
- **C. Acquisition of title by adverse possession**
- **D. None of the above**

2. What is an easement in property law relevant to surveying?

- **A. A formal plan for land development**
- **B. A document outlining land ownership**
- **C. A legal right to use another person's land for a specific purpose**
- **D. A method of land measurement**

3. Which of the following best describes geodetic surveying?

- **A. It assumes the earth's surface is flat**
- **B. It measures the curvature of the earth for accuracy**
- **C. It is mainly focused on boundary disputes**
- **D. It requires less equipment than plane surveying**

4. What units are commonly used in surveying for measuring distance?

- **A. Kilometers and centimeters**
- **B. Paces and steps**
- **C. Feet and meters**
- **D. Inches and miles**

5. In surveying, which type of error is usually not detected during measurements?

- **A. Systematic error**
- **B. Random error**
- **C. Blunder**
- **D. Percentage error**

6. GPS elevations are referenced to which of the following?

- **A. mean sea level**
- **B. geoid**
- **C. NAVD88**
- **D. ellipsoid**

7. Which of the following calls relates to natural monuments in surveying?

- **A. Artificial markers**
- **B. Distinctive landmarks**
- **C. Course directions**
- **D. Distance measurements**

8. What is an easement?

- **A. Title to surface rights only**
- **B. A lease or "estate for years"**
- **C. A fee simple title**
- **D. The right that the public or an individual has in the lands of another**

9. In a Lambert projection, which lines are equal distance apart?

- **A. Centrals meridians**
- **B. Straight lines**
- **C. Meridians**
- **D. Standard parallels**

10. What term is used for an error that is attributed to a miscalculation by the observer?

- **A. Systematic error**
- **B. Human error**
- **C. Random error**
- **D. Blunder**

Answers

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

Explanations

1. What does unwritten transfer of title to property imply?

A. Transfer by a holographic will

B. Transfer of property via an oral agreement

C. Acquisition of title by adverse possession

D. None of the above

The concept of an unwritten transfer of title to property often relates to the notion of adverse possession. Adverse possession is a legal doctrine that allows a person to claim ownership of land under certain conditions, typically when they have occupied the property for a specific period of time without the permission of the original owner. This can occur even if the transfer of title isn't formalized in writing. For a claim of adverse possession to be valid, the occupying party must usually demonstrate that their possession is actual, open, notorious, exclusive, and continuous for the statutory period defined by state law. If successful, the claimant can gain legal title to the property despite the lack of a written transfer from the original owner, which is why this option accurately reflects the meaning of an unwritten transfer of title. While options referring to a holographic will and oral agreements both involve forms of transfer, they do not align with the concept of "unwritten transfer" in the context of adverse possession. A holographic will is a handwritten document that conveys a person's wishes after death but remains a formal document, and oral agreements lack the legal standing typically required for property transfers. Therefore, the reference to adverse possession stands as the correct interpretation of the unwritten transfer of title.

2. What is an easement in property law relevant to surveying?

A. A formal plan for land development

B. A document outlining land ownership

C. A legal right to use another person's land for a specific purpose

D. A method of land measurement

An easement in property law is indeed defined as a legal right to use another person's land for a specific purpose. This implies that while the land is owned by one party, another party has the right to access it for specific activities, such as utility lines, pathways, or rights-of-way. Easements are important in surveying because they can impact land use, ownership, and the value of the property. For surveyors, understanding the existence and specifics of easements is critical to accurately interpreting property boundaries and legal descriptions. Other options refer to distinct concepts related to property but do not accurately capture the definition of an easement. For example, a formal plan for land development involves the organization and layout of land for building purposes rather than rights of use. A document outlining land ownership pertains to deeds and titles, which specifically convey ownership and do not involve usage rights. Lastly, a method of land measurement relates to the techniques used for determining land areas and distances, which does not address the legal aspects associated with easements. Thus, the correct answer directly reflects the unique legal parameters surrounding easements as they pertain to land use.

3. Which of the following best describes geodetic surveying?

A. It assumes the earth's surface is flat

B. It measures the curvature of the earth for accuracy

C. It is mainly focused on boundary disputes

D. It requires less equipment than plane surveying

Geodetic surveying is a branch of surveying that accounts for the Earth's curvature in its measurements and calculations. This means that it measures and considers the Earth's shape, which is an oblate spheroid, rather than a flat plane. By incorporating the Earth's curvature, geodetic surveying is able to provide more accurate positioning over large areas, which is particularly important for activities such as mapping, navigation, and establishing control networks that span significant distances. This focus on curvature allows surveyors to perform calculations that factor in the Earth's gravitational field and variations in elevation, ensuring precision in large-scale projects. Given the comprehensive nature of geodetic surveying, it utilizes specialized equipment and techniques, including Global Navigation Satellite Systems (GNSS) and advanced mathematical computations, to achieve high accuracy. In contrast to this approach, other methods mentioned in the options do not incorporate the curvature of the Earth, and as such, would not provide the same level of precision for extensive areas.

4. What units are commonly used in surveying for measuring distance?

A. Kilometers and centimeters

B. Paces and steps

C. Feet and meters

D. Inches and miles

In surveying, distance measurement units are crucial for accuracy and consistency across various applications. Feet and meters are widely used because they represent both imperial and metric systems, allowing surveyors to work in a variety of contexts depending on regional preferences or project requirements. The use of feet is standard in the United States for many types of surveying practices, while meters are the international standard in most other countries. This duality makes it convenient for surveyors to collaborate in a global setting, as they can easily convert between the two systems when necessary. Additionally, using these units provides a convenient range for measuring land areas, building dimensions, and other distances typically encountered in surveying tasks. Other options, while they incorporate distance measurements, are less common or not standardized in professional surveying practice. Kilometers and centimeters, for example, are not as practical for typical land surveying measurements due to their scale in relation to project scopes. Paces and steps are subjective and can vary significantly between individuals, making them unreliable. Lastly, inches and miles, while they are units of length, are less frequently utilized together in surveying contexts as they can complicate calculations and conversions.

5. In surveying, which type of error is usually not detected during measurements?

A. Systematic error

B. Random error

C. Blunder

D. Percentage error

In surveying, systematic errors are typically not detected during measurements because they consistently occur in the same direction and magnitude. These errors arise from flaws in the measuring instruments, environmental factors, or incorrect measurement techniques that remain constant throughout the survey process. Since they are predictable and repeatable, systematic errors can often go unnoticed unless a thorough analysis or calibration process is conducted to identify discrepancies. Unlike random errors, which fluctuate unpredictably and may cancel each other out over multiple measurements, systematic errors bias the entire set of data in a consistent manner. Blunders are typically large mistakes made during the measurement process and are usually easy to detect due to their significant impact on the results. Percentage error is a way to express the accuracy of a measurement but does not represent a type of error in the same way that the others do. Hence, systematic errors can persist undetected over time, which can lead to a cumulative impact on the survey results if not addressed.

6. GPS elevations are referenced to which of the following?

A. mean sea level

B. geoid

C. NAVD88

D. ellipsoid

GPS elevations are referenced to an ellipsoid, which is a mathematically defined surface that approximates the shape of the Earth. The ellipsoid provides a consistent frame of reference for positioning data acquired through GPS technology. When GPS calculates elevation, it does so in relation to this ellipsoidal model rather than a physical surface such as mean sea level or the geoid. Using the ellipsoid provides several advantages in GPS technology, including allowing for a more uniform approach to measuring positions across diverse geographical areas. The other options, while relevant in the context of elevation reference systems, do not serve as the primary reference for GPS measurements. They may be used in various conversions and applications but the GPS height is fundamentally tied to the ellipsoidal model.

7. Which of the following calls relates to natural monuments in surveying?

A. Artificial markers

B. Distinctive landmarks

C. Course directions

D. Distance measurements

The correct answer, which relates to natural monuments in surveying, is distinctive landmarks. Natural monuments refer to physical features in the landscape that are used to define property boundaries or to aid in surveying. These can include large trees, rock formations, rivers, and other notable geographic features that are easily identifiable and relatively permanent. Distinctive landmarks serve a similar purpose in that they provide recognizable references that can be used to mark or describe locations on a survey. In contrast, artificial markers are human-made objects, such as stakes or posts, that are also used to define boundaries but do not align with the concept of natural monuments. Course directions pertain to the orientation and alignment of the survey, which is a separate aspect of the surveying process rather than a physical reference marker. Lastly, distance measurements involve the quantification of space between points but do not specifically relate to natural features or monuments. Thus, the choice of distinctive landmarks aligns closely with the definition and role of natural monuments in surveying practices.

8. What is an easement?

A. Title to surface rights only

B. A lease or "estate for years"

C. A fee simple title

D. The right that the public or an individual has in the lands of another

An easement is defined as the right that the public or an individual has to use the lands of another for a specific purpose. This means that an easement grants someone the legal right to use a portion of another person's property without owning it, while the property owner retains ownership and certain rights over their land. Common examples include utility easements allowing companies to install power lines or pipelines across private property or access easements that allow individuals to cross someone else's land to reach their own property. This option accurately reflects the nature of an easement, which fundamentally serves as a limited right that can benefit either specific individuals or the general public, rather than transferring ownership or title to the property itself.

9. In a Lambert projection, which lines are equal distance apart?

A. Centrals meridians

B. Straight lines

C. Meridians

D. Standard parallels

In a Lambert projection, the lines that are equal distance apart are the standard parallels. A Lambert projection, particularly the Lambert conformal conic projection, preserves angles, which is crucial for navigation and aeronautical charts. The standard parallels are the lines of latitude where the scale of the map is true, meaning there is no distortion at those lines. These parallels are equally spaced, illustrating the principle of preserving distances along these specific lines on the projection. In contrast, central meridians do not maintain a uniform distance from one another across the map; they converge toward the poles. While straight lines may geometrically appear equal in some instances, they do not represent true distances on the globe or the projection itself. Meridians also do not remain equal distance apart as they converge toward the poles, leading to increased spacing as you move away from the equator. Thus, standard parallels are the features that maintain equal spacing in a Lambert projection, making them the correct response in this context.

10. What term is used for an error that is attributed to a miscalculation by the observer?

A. Systematic error

B. Human error

C. Random error

D. Blunder

The term for an error that arises due to a miscalculation by the observer is known as a blunder. Blunders are typically significant mistakes resulting from carelessness, misreading, or misinterpretation of data, often leading to substantial discrepancies in measurement or results. Blunders differ from systematic errors, which are consistent inaccuracies that occur due to flaws in the measurement process or instruments, and from random errors, which are unpredictable variations that can occur within the measurement process. Human error may encompass a broader range of mistakes, including both blunders and systematic or random errors that involve human judgment or technique. Identifying blunders is crucial in surveying because they can drastically affect the accuracy and reliability of the results, emphasizing the importance of precision and attention to detail in the field.