Certified Survey Technician Level 1 Practice Exam (Sample)

Study Guide

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Questions

1. How can you translate 27.2292 into degrees-minutes-seconds?

- **A. 27 degrees 15' 30"**
- **B. 27 degrees 13' 45"**
- **C. 27 degrees 12' 33"**
- **D. 27 degrees 14' 50"**

2. Who holds the responsibility for individual safety on a job site?

- **A. The safety officer**
- **B. Each individual**
- **C. The project manager**
- **D. Safety committee**

3. What should you do if you detect that your instrument has a collimation error?

- **A. Adjust the instrument yourself**
- **B. Take to repairman**
- **C. Ignore the error**
- **D. Calibrate the instrument**

4. Which of the following is not an element of a horizontal curve?

- **A. Long Chord**
- **B. Length**
- **C. Radius**
- **D. Slope**

5. When using a plumb bob in a slight wind, you should...

- **A. Let it hang freely**
- **B. Stabilize it with your hand**
- **C. Bounce the plumb bob lightly on the point**
- **D. Wait for calm conditions**

6. What is one impact of magnetic declination on surveying?

A. It affects the overall elevation record

B. It influences compass accuracy

C. It determines the legal boundaries

D. It has no significant impact at all

7. What is the best pencil hardness to use while taking field notes?

A. HB

B. 2B

C. 3H

D. 4H

8. What is considered the worst type of burn?

A. First-degree burn

B. Second-degree burn

C. Third-degree burn

D. Electrical burn

9. What is a critical factor in obtaining an accurate compass reading?

A. Weather conditions

B. Magnetic declination

C. The age of the compass

D. The duration of measurement

10. Which statement is true concerning the storage of pressurized paint cans?

A. Always store spray cans with the nozzle removed

B. Store spray cans at a temperature lower than 90 degrees

C. Keep paint cans in the passenger compartment of a vehicle

D. Empty cans can be thrown in the regular trash

Answers

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

Explanations

1. How can you translate 27.2292 into degrees-minutes-seconds?

A. 27 degrees 15' 30"

B. 27 degrees 13' 45"

C. 27 degrees 12' 33"

D. 27 degrees 14' 50"

To convert a decimal degree such as 27.2292 into degrees-minutes-seconds, the process involves separating the whole number from the decimal portion. First, take the integer part of the number, which is 27 degrees. Next, to find the minutes, you will take the decimal portion (0.2292) and multiply it by 60, since there are 60 minutes in a degree. Calculating this: 0.2292 * 60 = 13.752. The integer part of this result is 13 minutes. Next, to convert the remaining decimal portion (0.752) into seconds, multiply it by 60 again: 0.752 * 60 = 45.12. The integer part of this result is 45 seconds. Putting it all together, 27.2292 degrees translates to 27 degrees, 13 minutes, and 45 seconds. This corresponds to the choice indicating 27 degrees 13' 45". This outcome validates the conversion process, showing how the decimal degree is accurately represented in the degrees-minutes-seconds format.

2. Who holds the responsibility for individual safety on a job site?

A. The safety officer

B. Each individual

C. The project manager

D. Safety committee

The responsibility for individual safety on a job site rests predominantly with each individual. This principle emphasizes that every worker has a duty to maintain their own safety as well as the safety of those around them. It fosters an environment of personal accountability, encouraging individuals to be aware of their surroundings, use equipment properly, report unsafe conditions, and follow safety protocols at all times. While roles such as safety officers, project managers, and safety committees play crucial roles in establishing safety protocols, conducting training, and overseeing compliance, the ultimate responsibility for personal safety lies with each worker. This is rooted in the understanding that everyone is accountable for their own actions and decisions in relation to health and safety practices in the workplace. When individuals prioritize their safety and that of their coworkers, it enhances overall job site safety, creating a culture where everyone contributes to a safe working environment.

3. What should you do if you detect that your instrument has a collimation error?

A. Adjust the instrument yourself

B. Take to repairman

C. Ignore the error

D. Calibrate the instrument

When a collimation error is detected in surveying instruments, it is essential to address the issue appropriately to ensure precise measurements. Taking the instrument to a repairman is vital because collimation errors can indicate underlying problems that may require professional adjustment or calibration expertise. A repairman has the specialized knowledge and tools necessary to diagnose and resolve such issues, ensuring that the instrument functions correctly. Attempting to adjust the instrument yourself might lead to further inaccuracies or damage, as proper calibration often requires an understanding of the instrument's mechanics and optics. Ignoring the error can result in consistently inaccurate readings, which compromises the integrity of survey data. Calibration, while a necessary routine maintenance task, is generally performed by professionals in cases of detected errors, especially when it pertains to critical aspects like collimation. In summary, the correct action in the presence of a collimation error is to consult a repairman to ensure that the instrument is restored to proper working order.

4. Which of the following is not an element of a horizontal curve?

A. Long Chord

B. Length

C. Radius

D. Slope

In the context of horizontal curves, elements such as long chord, length, and radius are fundamental components that define the curvature of the path. The long chord refers to the straight line connecting the beginning and ending points of the curve, while the length denotes the distance of the curve along its arc. The radius is crucial because it determines the sharpness of the curve—specifically, the distance from the center of the curve to any point on its arc. In contrast, slope does not pertain to the geometric characteristics of a horizontal curve. Slope typically refers to the inclination of a surface or line in relation to a horizontal plane, which is more relevant to vertical alignment rather than horizontal curvature. Therefore, identifying slope as not being an element of a horizontal curve is accurate, as the other three elements directly influence the curve's geometry and navigation.

5. When using a plumb bob in a slight wind, you should...

A. Let it hang freely

B. Stabilize it with your hand

C. Bounce the plumb bob lightly on the point

D. Wait for calm conditions

The most effective approach when using a plumb bob in a slight wind is to let the tool hang freely. This allows the plumb bob to find its true vertical alignment according to the gravitational pull. If you attempt to stabilize it with your hand or wait for calm conditions, you may inadvertently introduce inaccuracies, as the plumb bob needs to respond to the forces acting upon it without interference. Allowing it to bounce lightly on the point can help in ensuring direct contact and can help find the vertical alignment more quickly. However, it's crucial to remember that the assignment of the plumb line under wind conditions generally leads to more consistent and precise vertical readings when left to swing freely, as it will naturally settle into the correct position once the wind's influence diminishes.

6. What is one impact of magnetic declination on surveying?

A. It affects the overall elevation record

B. It influences compass accuracy

C. It determines the legal boundaries

D. It has no significant impact at all

Magnetic declination, also known as magnetic variation, is the angle between magnetic north and true north. It plays a significant role in surveying, particularly in how accurately compass measurements can reflect true geographic directions. When using a compass, surveyors rely on it to orient themselves correctly on a given site, which is crucial for measuring angles and distances accurately. If a surveyor does not account for magnetic declination, the compass readings may lead to errors in positioning and alignment, resulting in inaccuracies in the survey data collected. This is particularly important when laying out property boundaries or aligning features on a site plan, where precision is key. While the other choices mention aspects of surveying that are important, they do not directly relate to the effect that magnetic declination has on compass accuracy in navigation and orientation tasks. Therefore, understanding and adjusting for magnetic declination is critical for surveyors to ensure accurate results and reliable data in their work.

7. What is the best pencil hardness to use while taking field notes?

A. HB

B. 2B

C. 3H

D. 4H

Using a pencil with a hardness rating of 3H is advantageous for field notes due to its ability to produce fine, crisp lines that are clear and legible. Harder pencils like 3H maintain a sharp point longer than softer pencils, minimizing the need for frequent sharpening, which is particularly useful in field conditions where tools may be limited, and environmental factors might affect the writing instrument's performance. Furthermore, the 3H pencil creates marks that are less likely to smudge or smear when exposed to moisture or rubbing against other materials, which is important in outdoor settings. The durability and permanence of the markings made with a harder pencil are essential for ensuring that field notes remain readable and intact for future reference. In contrast, softer pencils, such as 2B, while offering darker lines, tend to wear down quicker and can produce marks that are less resistant to environmental conditions. Pencils like 4H and higher, while providing even harder leads, may produce very faint marks that could be difficult to read. Thus, the balance offered by the 3H hardness provides the necessary clarity and durability desired in surveying field notes.

8. What is considered the worst type of burn?

A. First-degree burn

B. Second-degree burn

C. Third-degree burn

D. Electrical burn

A third-degree burn is considered the worst type of burn because it affects all layers of the skin, including the epidermis, dermis, and subcutaneous tissue. This type of burn can lead to severe damage, including the destruction of nerve endings, which may result in reduced sensation in the affected area. Due to the extent of injury, third-degree burns often require medical intervention such as skin grafting and have a higher risk of complications and infections compared to first and second-degree burns, which are less severe and more superficial. Additionally, third-degree burns can take a longer time to heal and may result in significant scarring, affecting the patient's quality of life. Understanding the classifications of burns is crucial for assessing the severity and determining the appropriate treatment.

9. What is a critical factor in obtaining an accurate compass reading?

A. Weather conditions

B. Magnetic declination

C. The age of the compass

D. The duration of measurement

Magnetic declination is a critical factor in obtaining an accurate compass reading because it refers to the angle between magnetic north (the direction the compass points) and true north (the geographical north pole). This angle varies depending on where you are located on the Earth's surface and can change over time due to fluctuations in the Earth's magnetic field. When taking compass readings, especially in navigation and surveying, it is essential to apply the correct magnetic declination adjustment. Failure to account for this declination can lead to significant errors in direction, which can affect the accuracy of surveys or navigation. Therefore, understanding and applying the appropriate magnetic declination is vital for ensuring the reliability of compass readings. While other factors like weather conditions, the age of the compass, and the duration of measurement may influence the compass performance or the accuracy of the method used, none is as essential for correcting the compass reading as magnetic declination, which directly impacts the alignment between the compass reading and true geographic references.

10. Which statement is true concerning the storage of pressurized paint cans?

A. Always store spray cans with the nozzle removed

B. Store spray cans at a temperature lower than 90 degrees

C. Keep paint cans in the passenger compartment of a vehicle

D. Empty cans can be thrown in the regular trash

The statement regarding storing pressurized paint cans with the nozzle removed is correct because removing the nozzle helps to prevent accidental discharge and reduces the risk of the can leaking or becoming damaged. Pressurized containers can be hazardous if not stored properly, and keeping them securely stored minimizes potential dangers such as explosions or spills. The other options present practices that are generally not recommended. For instance, while it is important to store spray cans at a safe temperature, storing them above certain temperature thresholds can still pose risks, making option about temperature not entirely appropriate as a safe practice standard. Keeping paint cans in the passenger compartment of a vehicle is particularly hazardous since fluctuations in temperature and movement can pose risks. Similarly, empty pressurized cans should not be discarded in regular trash as they can still pose a hazard and should be disposed of according to local hazardous waste regulations.