

NICET - Highway Construction Inspection Practice Exam (Sample)

Study Guide



Everything you need from our exam experts!

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SAMPLE

Questions

- 1. Which sheet provides detail on material specifications?**
 - A. Cross-section sheets**
 - B. Typical section sheets**
 - C. Profile sheets**
 - D. Plan or key sheets**
- 2. What aspect of positioning does geodetic surveying focus on?**
 - A. Detailed local measurements**
 - B. Relative positions of widely spaced points**
 - C. Elevation of hills and valleys**
 - D. Boundary locations**
- 3. What effect does temperature have on the measurement of a steel tape?**
 - A. Increases accuracy**
 - B. Causes the tape to elongate**
 - C. Shortens the tape's measured length**
 - D. Has no effect**
- 4. What is the term for previously established elevation points in surveying?**
 - A. Bench Marks**
 - B. Reference Points**
 - C. Measuring Rods**
 - D. Survey Control**
- 5. What is one of the main uses of levels in surveying?**
 - A. Checking the time of day**
 - B. Setting slope stakes**
 - C. Measuring temperature**
 - D. Determining soil types**

- 6. What is the primary purpose of using dust palliative in a grading project?**
- A. To enhance the aesthetic appeal of the site**
 - B. To reduce the amount of dust generated from construction activities**
 - C. To improve soil compaction**
 - D. To increase the speed of construction**
- 7. What is generally not a use of levels in surveying?**
- A. Check level of forms**
 - B. Determine site elevations**
 - C. Measure temperature**
 - D. Set slope stakes**
- 8. Which formula represents the volume of a sphere?**
- A. $(4/3)\pi r^3$**
 - B. $\pi r^2 h$**
 - C. $(1/2)\pi r^2$**
 - D. $3\pi r^2$**
- 9. How should a concrete pipe be placed to ensure proper water flow?**
- A. With the spigot end facing upstream**
 - B. With the bell end facing upstream**
 - C. Randomly, since water will flow either way**
 - D. End to end without consideration of direction**
- 10. Which of the following best describes 'sag' in measurements?**
- A. Excessive pull on the tape**
 - B. A natural curve in the tape due to weight**
 - C. Measurement taken at too steep an angle**
 - D. A slackness in the tape from the ground position**

Answers

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

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Explanations

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1. Which sheet provides detail on material specifications?

- A. Cross-section sheets
- B. Typical section sheets
- C. Profile sheets
- D. Plan or key sheets**

The plan or key sheets are essential in construction documents because they typically provide critical information on material specifications. These sheets serve as a roadmap for the project, detailing key aspects including materials, designs, and specific construction methods. They often summarize specifications and highlight the standards that must be adhered to throughout the construction process. Cross-section sheets illustrate the structure's depth and the relationship between various elements at a certain point but do not usually contain detailed material specifications. Typical section sheets show standard configurations for components but are more focused on representing common elements rather than specifying materials. Profile sheets display the vertical alignment and elevation changes along a roadway but do not convey material specifications. Thus, plan or key sheets are the most comprehensive source for understanding what materials need to be used in a given project, making them vital for ensuring compliance with project standards and specifications.

2. What aspect of positioning does geodetic surveying focus on?

- A. Detailed local measurements
- B. Relative positions of widely spaced points**
- C. Elevation of hills and valleys
- D. Boundary locations

Geodetic surveying primarily concentrates on measuring the relative positions of widely spaced points on the Earth's surface. This branch of surveying takes into account the curvature of the Earth and is critical for establishing control networks that cover larger areas, which are essential for various applications, including mapping, land development, and navigation. In geodetic surveying, techniques such as GPS and triangulation are utilized to determine not only horizontal positions but also vertical positions with a high degree of accuracy over long distances. This aspect is vital for ensuring that data collected from different geographic locations can be integrated coherently. The focus on relative positions allows for the creation of a comprehensive framework that supports various engineering and construction projects, ensuring that measurements are consistent and reliable across different regions. Other options like detailed local measurements, elevation of hills and valleys, and boundary locations relate to more specific or localized surveying practices, where the precision of local features may not address the broader implications that geodetic surveying covers. Consequently, the emphasis on the relative positions of broadly spaced points is what sets geodetic surveying apart within the field.

3. What effect does temperature have on the measurement of a steel tape?

- A. Increases accuracy**
- B. Causes the tape to elongate**
- C. Shortens the tape's measured length**
- D. Has no effect**

The measurement of a steel tape is affected by temperature primarily because materials tend to expand when heated and contract when cooled. When a steel tape is subjected to higher temperatures, it will elongate, causing the measured length to appear longer than it actually is if not properly corrected for temperature changes. Conversely, at lower temperatures, the tape contracts, potentially leading to shorter measurements than the actual distance. Understanding this thermal expansion is critical for achieving accurate measurements in construction and engineering applications. It's important for inspectors and surveyors to account for temperature when using steel tapes to ensure the integrity of their measurements, especially over long distances or in varying weather conditions. For these reasons, the correct answer highlights the elongation caused by temperature variations, emphasizing how temperature can impact the accuracy of measurements by altering the physical dimensions of the material being used.

4. What is the term for previously established elevation points in surveying?

- A. Bench Marks**
- B. Reference Points**
- C. Measuring Rods**
- D. Survey Control**

The term for previously established elevation points in surveying is "bench marks." Bench marks are specific locations where the elevation has been accurately measured and recorded, serving as a point of reference for future surveying activities. These points are crucial in establishing control for leveling work, providing a means to ensure consistency and accuracy in elevation measurements across different surveying tasks. Bench marks are typically marked on a durable material, such as concrete or metal, and they are distributed across the landscape to create a reliable framework for various project needs, including construction, engineering, and geographic mapping. Their use allows surveyors and engineers to relate other measurements back to a known, fixed elevation, which is essential for the design and construction of infrastructure like roads, bridges, and buildings.

5. What is one of the main uses of levels in surveying?

- A. Checking the time of day
- B. Setting slope stakes**
- C. Measuring temperature
- D. Determining soil types

Levels are primarily used in surveying to determine horizontal and vertical positioning on the construction site. One of the main applications of this tool is setting slope stakes, which involves establishing accurate grades and slopes for construction projects. In highway construction, for instance, levels help in defining the appropriate elevation and incline for roadways, ensuring that water drains properly and that the surface is safe for vehicle operation. By utilizing leveling instruments, surveyors can place stakes at needed intervals to guide construction activities, maintaining the designed slope of the land. Other options mentioned do not align with the fundamental functions of surveying levels. Checking the time of day, measuring temperature, and determining soil types fall outside the purview of focusing on horizontal and vertical angles, thus further clarifying that setting slope stakes is the correct and relevant application of levels in surveying.

6. What is the primary purpose of using dust palliative in a grading project?

- A. To enhance the aesthetic appeal of the site
- B. To reduce the amount of dust generated from construction activities**
- C. To improve soil compaction
- D. To increase the speed of construction

The primary purpose of using dust palliative in a grading project is to reduce the amount of dust generated from construction activities. This is crucial not only for environmental reasons but also for health and safety considerations. Exposure to dust can affect the respiratory system of workers and nearby communities, so minimizing dust generation helps to create a safer and more compliant construction site. Additionally, managing dust can help meet regulatory requirements and prevent potential fines or work stoppages associated with excessive dust emissions. Overall, using dust palliatives contributes to a more sustainable approach to grading operations.

7. What is generally not a use of levels in surveying?

- A. Check level of forms
- B. Determine site elevations
- C. Measure temperature**
- D. Set slope stakes

In surveying, levels are primarily used for tasks that involve determining and comparing heights or elevations in relation to a reference point. The correct choice highlights that measuring temperature is not a function of survey levels. Levels are specifically designed to establish a horizontal plane or measure vertical differences, making them suitable for applications like checking the level of forms, determining site elevations, and setting slope stakes. While temperature can affect materials and construction processes, it falls outside the scope of leveling tools, which are fundamentally aimed at assessing physical measurements of height and alignment rather than environmental factors like temperature. Thus, the focus of levels is concentrated on geometric relationships rather than thermal measurements.

8. Which formula represents the volume of a sphere?

- A. $(4/3)\pi r^3$**
- B. $\pi r^2 h$**
- C. $(1/2)\pi r^2$**
- D. $3\pi r^2$**

The formula for the volume of a sphere is represented as $(4/3)\pi r^3$, where r denotes the radius of the sphere. This formula derives from integral calculus, where it can be shown that by revolving a semicircle around its diameter, the resulting solid is a sphere, and its volume can be calculated using this specific relationship. The reason this formula accurately represents the volume is tied to the concept of cubic measurement, as volume is quantified in cubic units. The radius cubed, multiplied by the constant $(4/3)$ and π , takes into account the three-dimensional space occupied by the sphere. Other formulas listed relate to different geometric shapes or dimensions. For instance, $\pi r^2 h$ refers to the volume of a cylinder, since it incorporates both the base area (πr^2) and height (h). The formula $(1/2)\pi r^2$ doesn't correspond to the volume of any three-dimensional object, as it resembles the area of a semicircle, while $3\pi r^2$ is actually the surface area of a sphere, representing only the outer surface rather than the space contained within. Thus, $(4/3)\pi r^3$ is uniquely suited to express the volume of a sphere.

9. How should a concrete pipe be placed to ensure proper water flow?

- A. With the spigot end facing upstream**
- B. With the bell end facing upstream**
- C. Randomly, since water will flow either way**
- D. End to end without consideration of direction**

Placing a concrete pipe with the bell end facing upstream is crucial for ensuring proper water flow and maintaining the pipe's structural integrity. The bell end of the pipe is designed to receive the spigot end of the adjacent pipe, creating a watertight joint that helps prevent leaks and enhances the efficiency of water conveyance. When water flows through a pipe system, it naturally seeks the path of least resistance; thus, properly aligning the bell end in the direction of flow minimizes turbulence and potential blockages. If the pipe were placed with the spigot end facing upstream, it could result in improper installation, leading to potential structural damage at the joint and increased risks of leakage. Additionally, placing the pipe randomly or allowing for unrestricted flow direction would not take advantage of the designed features of the pipe, undermining the overall effectiveness of the drainage or conveyance system. Proper installation according to design specifications is essential for optimal performance in any drainage or sewer system.

10. Which of the following best describes 'sag' in measurements?

A. Excessive pull on the tape

B. A natural curve in the tape due to weight

C. Measurement taken at too steep an angle

D. A slackness in the tape from the ground position

The term 'sag' in the context of measurements refers to the natural curve that occurs in a tape measure or surveying tape due to its weight. When a tape is suspended between two points, gravity causes it to bend or curve downward, creating a 'sag.' This phenomenon can affect the accuracy of measurements if not accounted for, as the distance measured along the curved tape does not represent a straight-line distance between the two points. Understanding this is crucial in construction and surveying, as precise measurements are vital for ensuring the integrity of structures and the accuracy of project layouts. Proper techniques, such as holding the tape taut or using leveling instruments, can help mitigate the effects of sag during measurements.