

CWEA Collections Grade 2 Journey/Analyst Practice Test (Sample)

Study Guide



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SAMPLE

Questions

- 1. What is the primary purpose of a traffic control plan?**
 - A. To enhance road aesthetics**
 - B. To manage and direct vehicular traffic**
 - C. To provide emergency services**
 - D. To minimize travel time for drivers**
- 2. Which components are typically included in a collection system maintenance plan?**
 - A. Regular inspections, cleaning schedules, and emergency response protocols**
 - B. Upgrading all equipment to the latest technology**
 - C. Increasing collection fees for residents**
 - D. Reducing the frequency of system checks**
- 3. What is the volume of an upright circular cylinder tank with a diameter of 12 feet when filled to a depth of 8 feet?**
 - A. 904.32 cu ft**
 - B. 500.24 cu ft**
 - C. 1,256.64 cu ft**
 - D. 700.00 cu ft**
- 4. What is the significance of establishing "critical points" in collection systems?**
 - A. To minimize the need for regular inspections**
 - B. To monitor key areas that could affect overall system performance**
 - C. To focus solely on areas with historical issues**
 - D. To provide a backup for equipment monitoring**
- 5. Is vitrified clay pipe considered a rigid type of pipe?**
 - A. True**
 - B. False**
 - C. Only when under pressure**
 - D. Only in cold temperatures**

- 6. If a sewer spill has a flow of 166 gpm for 217 minutes, how is the total spill volume calculated?**
- A. Duration x Flow Rate**
 - B. Flow Rate x Area**
 - C. Area x Volume**
 - D. Duration + Flow Rate**
- 7. Which of the following methods is NOT included in sewer testing methods?**
- A. Air**
 - B. Water**
 - C. Sewage**
 - D. Mandrill**
- 8. What is the minimum design velocity for a sewer meant to be greater than?**
- A. 1 foot per second**
 - B. 2 feet per second**
 - C. 3 feet per second**
 - D. 4 feet per second**
- 9. At a nighttime short-term stationary temporary traffic control zone on a low-speed street, what is the minimum height for traffic cones?**
- A. 20 inches**
 - B. 24 inches**
 - C. 28 inches**
 - D. 30 inches**
- 10. What is an essential quality a collection system operator should possess?**
- A. Excellent communication skills for public relations**
 - B. Problem-solving skills to address operational issues effectively**
 - C. Strong managerial skills for team oversight**
 - D. Financial acumen for budget management**

Answers

SAMPLE

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

SAMPLE

Explanations

1. What is the primary purpose of a traffic control plan?

- A. To enhance road aesthetics
- B. To manage and direct vehicular traffic**
- C. To provide emergency services
- D. To minimize travel time for drivers

The primary purpose of a traffic control plan is to manage and direct vehicular traffic effectively. A well-structured plan ensures the safe movement of vehicles and reduces the potential for accidents in work zones or during special events. It includes strategies for directing drivers, establishing detours, and ensuring compliance with traffic laws, which helps maintain the flow of traffic while also prioritizing the safety of both workers and road users. While aesthetics, emergency services, and minimizing travel time may be considerations in the overall traffic management system, they are not the main objectives of a traffic control plan. The primary focus remains on managing traffic to ensure a safe and efficient roadway environment.

2. Which components are typically included in a collection system maintenance plan?

- A. Regular inspections, cleaning schedules, and emergency response protocols**
- B. Upgrading all equipment to the latest technology
- C. Increasing collection fees for residents
- D. Reducing the frequency of system checks

A collection system maintenance plan is essential for ensuring the reliability and efficiency of the collection system. This often includes several key components, such as regular inspections, which help identify potential issues before they escalate into major problems. Cleaning schedules are vital to prevent blockages and maintain optimal flow within the system. Emergency response protocols are crucial for effectively managing unexpected incidents or failures, thereby minimizing impact and restoring service as quickly as possible. Incorporating these elements into a maintenance plan promotes a proactive approach to system management, emphasizing the importance of routine upkeep and preparedness. This strategic maintenance aids in extending the lifespan of the equipment and ensures compliance with regulatory standards, ultimately serving the community effectively.

3. What is the volume of an upright circular cylinder tank with a diameter of 12 feet when filled to a depth of 8 feet?

- A. 904.32 cu ft**
- B. 500.24 cu ft**
- C. 1,256.64 cu ft**
- D. 700.00 cu ft**

To find the volume of an upright circular cylinder tank, you use the formula for the volume of a cylinder, which is given by: $V = \pi r^2 h$ In this formula, (r) is the radius of the cylinder, (h) is the height (or depth) of the cylinder, and (π) (approximately 3.14159) is a mathematical constant. For the given tank: - The diameter is 12 feet, which means the radius is half of that, so $(r = 12/2 = 6)$ feet. - The depth (or height) to which the tank is filled is 8 feet. Plugging these values into the formula: 1. Calculate the radius squared: $r^2 = 6^2 = 36$ 2. Now use the volume formula: $V = \pi \times 36 \times 8$ 3. Calculate the volume: $V = \pi \times 288$ 4. Using an approximation for (π) : $V \approx 3.14159 \times 288 \approx 904.32$

4. What is the significance of establishing "critical points" in collection systems?

- A. To minimize the need for regular inspections**
- B. To monitor key areas that could affect overall system performance**
- C. To focus solely on areas with historical issues**
- D. To provide a backup for equipment monitoring**

Establishing "critical points" in collection systems is significant because it allows for the monitoring of key areas that can have a substantial impact on the overall performance of the system. These critical points are strategically chosen locations that are essential for ensuring the efficient and effective operation of the collection infrastructure. By focusing monitoring efforts on these areas, operators can quickly identify and address potential problems before they escalate, thereby maintaining system reliability and performance. Monitoring these critical points enables the collection system operators to assess flow rates, detect blockages, monitor for leakage, and evaluate the condition of the infrastructure in real-time or through regular assessments. This proactive approach contributes to preventive maintenance and helps avoid costly repairs and system failures, ensuring that wastewater is collected and transported effectively. The other choices, while related to aspects of system management, do not encapsulate the primary purpose of identifying critical points in the context of maximizing performance monitoring. Establishing critical points is not about minimizing inspections or focusing solely on historical issues; instead, it is about ensuring that crucial areas for performance assessment are prioritized to uphold the integrity and functionality of the entire collection system.

5. Is vitrified clay pipe considered a rigid type of pipe?

A. True

B. False

C. Only when under pressure

D. Only in cold temperatures

Vitrified clay pipe is indeed considered a rigid type of pipe. This classification is based on the material's characteristics and structure. Vitrified clay is produced by firing clay at high temperatures until it becomes glass-like, resulting in a strong and inflexible material. This rigidity plays a crucial role in maintaining the integrity of pipelines, especially in sewer and drainage applications, where the pipes need to withstand soil pressure, external loads, and maintain shape over time. In contrast to other types of pipes that may be flexible or semi-rigid, such as PVC or HDPE, vitrified clay pipes do not deform under typical conditions. This rigidity helps to prevent distortion and cracking, ensuring a reliable and durable pipeline system. Understanding the properties of different types of pipes is vital in pipeline design and installation, and recognizing that vitrified clay is classified rigid due to its physical characteristics is essential in civil engineering and construction practices.

6. If a sewer spill has a flow of 166 gpm for 217 minutes, how is the total spill volume calculated?

A. Duration x Flow Rate

B. Flow Rate x Area

C. Area x Volume

D. Duration + Flow Rate

To calculate the total spill volume from a sewer spill, the correct approach is to multiply the flow rate by the duration of the spill. The flow rate indicates how much liquid is flowing per unit of time, in this case, gallons per minute (gpm). The duration represents the total time over which this flow occurs, expressed in minutes. By multiplying these two values together, you obtain the total volume of liquid spilled over that duration. Thus, in this instance, the volume would be calculated as 166 gpm multiplied by 217 minutes. This method provides a straightforward way to quantify the total amount of fluid that has leaked, which is essential for environmental assessments and response actions. Understanding this formula is crucial in wastewater management, as accurately measuring spill volumes helps in determining the potential impact on the environment and in planning mitigation strategies.

7. Which of the following methods is NOT included in sewer testing methods?

- A. Air**
- B. Water**
- C. Sewage**
- D. Mandrill**

The correct answer is that sewage is not considered a method for sewer testing. In sewer testing, different methods are utilized to evaluate the integrity and performance of sewer systems. Air testing involves introducing air into the sewer piping system to check for leaks, ensuring that all connections and pipes are airtight and can handle the expected pressure. Water testing, on the other hand, uses water to fill the sewer lines to detect any possible leaks or weaknesses in the system; it's a straightforward method that can also provide insights into flow characteristics. Mandrill testing refers to a method using a device that can inspect and analyze the interior condition of the sewers, providing a detailed look at the pipes without needing to physically access them. Sewage itself does not represent a method for testing; rather, it is the substance that the sewer system is designed to transport. In the context of sewer testing, it's crucial to distinguish the types of methods aimed at assessing system performance from the materials or waste that the system handles.

8. What is the minimum design velocity for a sewer meant to be greater than?

- A. 1 foot per second**
- B. 2 feet per second**
- C. 3 feet per second**
- D. 4 feet per second**

The minimum design velocity for a sewer system is typically established to ensure effective self-cleansing of the pipes. A design velocity of 2 feet per second is considered a standard minimum because it is sufficient to prevent the deposition of solids, which can lead to blockages and maintain the flow stability in the sewer system. When the flow velocity is above this threshold, it helps to ensure that waste and debris are effectively carried away, reducing the risk of clogs and backups. This velocity is a balance between being fast enough to keep solids in suspension while also being low enough to minimize excessive wear and noise in the system. Velocities lower than 2 feet per second may not provide adequate self-cleaning, while velocities significantly higher can increase the wear on the pipeline and lead to additional costs related to the infrastructure maintenance. Hence, a design velocity of at least 2 feet per second is established as a best practice in sewer design.

9. At a nighttime short-term stationary temporary traffic control zone on a low-speed street, what is the minimum height for traffic cones?

- A. 20 inches
- B. 24 inches
- C. 28 inches**
- D. 30 inches

The correct answer is that the minimum height for traffic cones in a nighttime short-term stationary temporary traffic control zone on a low-speed street is 28 inches. This height is established to ensure that the cones are clearly visible to motorists in low-light conditions. Traffic cones serve to alert drivers of potential hazards or changes in traffic patterns, and a height of 28 inches strikes a balance between visibility and manageability. Adequate height helps to improve safety by reducing the likelihood of motorists unintentionally colliding with the cones or failing to recognize the traffic control zone. In addition to visibility, the 28-inch specification also aligns with guidelines set forth by various highway safety standards, which recommend specific heights based on different conditions and environments. This is crucial in maintaining safety standards in traffic management and helping to direct vehicle movement effectively.

10. What is an essential quality a collection system operator should possess?

- A. Excellent communication skills for public relations
- B. Problem-solving skills to address operational issues effectively**
- C. Strong managerial skills for team oversight
- D. Financial acumen for budget management

The essential quality of problem-solving skills is crucial for a collection system operator because the role often involves navigating various operational challenges that can arise during the management of wastewater collection processes. Operators must be able to identify potential issues, analyze them quickly, and implement effective solutions to maintain system functionality and efficiency. This capability ensures that they can respond effectively to emergencies, plan preventive measures, and enhance the overall performance of the collection system. While other skills such as communication, managerial abilities, and financial acumen are valuable, they support different aspects of the role rather than directly addressing the immediate technical challenges an operator faces in day-to-day operations. Therefore, being skilled in problem-solving is fundamentally what allows a collection system operator to ensure reliable service and compliance with safety and environmental regulations.