MCC-NH Gas Fitters Practice Exam (Sample)

Study Guide

Everything you need from our exam experts!

Questions

1. **For testing gas piping systems, which volume range requires a minimum testing time of 24 hours?**

   A. Any volume greater than 10 cubic feet

   B. Any residential installation

   C. Any volume less than 10 cubic feet

   D. Only commercial systems over 100 cubic feet

2. **What is the minimum length of unthreaded pipe that must protrude from walls or ceilings?**

   A. 1 inch

   B. 2 inches

   C. 3 inches

   D. 4 inches

3. **Which type of piping requires a special transition fitting as defined in NFPA 54?**

   A. Metal piping

   B. Plastic piping encased in non-pressure-carrying metal pipe

   C. Flexible rubber piping

   D. Composite piping

4. **How many BTUs are approximately contained in 1 cubic foot of LP gas?**

   A. 2,000 BTU

   B. 2,500 BTU

   C. 3,000 BTU

   D. 3,500 BTU

5. **What is the maximum test duration for any gas piping system regardless of its volume?**

   A. 12 hours

   B. 36 hours

   C. 24 hours

   D. 8 hours

6. What is the available supply pressure for designing gas piping systems with the mentioned tables?

A. 4" W.C.

B. 6" W.C.

C. 11" W.C.

D. 15" W.C.

7. A gas piping installation covered by NFPA 54 includes all fixed piping from where to where?

A. From the gas meter to the appliance

B. From the main supply to the utility service

C. From the outlet of the meter set to the appliance

D. From the 1st stage regulator to the gas meter

8. What is the minimum length required for a sediment trap between the tee and the cap?

A. 1 inch

B. 2 inches

C. 3 inches

D. 4 inches

9. What should be done to protect gas piping from external damage when a minimum depth cannot be achieved?

A. Place it under a bridge

B. Run it inside a conduit

C. Cover it with soil

D. Use thicker pipes

10. What is an essential precaution when handling gas leaks?

A. Use of protective gear

B. Immediate ignition of gas

C. Manual valve adjustments

D. Collaborative testing with others

Answers

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

Explanations

1. For testing gas piping systems, which volume range requires a minimum testing time of 24 hours?

A. Any volume greater than 10 cubic feet

B. Any residential installation

C. Any volume less than 10 cubic feet

D. Only commercial systems over 100 cubic feet

The minimum testing time of 24 hours for gas piping systems pertains to larger systems, particularly those with a volume greater than 10 cubic feet. This requirement is in place to ensure safety and reliability in the piping system. Larger systems may retain gas and potentially develop leaks over time, so a longer testing duration is crucial to observe any pressure drop that could indicate a leak. Smaller systems, like those under 10 cubic feet, may not require as extensive testing because they do not hold enough gas to present the same level of risk if a leak were to occur. Residential installations also vary in size, and while they may include larger systems that would fall under the 24-hour testing requirement, there is no blanket requirement for residential installations as a category. Similarly, the emphasis is not solely on commercial systems over 100 cubic feet, as the standard applies to any gas piping system exceeding the specified volume. Therefore, the focus on the volume greater than 10 cubic feet directly correlates to the need for a thorough testing protocol to safeguard against leaks and ensure the integrity of the gas system.

2. What is the minimum length of unthreaded pipe that must protrude from walls or ceilings?

A. 1 inch

B. 2 inches

C. 3 inches

D. 4 inches

The minimum length of unthreaded pipe that must protrude from walls or ceilings is specified to ensure safe and proper installation of gas piping. A protrusion of at least 1 inch is required for several important reasons. This length allows adequate access to the pipe for any necessary fittings or connections without risking damage to the wall or ceiling materials during installation or maintenance. It also serves as a safety feature, providing enough length to prevent any potential issues that may arise during the connection of additional fittings or appliances. This requirement aligns with best practices in gas work, ensuring that installations are not only functional but also adhere to safety standards. In contrast, longer lengths like 2, 3, or 4 inches may exceed typical requirements for most installations, potentially leading to unnecessary challenges in terms of aesthetics and integration within walls or ceilings without adding practical benefits. Therefore, the 1-inch requirement strikes a balance between safety, practicality, and compliance with relevant regulations.

3. Which type of piping requires a special transition fitting as defined in NFPA 54?

A. Metal piping

B. Plastic piping encased in non-pressure-carrying metal pipe

C. Flexible rubber piping

D. Composite piping

The correct answer is that plastic piping encased in non-pressure-carrying metal pipe requires a special transition fitting as defined in NFPA 54. This is because the use of different materials in gas piping systems generally necessitates specific fittings to ensure safe and effective transitions between them. The NFPA (National Fire Protection Association) standards, specifically NFPA 54, outline the requirements for gas installations, including stipulations for transition fittings to address issues such as potential leaks, structural integrity, and compatibility of materials. When moving from plastic to metal, the transition needs to be carefully managed to avoid any vulnerabilities during operation. A special fitting serves to maintain the required strength and sealing capability at the joint, mitigating risks associated with gas leaks or failures in the piping system. In contrast, metal piping does not require a transition fitting as it maintains consistent properties throughout, flexible rubber piping tends to be more suited to specific applications and doesn't typically interact with traditional metallic systems in a way that necessitates a special transition, and composite piping often has its own criteria and does not directly align with the same requirements as plastic encased in metal.

4. How many BTUs are approximately contained in 1 cubic foot of LP gas?

A. 2,000 BTU

B. 2,500 BTU

C. 3,000 BTU

D. 3,500 BTU

When considering the energy content of liquid propane (LP) gas, it is important to understand how to correctly quantify the energy it provides. One cubic foot of LP gas typically contains approximately 2,500 BTUs (British Thermal Units). This measurement provides a useful reference for anyone working with LP gas, whether for heating, cooking, or other applications. Understanding this value is crucial for gas fitters, as it informs decisions regarding system design, appliance selection, and fuel supply management. Recognizing that 2,500 BTUs per cubic foot is a standard approximation helps gas fitters calculate the necessary volume of gas needed for various applications and ensure that appliances are operating efficiently and safely. Calculating energy requirements based on this figure helps in determining fuel consumption rates, which is essential for providing accurate estimates for cost and efficiency in gas systems. This knowledge is foundational for anyone qualified to work with gas appliances and fuel systems.

5. What is the maximum test duration for any gas piping system regardless of its volume?

A. 12 hours

B. 36 hours

C. 24 hours

D. 8 hours

The standard maximum test duration for any gas piping system, regardless of its volume, is established at 24 hours. This time frame allows for adequate monitoring to ensure that the system is airtight and that there are no leaks present. A 24-hour test is considered sufficient to observe any pressure drops that could indicate a leak while also allowing time for any potential pressure equalization to occur. Testing for a shorter duration may not provide enough assurance, as certain small leaks may take time to manifest in noticeable pressure changes. Conversely, extending the test beyond 24 hours may be unnecessary and potentially complicate the inspection process without yielding significant additional assurance of safety or leak-free integrity. Therefore, adhering to the 24-hour guideline is both practical and acknowledges the need for a balance between efficiency and thoroughness in ensuring the safety of gas piping systems.

6. What is the available supply pressure for designing gas piping systems with the mentioned tables?

A. 4" W.C.

B. 6" W.C.

C. 11" W.C.

D. 15" W.C.

The correct choice for the available supply pressure when designing gas piping systems is based on standard practices outlined in relevant codes and guidelines. In this context, 11 inches of water column (W.C.) represents a common supply pressure level for residential and small commercial gas systems. This pressure is sufficient to ensure proper fuel delivery to appliances while maintaining system integrity. Designing with this pressure level allows professionals to calculate the appropriate pipe diameters, fittings, and lengths needed to ensure an efficient gas flow without excessive pressure drops that could affect appliance performance. Using a supply pressure that is too low may result in inadequate gas flow or performance issues with connected appliances, while a higher supply pressure, such as 15 inches W.C., is typically outside the standard residential design requirements and might lead to regulatory compliance issues or safety concerns. Therefore, 11" W.C. is standard for availability in many installations, making it the most appropriate choice for gas piping system design in this scenario.

7. A gas piping installation covered by NFPA 54 includes all fixed piping from where to where?

A. From the gas meter to the appliance

B. From the main supply to the utility service

C. From the outlet of the meter set to the appliance

D. From the 1st stage regulator to the gas meter

The correct choice states that a gas piping installation covered by NFPA 54 includes all fixed piping from the outlet of the meter set to the appliance. This definition aligns with the scope of NFPA 54, which is the National Fuel Gas Code. The reason this option is correct is that NFPA 54 specifically addresses the safety standards for the installation of gas piping systems, which includes requirements for materials, design, and installation procedures. The term "outlet of the meter set" refers to the point where the gas is released for distribution through the fixed piping system, and the code focuses on the piping that transports this gas to a final point, which is the appliance. This coverage ensures that the gas is safely handled up to the appliance that ultimately uses it, thereby reducing risks associated with gas leaks or malfunctions. The emphasis on fixed piping means that any parts of the system intended for transport and not for utility service or internal appliance fittings are considered under this standard. Other potential answers may refer to stages or components of gas supply systems that do not directly fall under the jurisdiction of NFPA 54 regarding fixed piping installations.

8. What is the minimum length required for a sediment trap between the tee and the cap?

A. 1 inch

B. 2 inches

C. 3 inches

D. 4 inches

The minimum length required for a sediment trap between the tee and the cap is three inches. This specification is crucial in gas fitting as it ensures that any sediment or debris that may accumulate in the gas line can effectively settle and be removed during maintenance. Sediment traps are designed to collect impurities that might otherwise cause blockages or malfunctions in the gas system. Having a three-inch trap provides sufficient space for sediment to gather without obstructing gas flow. This length balances the need for capturing sediment while maintaining system efficiency. If the sediment trap were shorter than this minimum requirement, it might not adequately perform its function, potentially leading to operational issues or safety concerns. Proper implementation of these standards is essential for ensuring the reliability and safety of gas installations.

9. What should be done to protect gas piping from external damage when a minimum depth cannot be achieved?

A. Place it under a bridge

B. Run it inside a conduit

C. Cover it with soil

D. Use thicker pipes

The best approach to protect gas piping from external damage when it cannot be installed at the minimum depth is to run it inside a conduit. This method offers a physical barrier that shields the gas piping from impacts, corrosion, and other potential hazards it may encounter in its environment. Using conduit provides a protective casing that can withstand external pressures and accidental impacts, helping to prevent any damage to the gas piping. It is especially important in areas where vehicular traffic or heavy loads might pose a risk to buried lines, ensuring that the integrity of the gas system is maintained. While placing the piping under a bridge might seem like a protective measure, it does not effectively address issues like corrosion or impact from the ground level. Covering it with soil does not provide additional protection if the depth is insufficient. Similarly, utilizing thicker pipes may improve durability but does not directly shield the piping from environmental damage. Therefore, using a conduit is the most effective strategy in this scenario.

10. What is an essential precaution when handling gas leaks?

A. Use of protective gear

B. Immediate ignition of gas

C. Manual valve adjustments

D. Collaborative testing with others

Using protective gear is critical when handling gas leaks for several reasons. First and foremost, gas leaks can pose serious health and safety risks, including potential exposure to toxic gases, fire, or explosion hazards. Protective gear, such as goggles, gloves, and appropriate clothing, helps shield workers from harmful chemical exposure and reduces the risk of injury from any sudden incidents related to gas leaks. Additionally, protective gear can provide a barrier against sharp objects or materials that might be present when working on or around gas lines. It is essential to prioritize personal safety first before attempting to address any leaks or repair work. In contrast, the other options, such as immediate ignition of gas, manual valve adjustments, or collaborative testing with others, can introduce additional risks or may not be the best first steps in addressing a gas leak situation. Immediate ignition of gas is extremely dangerous as it can lead to explosions. Manual valve adjustments could be inappropriate depending on the context and may lead to further leaks if not handled correctly. While collaboration can be useful, it doesn't directly address the immediate need for personal safety when a gas leak is detected.