Minnesota Journeyman Sprinkler Fitter Practice Exam (Sample)

Study Guide

Everything you need from our exam experts!

Questions

1. **What size of auxiliary drain is required for trapped water between 5 and 50 gallons?**

   A. ½”

   B. ¾”

   C. 1”

   D. 1½”

2. **What is the required setting for an automatic relief valve installed with a fire pump?**

   A. Flow minimum

   B. Shutoff minimum

   C. Net minimum

   D. Pressure minimum

3. **In sprinkler systems, what is the common term for horizontal piping that may have sprinkler heads installed directly on it?**

   A. Riser Nipple

   B. Branch Line

   C. Feed Main

   D. Cross Main

4. **What is the minimum curing time required after solvent welding CPVC pipe and fittings, including sprinkler head adapters, before installing sprinkler heads?**

   A. 30 minutes

   B. 5 minutes

   C. 10 minutes

   D. 20 minutes

5. **In refrigerated spaces maintained below 5° Fahrenheit, how long is the air pressure allowed to be restored after a system activation?**

   A. 30 minutes

   B. 45 minutes

   C. 60 minutes

   D. 90 minutes

6. What is the maximum operating pressure for extra hazard storage in a sprinkler system?

A. 150 psi

B. 175 psi

C. 200 psi

D. 125 psi

7. What temperature does a solder link sprinkler with blue paint signify?

A. 250°F

B. 286°F

C. 300°F

D. 350°F

8. What is the maximum length of pipe allowed before a larger nominal pipe size must be used in a test header connection?

A. 15'

B. 10'

C. 5'

D. 20'

9. What width must Horizontal sidewall sprinklers be installed at above and below a soffit?

A. 8"

B. 16"

C. 24"

D. 6"

10. What is the maximum distance allowed from the last hanger to the end of a 1" branch line?

A. 24"

B. 30"

C. 36"

D. 12"

Answers

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

Explanations

1. What size of auxiliary drain is required for trapped water between 5 and 50 gallons?

A. ½”

B. ¾”

C. 1”

D. 1½”

The correct answer indicates that a ¾” auxiliary drain is required for trapped water volumes between 5 and 50 gallons. This size is appropriate because it allows for effective drainage of the water collected in a system's low points, avoiding issues like stagnation or water hammer that can lead to system failure or inefficiency. In sprinkler systems, it is crucial to have properly sized drains to ensure that any trapped water can be evacuated swiftly and effectively. A ¾” drain strikes the right balance between ensuring adequate flow rate while not taking up excessive space or requiring larger support infrastructure. This allows for efficient maintenance and functionality of the fire protection system. Sizes smaller than ¾” might not permit adequate outflow for the volume of water specified, risking potential overflows or pressure build-up. Conversely, larger sizes like 1” or 1½” might be unnecessarily large for this application, which could lead to challenges in installation, increased costs, and potential misalignment with design specifications that focus on more common, compact sizing for drains in this range.

2. What is the required setting for an automatic relief valve installed with a fire pump?

A. Flow minimum

B. Shutoff minimum

C. Net minimum

D. Pressure minimum

The required setting for an automatic relief valve installed with a fire pump is to be adjusted to a shutoff minimum pressure. This setting ensures that the valve will relieve pressure automatically when the pump reaches a predetermined shutoff pressure, which is crucial for preventing overpressure conditions that could damage the system. In fire protection systems, maintaining appropriate pressure levels is vital for both the safety and effectiveness of the fire pump operation. The shutoff minimum setting allows the system to respond appropriately when the pump is not engaged in producing flow, ensuring that excessive pressure does not build up in the system. By doing so, it helps maintain operational integrity and prevents potential failures that could affect fire suppression capabilities. Other settings, such as flow minimum or net minimum, pertain to different operational contexts and do not specifically address the shutoff conditions necessary for the fire pump and its associated relief valve. Thus, the shutoff minimum setting is the correct choice for ensuring safety and functionality in a fire protection system.

3. In sprinkler systems, what is the common term for horizontal piping that may have sprinkler heads installed directly on it?

A. Riser Nipple

B. Branch Line

C. Feed Main

D. Cross Main

The correct choice is the term commonly used to refer to the horizontal piping that serves multiple sprinkler heads directly. This piping connects individual sprinkler heads within a particular area or zone of a system, allowing water to be distributed effectively from the main supply to the heads. The branch line is crucial in ensuring that water reaches each sprinkler head at the correct pressure and flow rate, providing adequate coverage for fire protection. The other terms refer to different elements of a sprinkler system. The riser nipple typically refers to a vertical pipe section that connects the main system to the sprinkler heads or other components. The feed main is a larger, main supply pipe that carries water to different branches or zones but does not usually have sprinkler heads mounted directly on it. The cross main connects various feed mains and helps distribute water across a larger area, but again, it is not the section where heads are mounted directly. Understanding these definitions helps clarify the role of each component in a sprinkler system and ensures proper installation and functionality.

4. What is the minimum curing time required after solvent welding CPVC pipe and fittings, including sprinkler head adapters, before installing sprinkler heads?

A. 30 minutes

B. 5 minutes

C. 10 minutes

D. 20 minutes

The minimum curing time required after solvent welding CPVC pipe and fittings, including sprinkler head adapters, is critical for ensuring a strong and durable bond. The correct choice specifies a curing time of 30 minutes. This duration allows the solvent cement to adequately set and the welded joint to achieve its maximum strength before any stress or load is applied, such as during the installation of sprinkler heads. If the joint is not allowed sufficient time to cure, it may lead to joint failure, leaks, or reduced performance of the sprinkler system. Solvent welding involves the use of chemicals that temporarily dissolve the surface of the CPVC, allowing the materials to fuse together as the solvent evaporates. Insufficient curing time can compromise this chemical bond, risking the integrity of the sprinkler system in the long run. Proper adherence to these guidelines is essential for ensuring the reliability and safety of fire protection systems, such as those utilizing CPVC piping. Understanding the importance of curing time helps in maintaining the industry standards for installation practices.

5. In refrigerated spaces maintained below 5° Fahrenheit, how long is the air pressure allowed to be restored after a system activation?

A. 30 minutes

B. 45 minutes

C. 60 minutes

D. 90 minutes

In refrigerated spaces maintained below 5° Fahrenheit, it is crucial to adhere to specific guidelines regarding air pressure restoration after a system activation. The correct duration for restoring air pressure is 60 minutes. This time frame is established to ensure that the temperature within the refrigerated space is adequately controlled, preventing any adverse effects on the products stored inside. Maintaining a proper pressure balance is essential in refrigeration systems because rapid or improper changes in air pressure can lead to inefficiencies, such as increased energy consumption or even potential system failure. The 60-minute window allows for a gradual and stable restoration of pressure, which can help maintain the integrity of the refrigerated environment and ensure that the system operates effectively. Other time frames, such as 30, 45, or 90 minutes, do not align with industry best practices regarding pressure restoration in low-temperature refrigeration systems. A shorter restoration period might not provide sufficient time for stabilization, while a longer period could result in unnecessary risks to temperature control and product safety. Therefore, the 60-minute duration is accepted as the standard in these scenarios.

6. What is the maximum operating pressure for extra hazard storage in a sprinkler system?

A. 150 psi

B. 175 psi

C. 200 psi

D. 125 psi

The maximum operating pressure for extra hazard storage in a sprinkler system is set at 175 psi. This standard ensures that the system can effectively deliver water to suppress fires in areas deemed as extra hazard, which require a higher level of fire protection due to the nature of the materials stored or the activities conducted there. Extra hazard areas might include locations with flammable liquids, high-pile storage, or similar conditions that can significantly escalate the fire risk. A pressure of 175 psi is necessary to achieve the effective distribution and reach of water through the sprinkler heads in these scenarios. Higher pressures allow for greater distances to be covered and more robust performance overall, ensuring that the fire-fighting capability of the system meets the demands of these environments. Understanding the specific requirements for extra hazard storage is critical for compliance with fire safety codes and the effectiveness of fire suppression systems.

7. What temperature does a solder link sprinkler with blue paint signify?

A. 250°F

B. 286°F

C. 300°F

D. 350°F

A solder link sprinkler with blue paint is specifically designed to activate at a temperature of 286°F. This type of sprinkler is part of a system that utilizes a solder link mechanism, which is a common activation method for sprinklers. When the ambient temperature reaches the threshold of 286°F, the solder melts, releasing the link and allowing the sprinkler to open and distribute water to control or extinguish a fire. Understanding the specific operational temperatures of different types of sprinklers is crucial for fire safety systems. Each color typically indicates a distinct activation temperature, and blue paint is standardized in this system to represent the 286°F activation point. This knowledge helps ensure that the right type of sprinkler is installed in the appropriate environments, as selecting the appropriate temperature rating is essential for effective fire protection.

8. What is the maximum length of pipe allowed before a larger nominal pipe size must be used in a test header connection?

A. 15'

B. 10'

C. 5'

D. 20'

The correct answer indicates that, for a test header connection, the maximum length of pipe allowed before transitioning to a larger nominal pipe size is 15 feet. This standard is established to ensure that the system maintains adequate flow and pressure. When piping runs exceed a specific length, it is essential to increase the diameter to avoid excessive friction loss and to maintain the performance characteristics required for fire protection systems. In fire protection systems, maintaining pressure and flow is crucial for effective operation. If the pipe is too long for its diameter, it can impede the flow of water, resulting in insufficient pressure at the end of the run. By requiring that a larger nominal pipe size be used after 15 feet, building codes and standards help prevent these issues, ensuring the reliability and effectiveness of the fire suppression system. This requirement serves to optimize the functionality of the sprinkler system, facilitating proper distribution of water during an emergency situation.

9. What width must Horizontal sidewall sprinklers be installed at above and below a soffit?

A. 8"

B. 16"

C. 24"

D. 6"

Horizontal sidewall sprinklers must be installed at a distance of 8 inches above and below a soffit. This installation height ensures that the sprinkler can effectively control or suppress a fire in the area, allowing for optimum water distribution throughout the space. It also adheres to the design and installation standards outlined in fire protection codes, which are in place to ensure safety and compliance with regulations. The specified 8 inches places the sprinkler within a range that allows for proper functioning while considering the presence of a soffit, which could obstruct the water spray if the sprinkler were installed too close to the structure or too far away. Proper installation is critical for maintaining adequate coverage and achieving effective fire suppression, hence the significance of this specific measurement.

10. What is the maximum distance allowed from the last hanger to the end of a 1" branch line?

A. 24"

B. 30"

C. 36"

D. 12"

The maximum distance allowed from the last hanger to the end of a 1" branch line is specified as 36 inches. This is important for maintaining the structural integrity of the piping system. Properly spacing hangers prevents excessive sagging and potential damage or leakage from the piping due to unsupported spans. In sprinkler systems, the guidelines regarding hanger spacing are designed to ensure that the piping is sufficiently supported throughout its length, particularly in areas where it may experience load or thermal expansion. Following these specifications helps to ensure the reliability and safety of the installation. Proper support of branch lines also aids in effective maintenance and inspection, as it allows for easy access and visibility of the pipes. A 36-inch distance strikes a balance between support needs and practicality, making it the standard maximum allowable distance in such configurations.