G2 Gas Fitter Practice Exam (Sample)

Study Guide

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Questions

1. **The Ontario Natural Gas Utilization Code is primarily used to determine what aspect of gas appliance installation?**

   A. Ventilation requirements

   B. Regulation for installing gas appliances

   C. Pipe sizing

   D. Safety training for installers

2. **What is the primary purpose of a low water cut-off device on gas-fired boilers?**

   A. To enhance system efficiency

   B. To maintain temperature

   C. To shut off the burner in the event of an unsafe water level

   D. To modulate gas flow

3. **What is the role of a pressure regulator?**

   A. To increase pressure to flow smoothly

   B. To control and maintain uniform outlet pressure

   C. To vary the pressure according to external conditions

   D. To decrease pressure at all times

4. **What type of building is classified as an industrial building?**

   A. A building used for residential purposes

   B. A structure used for production or process work

   C. A facility used for recreation

   D. A building for civic gatherings

5. **Which valve stops the supply of gas when de-energized by a safety control?**

   A. Fast closing valve

   B. Safety shut-off valve

   C. Zero governor

   D. Control valve

6. What does the B149.1 Installation Code also cover?

A. Installation of electrical systems

B. Installation of venting systems

C. Installation of safety systems

D. Installation of drainage systems

7. What type of pilot allows for continuous ignition during main burner operation?

A. Standing pilot

B. Intermittent pilot

C. Electronic pilot

D. Variable pilot

8. Spillage of flue gases at the appliance draft diverter is an indication of?

A. A properly functioning venting system

B. An excess draft condition

C. A restriction in the venting systems

D. High efficiency appliance operation

9. What are the products of complete combustion of natural gas in the air?

A. Carbon monoxide, soot, and heat

B. Carbon dioxide, water vapour, and heat

C. Hydrogen, carbon dioxide, and ash

D. Carbon dioxide, steam, and noise

10. Which gas is typically associated with combustion products in gas appliances?

A. Carbon dioxide

B. Oxygen

C. Hydrogen

D. Nitrogen

Answers

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

Explanations

1. The Ontario Natural Gas Utilization Code is primarily used to determine what aspect of gas appliance installation?

A. Ventilation requirements

B. Regulation for installing gas appliances

C. Pipe sizing

D. Safety training for installers

The Ontario Natural Gas Utilization Code serves as a framework that regulates the installation of gas appliances to ensure safety and compliance with operational standards. Its primary focus is on the specific requirements and processes that must be followed when installing gas appliances, making sure that these installations are conducted properly to prevent hazards such as leaks, explosions, or inefficient operation. While the other options, such as ventilation requirements, pipe sizing, and safety training, are important aspects related to gas appliance installation, they fall under the broader guidelines and regulatory framework established by the code. The code encompasses various specifics, including the safe installation processes and methods for different types of gas appliances, ensuring that installers meet consistent industry standards. This emphasis on regulation directly correlates with ensuring that all installations adhere to safety, operational, and environmental requirements. Thus, the focus of the Ontario Natural Gas Utilization Code is fundamentally on the regulation of gas appliance installation itself, which is reflected in the chosen answer.

2. What is the primary purpose of a low water cut-off device on gas-fired boilers?

A. To enhance system efficiency

B. To maintain temperature

C. To shut off the burner in the event of an unsafe water level

D. To modulate gas flow

The primary purpose of a low water cut-off device on gas-fired boilers is to shut off the burner in the event of an unsafe water level. This safety device plays a crucial role in preventing the boiler from operating dry, which can lead to overheating and potential damage to the boiler or even catastrophic failure. When the water level drops below a predetermined threshold, the low water cut-off detects this condition and automatically interrupts the fuel supply to the burner, safeguarding the system from hazards associated with low water conditions. This safety measure is crucial because boilers rely on water to transfer heat and to create steam. If the water level is too low, the heat generated by the burner can cause the metal surfaces to overheat, leading to structural failures. Therefore, the low water cut-off device is an essential component that ensures safe operation and prevents dangerous situations in gas-fired boilers.

3. What is the role of a pressure regulator?

A. To increase pressure to flow smoothly

B. To control and maintain uniform outlet pressure

C. To vary the pressure according to external conditions

D. To decrease pressure at all times

The role of a pressure regulator is primarily to control and maintain a uniform outlet pressure. This is essential for ensuring consistent performance of gas appliances and systems. A pressure regulator functions by adjusting the flow of gas to maintain a set output pressure, regardless of fluctuations in the input pressure from the supply source. This regulation helps protect downstream appliances and systems by preventing overpressure situations that could lead to safety hazards or operational inefficiencies. In various applications, a stable outlet pressure allows for the proper operation of devices, achieving optimal combustion in appliances like furnaces or water heaters, which in turn enhances energy efficiency and safety. The ability to provide a steady pressure despite changes in the supply or demand makes pressure regulators a critical component of gas distribution systems.

4. What type of building is classified as an industrial building?

A. A building used for residential purposes

B. A structure used for production or process work

C. A facility used for recreation

D. A building for civic gatherings

An industrial building is specifically designed for activities related to production or processing. This type of building typically includes manufacturing plants, factories, warehouses, and distribution facilities, where goods are produced, assembled, or stored. The nature of industrial buildings is such that they are purpose-built to accommodate machines, workers, and equipment necessary for various manufacturing processes, which distinguished them from other types of buildings. In contrast, buildings used for residential purposes focus on housing individuals and families, while recreational facilities are designed for leisure activities, and civic buildings are intended for public events and community functions. Each of these other building types serves different societal needs and thus falls outside the definition of an industrial building, which is fundamentally linked to economic and production activities.

5. Which valve stops the supply of gas when de-energized by a safety control?

A. Fast closing valve

B. Safety shut-off valve

C. Zero governor

D. Control valve

The safety shut-off valve is specifically designed to stop the flow of gas when prompted by a safety control de-energization. This design enables it to act quickly in situations where there's a malfunction or unsafe condition, thereby preventing potential hazards such as leaks or explosions. Safety shut-off valves are integral to gas systems, ensuring that if an safety control device detects an unsafe condition, the gas supply can be effectively halted to mitigate risks. This is in contrast to the other options; for instance, a fast-closing valve, while it may close quickly, does not specifically serve the function of a safety control mechanism. A zero governor regulates pressure but does not stop gas flow entirely, and a control valve typically modulates the flow based on demand rather than providing a shutdown function in response to safety measures. Thus, the safety shut-off valve is critical for immediate response to hazardous situations, making it the correct choice.

6. What does the B149.1 Installation Code also cover?

A. Installation of electrical systems

B. Installation of venting systems

C. Installation of safety systems

D. Installation of drainage systems

The B149.1 Installation Code primarily focuses on the installation of gas-fired appliances and equipment. However, it also includes guidelines for the installation of venting systems that are essential for the safe operation of these gas appliances. Proper venting is critical to ensure that combustion by-products are safely expelled outside, preventing the build-up of harmful gases like carbon monoxide inside living spaces. This aspect is crucial for ensuring adequate air supply and maintaining safe pressure levels within the venting system. While the other choices pertain to areas of installation that may fall under other codes or standards, they are not covered by B149.1. The importance of venting systems is emphasized in the code to ensure compliance with safety standards and to protect the health of occupants in buildings using gas appliances.

7. What type of pilot allows for continuous ignition during main burner operation?

A. Standing pilot

B. Intermittent pilot

C. Electronic pilot

D. Variable pilot

The type of pilot that allows for continuous ignition during main burner operation is the standing pilot. A standing pilot is a small flame that remains lit at all times, providing continuous ignition for the main burner when it is activated. This design ensures that the main gas burner can ignite instantly without needing to relight the pilot each time the main burner is called for heat. In contrast, the other types of pilots operate differently. An intermittent pilot, for instance, only ignites when there is a call for heat, which means it is not continuously lit. An electronic pilot also relies on an ignitor that activates only during main burner operation but does so electronically, meaning it is not continuously burning. Lastly, a variable pilot refers to a type of pilot that can adjust its flame size but does not inherently imply continuous burning like a standing pilot. Therefore, the standing pilot is the correct answer as it meets the requirement for continuous ignition during the operation of the main burner.

8. Spillage of flue gases at the appliance draft diverter is an indication of?

A. A properly functioning venting system

B. An excess draft condition

C. A restriction in the venting systems

D. High efficiency appliance operation

Spillage of flue gases at the appliance draft diverter indicates a restriction in the venting systems. When the venting system is functioning properly, flue gases are effectively carried away from the appliance, ensuring safe operation. However, if there is a restriction—such as a blockage, improper installation, or design flaws—it can prevent the flue gases from exiting as they should. This causes the gases to back up, leading to spillage at the draft diverter. Understanding that spillage is a sign of potential issues in the venting is critical for safety. A properly functioning venting system would not allow such spillage to occur, and an excess draft condition would instead expel gases effectively, not cause them to spill. Furthermore, high-efficiency appliances typically have specific venting requirements and are designed to minimize such issues when properly installed and maintained. Therefore, recognizing spillage as a direct indicator of venting restrictions helps gas fitters to diagnose and address safety hazards effectively.

9. What are the products of complete combustion of natural gas in the air?

A. Carbon monoxide, soot, and heat

B. Carbon dioxide, water vapour, and heat

C. Hydrogen, carbon dioxide, and ash

D. Carbon dioxide, steam, and noise

The products of complete combustion of natural gas primarily include carbon dioxide, water vapor, and heat. When natural gas, which mainly consists of methane (CH_4), burns in the presence of sufficient oxygen, it undergoes a chemical reaction where its carbon and hydrogen combine with oxygen to produce carbon dioxide (CO_2) and water (H_2O), while releasing energy in the form of heat. During complete combustion, all the carbon in the methane is converted into carbon dioxide, and all the hydrogen is converted into water. This process is efficient because it maximizes the use of fuel and minimizes the release of harmful byproducts such as carbon monoxide (produced during incomplete combustion) or soot (particulate matter). Understanding the products of combustion is essential for gas fitters, as it informs safety practices and compliance with environmental regulations, helping to reduce emissions and promote cleaner burning procedures. This makes the knowledge of complete combustion crucial for ensuring efficient and safe operations within the field.

10. Which gas is typically associated with combustion products in gas appliances?

A. Carbon dioxide

B. Oxygen

C. Hydrogen

D. Nitrogen

The presence of carbon dioxide in combustion products is a fundamental aspect of how gas appliances operate. When a gas appliance burns natural gas or another hydrocarbon fuel, the primary chemical reaction involves the gas combining with oxygen from the air. This combustion process yields energy in the form of heat, and carbon dioxide is one of the main by-products generated along with water vapor. In residential and commercial contexts, gas appliances such as furnaces, water heaters, and ovens predominantly produce carbon dioxide when functioning correctly. Monitoring the levels of this gas is crucial because, although it is not toxic at low levels, high concentrations can indicate poor combustion, leading to safety concerns such as inadequate ventilation and the potential build-up of harmful gases. Oxygen, while essential for combustion, is consumed during the process and is not found in the combustion products. Similarly, hydrogen and nitrogen are either not products of this process or are only present in trace amounts, making them less relevant to the outputs expected from gas appliances. Understanding the role of carbon dioxide helps ensure that gas appliances are functioning safely and efficiently.