G2 Gas Fitter Practice Exam (Sample)

Study Guide

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Questions

1. **The relative density of liquid propane is approximately what value?**

   A. 0.2

   B. 0.5

   C. 0.8

   D. 1.0

2. **What is the primary purpose of a heat reclaimer in a venting system?**

   A. To regulate gas flow

   B. To extract heat from gases

   C. To provide mechanical draft

   D. To ignite the fuel supply

3. **What is the approximate heat content of 1 cubic foot of propane?**

   A. 1500 BTU

   B. 2000 BTU

   C. 2500 BTU

   D. 3000 BTU

4. **Which details are typically indicated on a wiring diagram?**

   A. Color coding of wires

   B. Supply voltage and internal wiring

   C. Fan speed settings

   D. Material type of wires

5. **What describes a category 2 appliance?**

   A. An appliance that operates with a positive vent static pressure

   B. An appliance that operates with a negative vent static pressure

   C. An appliance that operates with a positive vent static pressure and a flue loss of less than 17%

   D. An appliance that operates with a flue loss of not less than 17%

6. What is the primary purpose of flue gas analysis?

A. To check for efficiency of insulation

B. To ensure safety and efficiency of operation

C. To measure gas pressure

D. To assess appliance age

7. Which pilot must have its flame sensed before gas is admitted to the main burner?

A. Continuous pilot

B. Proved pilot

C. Intermittent pilot

D. Variable pilot

8. What would typically accompany the blueprint for a large construction project?

A. Instructions for workers

B. Specifications

C. Material safety data sheets

D. Inspection reports

9. What should be done when using a water extinguisher on an electrical fire?

A. It is safe to use

B. Avoid using it

C. Only use if no other extinguishers are available

D. Soak the area surrounding the fire

10. To correct a symptom like a fluctuating flame, what action should be taken?

A. Reinstall the entire appliance

B. Consult the manufacturer's checklist

C. Increase the gas pressure

D. Replace the entire unit

Answers

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

Explanations

1. The relative density of liquid propane is approximately what value?

A. 0.2

B. 0.5

C. 0.8

D. 1.0

The relative density of liquid propane is approximately 0.5. Relative density, also known as specific gravity, is a measure that compares the density of a substance to the density of water. Since water has a relative density of 1.0, a relative density of 0.5 indicates that liquid propane is about half as dense as water. This value is significant in various applications, including gas fitting, as it helps professionals understand how propane behaves in various conditions. For example, because the relative density is less than 1, liquid propane will float on water. This information is crucial for safety and engineering considerations, especially in leak scenarios where propane may come into contact with water. Additionally, understanding the relative density helps in calculating the volume and mass of propane in different situations, assisting professionals in ensuring safety and efficiency in gas systems. Knowing that propane is less dense than water can also impact decisions regarding storage and handling of this substance.

2. What is the primary purpose of a heat reclaimer in a venting system?

A. To regulate gas flow

B. To extract heat from gases

C. To provide mechanical draft

D. To ignite the fuel supply

The primary purpose of a heat reclaimer in a venting system is to extract heat from the gases that are produced during combustion processes. This technology is instrumental in energy efficiency, as it captures otherwise wasted thermal energy from exhaust gases and redirects it for reuse within the system or for heating purposes. By harnessing this heat, a heat reclaimer helps to improve the overall efficiency of the heating system, reducing energy consumption and operational costs. In this context, heat reclaimers are particularly important in systems that vent hot gases into the atmosphere, where they would otherwise dissipate their heat. The design and placement of a heat reclaimer facilitate the transfer of heat from the exhaust stream to a fluid, often water or air, which can then be used for space heating or to enhance the efficiency of boiler operations. The other options pertain to different functions that are not related to the primary role of a heat reclaimer. While regulating gas flow, providing mechanical draft, and igniting the fuel supply are crucial aspects of venting systems and combustion efficiency, they do not align with the primary function of extracting heat from gases.

3. What is the approximate heat content of 1 cubic foot of propane?

A. 1500 BTU

B. 2000 BTU

C. 2500 BTU

D. 3000 BTU

The approximate heat content of 1 cubic foot of propane is around 2500 BTU. This value is based on standard measurements of propane's energy content, which is significant when calculating heating requirements for various applications. Understanding the heat content is crucial for gas fitters as it influences the design and implementation of heating systems, ensuring efficiency and safety. Knowing that 1 cubic foot of propane contains approximately 2500 BTU allows professionals to accurately size equipment and predict energy usage based on the demands of the space being heated or the appliance being used. This value can be influenced by variables such as temperature and pressure conditions, but 2500 BTU serves as a reliable estimate for typical calculations.

4. Which details are typically indicated on a wiring diagram?

A. Color coding of wires

B. Supply voltage and internal wiring

C. Fan speed settings

D. Material type of wires

The correct answer identifies that a wiring diagram typically includes supply voltage and internal wiring details. This is essential for understanding the operational characteristics of the electrical components in a system. The supply voltage indicates the necessary voltage level for safe and efficient operation, which is crucial when connecting or troubleshooting electrical devices. Internal wiring details illustrate how components are interconnected, providing a visual reference for installation, repairs, or modifications. While color coding of wires can frequently be found in various illustrated guides to aid in proper identification, it is not a universal feature of all wiring diagrams. Fan speed settings relate to operational parameters specific to devices rather than the installation or wiring information. The material type of wires may be relevant when considering safety specifications or standards but does not typically appear on a wiring diagram itself. Recognizing the importance of supply voltage and internal wiring in ensuring correct electrical connections and functionality helps in adhering to safety codes and best practices in gas fitting and appliance installation.

5. What describes a category 2 appliance?

A. An appliance that operates with a positive vent static pressure

B. An appliance that operates with a negative vent static pressure

C. An appliance that operates with a positive vent static pressure and a flue loss of less than 17%

D. An appliance that operates with a flue loss of not less than 17%

A category 2 appliance is characterized specifically by its operation with a negative vent static pressure. This type of appliance is designed to vent products of combustion safely, ensuring that there is a proper flow of combustion gases without back pressure affecting the appliance's performance. A negative static pressure indicates that the appliance is drawing air into the combustion chamber, which is crucial for its efficiency and safety, as it helps prevent the escape of combustion gases into the living space. In contrast, the other options refer to different conditions or types of appliances. Operating with a positive vent static pressure is not typical for category 2 appliances, as this may lead to improper venting and potential safety hazards. Additionally, while flue loss percentages are relevant when classifying appliances, the defining characteristic of category 2 is its operational pressure rather than specific loss metrics. Thus, the emphasis on negative vent static pressure highlights the operational mechanics critical for ensuring the effectiveness and safety of these types of appliances.

6. What is the primary purpose of flue gas analysis?

A. To check for efficiency of insulation

B. To ensure safety and efficiency of operation

C. To measure gas pressure

D. To assess appliance age

The primary purpose of flue gas analysis is to ensure safety and efficiency of operation. This process involves measuring the composition and quantity of gases emitted from combustion appliances. By analyzing flue gases, a technician can determine if the appliance is burning fuel efficiently, indicated by the appropriate levels of oxygen and carbon dioxide, and if there are harmful gases like carbon monoxide present. Ensuring that appliances operate safely means they are emitting acceptable levels of pollutants and functioning within their designed parameters, which is crucial for both safety and performance. While assessing insulation efficiency, measuring gas pressure, and determining appliance age may be important aspects of overall appliance maintenance, they do not specifically pertain to the analysis of flue gases. Flue gas analysis is directly linked to performance metrics that affect both the environmental impact and the health of occupants in a space.

7. Which pilot must have its flame sensed before gas is admitted to the main burner?

A. Continuous pilot

B. Proved pilot

C. Intermittent pilot

D. Variable pilot

The correct answer is based on safety mechanisms in gas appliances. A proved pilot is a pilot light system designed to ensure that the pilot flame is actually lit and functioning properly before any gas is allowed to flow to the main burner. This is crucial for preventing potential hazards, such as gas leaks or explosions, which could occur if the main burner were to be ignited without a reliable ignition source. In a proved pilot system, a flame sensing device, such as a thermocouple or a flame rectification sensor, continuously monitors the pilot flame. If the flame goes out, the sensing device will shut off the gas supply to the main burner, thus preventing the risk of unburned gas accumulating in the appliance. This safety feature is an essential part of gas safety regulations and helps ensure the safe operation of gas-fired equipment. Other types of pilots, like continuous and intermittent pilots, may have different operational characteristics but often do not provide the same level of proof of flame during operation. Variable pilots may change intensity and are typically more related to specific applications, which do not inherently require flame proofing in the same way as a proved pilot system does. Understanding the nuances of these pilot systems is key to effective and safe gas fitting practices.

8. What would typically accompany the blueprint for a large construction project?

A. Instructions for workers

B. Specifications

C. Material safety data sheets

D. Inspection reports

The accompanying documents for a blueprint in a large construction project typically include specifications. Specifications are critical because they provide detailed descriptions of the materials, workmanship, and the standards required for the project. They ensure that all parties involved have a clear understanding of what is needed to meet the project's requirements and adhere to industry standards. Specifications cover various aspects, such as types of materials to be used, installation procedures, quality benchmarks, and compliance with safety codes and regulations. This information is essential for contractors and workers to accurately execute the project as envisioned in the blueprint, thus serving as a complementary document that enhances the understanding and implementation of the design. While instructions for workers, material safety data sheets, and inspection reports may also be relevant in specific contexts, they do not directly accompany blueprints in the way specifications do. Instructions for workers might be developed on-site or accompany specific tasks, material safety data sheets pertain more to safety and handling information rather than building requirements, and inspection reports are generated post-construction to assess compliance with project specifications and safety.

9. What should be done when using a water extinguisher on an electrical fire?

A. It is safe to use

B. Avoid using it

C. Only use if no other extinguishers are available

D. Soak the area surrounding the fire

Using a water extinguisher on an electrical fire is extremely dangerous due to the nature of electricity and water. Water is a conductor of electricity, which means using it on an electrical fire can create a risk of electric shock for the person trying to extinguish the fire. This is particularly critical because electric currents can spread through the water, effectively increasing the risk of injury or even death. The best practice in the event of an electrical fire is to use a specifically rated extinguisher, such as a CO2 or dry powder extinguisher, which are designed to safely extinguish electrical fires without conducting electricity. These extinguishers are made to handle fires involving live electrical equipment without the risk associated with water exposure. In summary, avoiding the use of water extinguishers on electrical fires is a crucial safety measure for both the individual and the surrounding area.

10. To correct a symptom like a fluctuating flame, what action should be taken?

A. Reinstall the entire appliance

B. Consult the manufacturer's checklist

C. Increase the gas pressure

D. Replace the entire unit

Consulting the manufacturer's checklist is the most appropriate action to take when addressing a symptom like a fluctuating flame. This checklist typically provides detailed diagnostic information and troubleshooting steps specific to the appliance in question. By following these guidelines, a trained technician can identify the root cause of the issue, whether it be related to installation, maintenance, or operational parameters. In many cases, a fluctuating flame may indicate problems such as inadequate gas supply, improper ventilation, or issues with the burner assembly. The manufacturer's checklist is designed to help diagnose these specific issues systematically, ensuring that you are considering all possible causes before taking more drastic measures. In contrast, reinstalling the entire appliance could be unnecessary and time-consuming, especially if the issue could be resolved through simpler troubleshooting methods. Increasing the gas pressure could potentially create unsafe conditions and would likely not resolve the underlying issue unless it is specifically indicated as a requirement by the manufacturer's guidelines. Replacing the entire unit is usually a last resort and should only be considered after all other troubleshooting steps have been exhausted and if the appliance is deemed beyond repair.