Florida Journeyman Practice Exam (Sample)

Study Guide

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Questions

1. What effect does a thermostatic expansion valve with a discharge power element have on the evaporator?

A. Overheated evaporator

B. Starved evaporator

C. Fully functioning evaporator

D. Flooded evaporator

2. What type of labeling is required on refrigerant pressure relief devices?

A. The model number and serial number

B. The name and address of the manufacturer

C. The date of manufacture

D. The operating pressure range

3. How many ohms is considered a low-resistance connection?

A. 1 ohm

B. Less than 1 ohm

C. 5 ohms

D. 10 ohms

4. In a ducted system with a cooling coil installed and an existing furnace heat exchanger, where must the air first flow through according to code?

A. Cooling coil

B. Heat exchanger

C. Duct system

D. Air filter

5. What is the primary function of circuit breakers in electrical systems?

A. To increase circuit capacity

B. To provide secure electrical connections

C. To interrupt excessive current flow for protection

D. To maintain steady voltage levels

6. Which factors influence the selection of wire sizes in electrical installations?

A. Thickness, Color, and Length

B. Current Load, Length of Run, and Ambient Temperature

C. Voltage, Distance, and Weather Conditions

D. Type of Insulation, Demand Load, and Efficiency

7. In an attic installation, where must a platform be provided?

A. In front of the equipment

B. Above the insulation

C. Next to the access door

D. Below the ceiling

8. What is the minimum level of insulation that a portion of a supplied duct that is on an exterior of a residential structure requires if the duct is greater than 3 inches in diameter?

A. R-15

B. R-10

C. R-20

D. R-5

9. When are junction boxes required in residential wiring?

A. When a circuit is overloaded

B. Whenever a conductor is spliced or joined

C. When installing lighting fixtures

D. To connect multiple circuits

10. What is an established and recognized agency called that is engaged in conducting tests or furnishing inspection services?

A. Approved agency

B. National testing authority

C. Inspection council

D. Regulatory body

Answers

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

Explanations

1. What effect does a thermostatic expansion valve with a discharge power element have on the evaporator?

A. Overheated evaporator

B. Starved evaporator

C. Fully functioning evaporator

D. Flooded evaporator

The correct answer relates to the specific function of a thermostatic expansion valve (TXV) equipped with a discharge power element, which is designed to precisely control the flow of refrigerant into the evaporator. In this scenario, when the evaporator experiences a starved condition, it indicates that insufficient refrigerant is entering the evaporator, leading to a reduction in cooling capacity and inefficient operation. The discharge power element in the TXV responds to changes in the discharge pressure, adjusting the flow of refrigerant accordingly. If the pressure is too low, it could result in the valve restricting refrigerant flow even further, causing a starved evaporator where the surface area of the evaporator is not fully utilized. This can happen if the system is low on refrigerant or if there is an obstruction or improper functioning of the valve itself. Therefore, the condition of a starved evaporator is accurately characterized by the implication that the unit isn't receiving enough refrigerant for proper heat exchange, ultimately leading to ineffective cooling and potential system damage if not addressed.

2. What type of labeling is required on refrigerant pressure relief devices?

A. The model number and serial number

B. The name and address of the manufacturer

C. The date of manufacture

D. The operating pressure range

The requirement for labeling on refrigerant pressure relief devices to include the name and address of the manufacturer is crucial for several reasons. Having the manufacturer's information allows for easy identification of the source of the device, which is essential for ensuring compliance with safety standards and regulations. This can aid in referencing product specifications, addressing warranty claims, or obtaining replacement parts. Knowing the manufacturer also helps in tracking potential recalls or safety notices issued for particular devices. In the event of malfunction or safety concerns, being able to contact the manufacturer directly can be invaluable for prompt support. The other aspects of labeling, such as the model number, serial number, date of manufacture, and operating pressure range, while important for maintenance and operational purposes, are not categorized under the primary labeling requirements that emphasize manufacturer identification. Thus, the necessity of including the manufacturer's name and address holds a significant priority in ensuring reliability and accountability in the use of refrigerant pressure relief devices.

3. How many ohms is considered a low-resistance connection?

A. 1 ohm

B. Less than 1 ohm

C. 5 ohms

D. 10 ohms

A low-resistance connection is typically defined as one that has a resistance considerably less than the standard impedance found in most electrical circuits. In many electrical standards and practices, a resistance of less than 1 ohm is regarded as low resistance. This threshold allows for efficient current flow with minimal energy loss, which is crucial in applications where resistance can lead to excess heat generation and reduced performance. Connections that are meant to be low-resistance—such as those in critical power distribution systems, grounding systems, or connections in sensitive electronic devices—are designed to have less than this 1-ohm threshold. Keeping resistance low ensures that electrical devices operate correctly and safely by minimizing voltage drops and avoiding overheating, which could result from higher resistances. Higher resistance levels, such as 5 ohms or 10 ohms, are considered significantly more resistive, potentially leading to problems in electrical performance and safety. Therefore, a connection measured at less than 1 ohm is well within the acceptable range for a low-resistance connection, ensuring optimal performance in electrical applications.

4. In a ducted system with a cooling coil installed and an existing furnace heat exchanger, where must the air first flow through according to code?

A. Cooling coil

B. Heat exchanger

C. Duct system

D. Air filter

In a ducted system where both a cooling coil and a furnace heat exchanger are present, the code typically mandates that the air must first flow through the heat exchanger before passing through the cooling coil. This is primarily to ensure that the heating function of the furnace can effectively warm the air before it is either cooled or circulated throughout the space. The design intent is to maximize the efficiency of both systems. By allowing the air to first be heated in the heat exchanger, it helps to prevent the cooling coil from having to work harder to reach the desired temperature. This sequence also includes safety considerations, as it ensures that any potential condensation or moisture that might occur in the cooling coil does not adversely affect the heating system. Proper airflow is essential for both heating and cooling operations to maintain efficient temperature control and energy use within the system. Adhering to this airflow sequence also ensures compliance with safety and performance standards as dictated by the relevant building codes.

5. What is the primary function of circuit breakers in electrical systems?

A. To increase circuit capacity

B. To provide secure electrical connections

C. To interrupt excessive current flow for protection

D. To maintain steady voltage levels

The primary function of circuit breakers in electrical systems is to interrupt excessive current flow for protection. Circuit breakers are designed to automatically trip and disconnect the circuit when the current exceeds a predetermined threshold, which helps prevent overheating, potential fire hazards, and damage to electrical devices and wiring. This safety mechanism is crucial for protecting both the electrical system and the users involved, as it ensures that in the event of a fault—such as a short circuit or overload—the electrical flow is cut off, thus mitigating risks. In contrast, while increasing circuit capacity, providing secure electrical connections, and maintaining steady voltage levels are important aspects of electrical systems, they do not encapsulate the primary purpose of circuit breakers. Increased circuit capacity refers to the ability to handle more current without tripping, secure connections pertain to proper installation and wiring, and maintaining voltage levels involves regulation that is typically managed by other components in the system. Therefore, the interruption of excessive current flow stands as the critical function that defines the role of circuit breakers.

6. Which factors influence the selection of wire sizes in electrical installations?

A. Thickness, Color, and Length

B. Current Load, Length of Run, and Ambient Temperature

C. Voltage, Distance, and Weather Conditions

D. Type of Insulation, Demand Load, and Efficiency

The selection of wire sizes in electrical installations is primarily influenced by current load, length of run, and ambient temperature. Current load refers to the amount of electric current a wire is expected to carry during normal operation. This factor is crucial because each wire size has a specific ampacity, meaning it can only handle a certain amount of current without overheating. The length of run, or the distance the wire must travel from the power source to the load, is also significant. Longer runs can result in voltage drop, which can negatively affect the performance of electrical equipment. Proper wire sizing helps mitigate this issue by ensuring that sufficient conductor material is used to maintain adequate voltage levels at the load end. Ambient temperature is another essential consideration, as the temperature surrounding the wire can affect its ability to dissipate heat. Higher ambient temperatures decrease a wire's ampacity, meaning if the wire is located in a hotter environment, a larger gauge may be necessary to safely handle the intended load. The other factors outlined in the other choices do play a role in electrical installations but do not focus on the direct technical parameters required for wire sizing in the same way as current load, length of run, and ambient temperature. For instance, thickness may correspond to wire gauge but is not a

7. In an attic installation, where must a platform be provided?

A. In front of the equipment

B. Above the insulation

C. Next to the access door

D. Below the ceiling

A platform must be provided in front of the equipment in an attic installation to ensure safe and convenient access for maintenance and servicing. This requirement is crucial because it allows workers to operate and inspect equipment without the risk of stepping on fragile insulation, electrical wiring, or ductwork that could be obstructive in the attic space. Providing this platform enhances safety by ensuring that workers have a stable and designated area to perform their tasks, reducing the likelihood of accidents and injuries while they work in a confined and often challenging environment. The other options do not fulfill the practical considerations for safety and accessibility that are critical in an attic space. Being above insulation or next to the access door does not provide the necessary stability for serving the equipment. Installing a platform below the ceiling could lead to difficulties in reaching the equipment and may not adhere to safety codes and standards that prioritize worker access and safety.

8. What is the minimum level of insulation that a portion of a supplied duct that is on an exterior of a residential structure requires if the duct is greater than 3 inches in diameter?

A. R-15

B. R-10

C. R-20

D. R-5

The minimum level of insulation required for a portion of a supplied duct that is on the exterior of a residential structure and has a diameter greater than 3 inches is R-10. This level of insulation helps to ensure proper energy efficiency and performance by reducing heat loss or gain through the ductwork, which can be particularly important when ducts are exposed to outside temperatures. Ducts with inadequate insulation can lead to significant energy waste, as conditioned air may be heated or cooled before it reaches its intended destination. By specifying R-10, building codes and standards seek to maintain a comfortable indoor environment while also promoting energy conservation practices. The other levels of insulation, such as R-15, R-20, and R-5, either exceed what is necessary for this application or do not provide sufficient insulation. R-10 strikes the right balance for effective insulation in the context of exterior ducts under standard requirements.

9. When are junction boxes required in residential wiring?

A. When a circuit is overloaded

B. Whenever a conductor is spliced or joined

C. When installing lighting fixtures

D. To connect multiple circuits

Junction boxes are required in residential wiring whenever a conductor is spliced or joined. The primary purpose of a junction box is to provide a safe and organized space for electrical connections. This includes situations where wires are cut and then joined together, whether through splicing or connecting different lengths of wire. Junction boxes help protect these connections from physical damage, prevent potential electrical fires, and allow for easy access for maintenance or troubleshooting. In addition to ensuring safety, using junction boxes maintains compliance with electrical codes that mandate proper enclosure for spliced conductors. This prevents wires from coming into contact with any potential moisture or other hazards that could compromise insulation or safety. Proper junction box procedures also help with ensuring that every connection is accessible for inspection, which is essential for both installation and future modifications. While junction boxes can indeed play a role in scenarios involving overloaded circuits or connecting multiple circuits, the specific trigger for the requirement is fundamentally about splicing or joining conductors. The necessity for junction boxes enhances safety and adheres to best practices within electrical work.

10. What is an established and recognized agency called that is engaged in conducting tests or furnishing inspection services?

A. Approved agency

B. National testing authority

C. Inspection council

D. Regulatory body

The term "approved agency" refers to an established and recognized organization that is specifically engaged in conducting tests or providing inspection services. These agencies are often accredited or certified by relevant authorities to ensure that they meet specific standards and guidelines for testing and inspection processes. In the context of the construction and electrical trades in Florida, approved agencies play a crucial role in ensuring compliance with codes and standards. They are trusted to evaluate materials, systems, and installations to guarantee safety and efficacy, which is vital for both regulatory compliance and public safety. Other options, while potentially relevant in different contexts, do not specifically indicate the designated role of providing inspection services. A national testing authority may refer to a broader organization that oversees testing on a national level but may not exclusively focus on inspections. An inspection council might suggest a group or body that discusses or regulates inspection practices, but it doesn't directly imply a recognized agency that performs tests. A regulatory body generally oversees compliance and enforces laws but may not necessarily conduct testing or inspections directly. Thus, "approved agency" is the most accurate description of an organization conducting tests or furnishing inspection services.