# Ohio Electrical Contractor NEC Code and Safety Standards Practice Test (Sample)

## Study Guide


**Everything you need from our exam experts!**

# Questions

**1. What is required for conductors installed in manholes or enclosures allowing personnel entry?**

**A. They must be color-coded**

**B. Must provide ready and safe access for installation and maintenance**

**C. They can be installed without additional requirements**

**D. They must be buried underground**

**2. What must be used when calculating noncoincident loads of motor or air-conditioning equipment?**

**A. 100 percent of the load**

**B. 150 percent of the load**

**C. 125 percent of whichever is larger**

**D. 200 percent of the load**

**3. If large electrical equipment is at least 6 feet wide, will a single entrance be permitted if the exit is unobstructed?**

**A. No, a double entrance is required**

**B. Yes, as long as it meets clearance standards**

**C. Yes, regardless of exit conditions**

**D. No, it must have multiple exits**

**4. Is it permitted to use a set-screw type pressure connector to complete the connection of conductors to terminal parts?**

**A. Not permitted**

**B. Permitted**

**C. Only in outdoor installations**

**D. Only for temporary connections**

**5. Is it acceptable for feeders to operate without proper labeling for grounded conductors?**

**A. Yes, if they are in a secure area**

**B. No, labeling is mandatory**

**C. Only for temporary setups**

**D. Only in residential applications**

**6. May all feeder or branch-circuit conductors be attached to a feeder and/or branch-circuit mast?**

**A. Yes**

**B. No**

**C. Only branch-circuit conductors**

**D. Only feeder conductors**

**7. To which load does the demand factors in Table 220.45 apply?**

**A. Individual appliance loads**

**B. The total branch-circuit load for cooking appliances**

**C. The portion of the total branch-circuit load calculated for general illumination**

**D. Dedicated circuits for lighting**

**8. Must grounded conductors for a premises wiring system be electrically connected to the grounded conductor of the supply system?**

**A. Yes**

**B. No**

**C. Only for larger systems**

**D. Only if required by local code**

**9. Why is it important to have a disconnect in solidly grounded wye electric services?**

**A. To enhance the aesthetics of installation**

**B. To facilitate safe maintenance and emergency situations**

**C. To allow for more appliances to be added**

**D. It is not important**

**10. For household electric clothes dryers, what should be the basis of load determination as per the recommendations?**

**A. The operational history of the dryer**

**B. The specific rating provided on the appliance's nameplate**

**C. The average load of similar models**

**D. The maximum calculated load from all circuits**

# Answers

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

# Explanations

## 1. What is required for conductors installed in manholes or enclosures allowing personnel entry?

**A. They must be color-coded**

**B. Must provide ready and safe access for installation and maintenance**

**C. They can be installed without additional requirements**

**D. They must be buried underground**

**The requirement that conductors installed in manholes or enclosures allowing personnel entry must provide ready and safe access for installation and maintenance is important for several safety and practical reasons. When personnel need to enter these confined spaces for work, such as installation, inspection, or repair, it is crucial that they can do so without unnecessary risk or obstruction. In practice, this means ensuring that conductors and any associated equipment are installed in a manner that facilitates easy movement and accessibility within the enclosure. This could involve considerations such as the arrangement of the conductors, leaving adequate space for tools, and ensuring that there are no sharp edges or hazards that could injure personnel. Accessibility also plays a critical role in emergency situations, allowing quick action to be taken if needed. Having conductors that are hard to access could lead to dangerous situations, increased risk of accidents, or delays in maintenance which could compromise the electrical system's safety and reliability. Therefore, the emphasis on safe access is essential in maintaining compliance with safety standards and upholding the well-being of personnel working in these settings.**

## 2. What must be used when calculating noncoincident loads of motor or air-conditioning equipment?

**A. 100 percent of the load**

**B. 150 percent of the load**

**C. 125 percent of whichever is larger**

**D. 200 percent of the load**

**When calculating noncoincident loads for motor or air-conditioning equipment, the standard practice is to apply 125 percent of the highest individual load, which provides a buffer to account for potential fluctuations in demand and ensures that the electrical system can handle the load safely and efficiently. This practice reflects the National Electrical Code (NEC) guidelines, which aim to enhance safety and reliability, particularly for systems subjected to varying operational conditions. In the case of motors, the 125 percent rule is particularly important due to the potential for high inrush currents during startup, which can exceed the normal running current. By using 125 percent of the larger load, you are accommodating these variations and ensuring that the circuit can handle both continuous and peak load demands without risk of overload. This approach helps maintain a margin of safety within electrical installations, thus reducing the likelihood of equipment failures or electrical hazards, translating to better performance and longevity of both the electrical system and the equipment being serviced.**

## 3. If large electrical equipment is at least 6 feet wide, will a single entrance be permitted if the exit is unobstructed?

**A. No, a double entrance is required**

**B. Yes, as long as it meets clearance standards**

**C. Yes, regardless of exit conditions**

**D. No, it must have multiple exits**

**The correct answer is that a single entrance is permitted as long as it meets clearance standards. In electrical installations, safety guidelines often provide specifications that allow for flexibility based on the dimensions of the equipment and the route of egress. When large equipment exceeds a certain width, there are specific clearance requirements that must be adhered to ensure safe operation, maintenance, and emergency evacuation. As long as the single entrance provides adequate access and complies with the necessary clearance standards—meaning it does not create a safety hazard and allows for easy movement around the equipment—it is permissible. This compliance ensures that personnel can safely operate and maintain the equipment without obstruction both during normal operations and in emergencies. In contrast, options suggesting a double entrance or multiple exits are generally required in scenarios involving equipment exceeding the defined width if clearance or other safety considerations are not met. Thus, this approach caters to operational safety and proper safety protocol, aligning the configuration of entrances with the equipment's size and the overall safety of the environment.**

## 4. Is it permitted to use a set-screw type pressure connector to complete the connection of conductors to terminal parts?

**A. Not permitted**

**B. Permitted**

**C. Only in outdoor installations**

**D. Only for temporary connections**

**The use of a set-screw type pressure connector to complete the connection of conductors to terminal parts is indeed permitted according to the National Electrical Code (NEC) and Ohio Electrical Code requirements. These types of connectors are designed to securely hold conductors in place, ensuring a reliable and safe electrical connection. Set-screw connectors provide a straightforward method for making connections, especially in situations where quick installation is desired. They are commonly used in various applications, noting that the pressure the set-screw applies is sufficient to maintain a continuous electrical connection under normal service conditions. The integrity of these connections is paramount in preventing overheating and maintaining safety standards within the electrical system. The approval of set-screw type connectors recognizes their effectiveness in various installations, provided they are used in accordance with manufacturers' guidelines and NEC standards. This allows for increased versatility and options for electricians and contractors in completing their work efficiently and safely.**

## 5. Is it acceptable for feeders to operate without proper labeling for grounded conductors?

**A. Yes, if they are in a secure area**

**B. No, labeling is mandatory**

**C. Only for temporary setups**

**D. Only in residential applications**

**Labeling grounded conductors is essential for maintaining safety and ensuring proper identification in electrical installations. It enhances the ability of electricians and maintenance personnel to quickly and accurately assess and manage the electrical system. Proper labeling helps prevent accidents, such as incorrect connections or maintenance actions that could lead to electric shock or equipment failure. The National Electrical Code (NEC) mandates clear and adequate labeling of conductors to provide information regarding their purpose, voltage, and other essential details. This is particularly important for feeders, which may operate under high voltage or carry significant current, further emphasizing the need for clarity in identification. When grounded conductors lack proper labeling, it increases the risk of confusion and improper handling, making it potentially dangerous. In contrast, options that suggest that labeling may not be necessary under certain conditions—such as secure areas, temporary setups, or in specific residential applications—do not align with the comprehensive safety standards outlined in the NEC. These exceptions could lead to misinterpretation and could compromise the safety and reliability of electrical installations. Therefore, proper labeling is a crucial component of electrical safety practices that must be followed at all times.**

## 6. May all feeder or branch-circuit conductors be attached to a feeder and/or branch-circuit mast?

**A. Yes**

**B. No**

**C. Only branch-circuit conductors**

**D. Only feeder conductors**

**The correct response reflects the National Electrical Code (NEC) guidelines regarding the installation of feeder and branch-circuit conductors. The NEC specifies that feeder and branch-circuit conductors have distinct roles and requirements within electrical systems. Feeder conductors are designed to carry power from a service entrance to a distribution point, while branch-circuit conductors distribute power from that point to the final load devices. Because of their different functions, there are specific regulations that determine how and where these conductors can be run and attached. The NEC restricts the attachment of all feeder and branch-circuit conductors to a single mast, as this may lead to complications in serviceability, maintenance, and compliance with safety standards. By separating these conductors, it reduces the risks associated with overheating and simplifies troubleshooting. Thus, stating that they cannot all be attached together to a mast is supported by the safety principles outlined in the NEC, ensuring that installations remain safe and efficient.**

## 7. To which load does the demand factors in Table 220.45 apply?

**A. Individual appliance loads**

**B. The total branch-circuit load for cooking appliances**

**C. The portion of the total branch-circuit load calculated for general illumination**

**D. Dedicated circuits for lighting**

**The demand factors in Table 220.45 apply specifically to the portion of the total branch-circuit load calculated for general illumination. This table provides a means to determine the minimum demand for lighting load requirements within a space, helping engineers and electricians accurately size circuits and ensure adequate lighting levels while also avoiding oversizing, which can lead to inefficient systems. General illumination typically encompasses a variety of lighting sources used to provide overall lighting in an area, as opposed to loads associated with dedicated appliances or specific lighting circuits. By applying these demand factors, electrical professionals can derive a more realistic calculation for the lighting needs in terms of safety, efficiency, and compliance with the National Electrical Code (NEC). In contrast, individual appliance loads and dedicated circuits address specific items or dedicated lighting systems, which do not utilize the same demand factors outlined in Table 220.45. These aspects may require different considerations for their unique power demands rather than generalized illumination calculations. The focus on the general illumination load aligns with the intention of optimizing the design and operation of lighting within spaces.**

## 8. Must grounded conductors for a premises wiring system be electrically connected to the grounded conductor of the supply system?

**A. Yes**

**B. No**

**C. Only for larger systems**

**D. Only if required by local code**

**The requirement for grounded conductors in a premises wiring system to be electrically connected to the grounded conductor of the supply system is rooted in the need for safety and the proper functioning of electrical systems. When a grounded conductor is connected to a grounding system, it helps ensure that fault currents can safely return to the source, thereby facilitating the operation of overcurrent protection devices, such as circuit breakers or fuses. This connection is crucial to maintaining safety standards, as it helps prevent electric shock hazards and enhances the overall stability of the electrical system. In addition, this practice aligns with the National Electrical Code (NEC) regulations, which establish clear guidelines for grounding and bonding to ensure that electrical systems operate safely and effectively. Ensuring that grounded conductors are correctly bonded to the supply system creates a reference point for voltage and minimizes the risk of transient voltages that can lead to equipment damage or hazards. This connection is not merely a suggestion; it is a fundamental requirement in electrical installations to ensure electrical safety and reliability.**

## 9. Why is it important to have a disconnect in solidly grounded wye electric services?

**A. To enhance the aesthetics of installation**

**B. To facilitate safe maintenance and emergency situations**

**C. To allow for more appliances to be added**

**D. It is not important**

**Having a disconnect in solidly grounded wye electric services is crucial for facilitating safe maintenance and emergency situations. A disconnect switch provides a means to isolate electrical equipment from the power supply, which is essential for workers performing maintenance tasks. This isolation reduces the risk of accidental energization, allowing technicians to work safely on electrical components without the threat of electrical shock or other hazards. In emergency situations, such as during a fire or electrical malfunction, the ability to quickly disconnect power can help prevent further damage and ensure safety for emergency responders. Additionally, it allows for a rapid response to potentially dangerous situations, minimizing risks to both personnel and equipment. The other suggested choices do not reflect the primary purpose of a disconnect in this context. Aesthetic considerations or the capacity to add more appliances is secondary to the vital safety functions that a disconnect provides in solidly grounded wye electric services.**

## 10. For household electric clothes dryers, what should be the basis of load determination as per the recommendations?

**A. The operational history of the dryer**

**B. The specific rating provided on the appliance's nameplate**

**C. The average load of similar models**

**D. The maximum calculated load from all circuits**

**The recommendation for determining the load for household electric clothes dryers is based on the specific rating provided on the appliance's nameplate. This rating reflects the manufacturer's specifications and represents the maximum continuous load that the dryer is designed to handle safely and efficiently. The nameplate information typically includes the voltage, current, and wattage requirements, which are crucial for ensuring that the electrical system is adequately sized and capable of supporting the appliance's operation without the risk of overload or hazard. Using the nameplate rating ensures that the determination is both accurate and aligned with the manufacturer's guidelines, promoting safety and compliance with the National Electrical Code (NEC). This method allows for more precise calculations when designing electrical systems and ensures that the installation meets the necessary safety standards without relying on general assumptions or averages from similar models. Operational history of the dryer, average loads from similar models, or maximum calculated loads from all circuits may not provide the same level of specificity and could lead to underestimating or overestimating the requirements for safe operation. Thus, relying on the nameplate is crucial for making informed electrical calculations.**