Elevator Mechanic Practice Exam (Sample)

Study Guide

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Questions

1. What is typically included in the final layout or Hoistway plan view drawing for an elevator installation?

A. Elevator lighting requirements

B. Elevator speed specifications

C. Pulley arrangements

D. Door control system

2. What is the proper way to test incoming voltage?

A. Using a single-phase AC meter

B. Using a ground fault circuit interrupter

C. 3 phase AC using digital meter: L1-L2 L1-L3 L2-L3

D. Using a 12V car battery

3. Car weighs 7,000lbs with a capacity of 3,500lbs. what does the CWT weigh?

A. 7,800 lbs

B. 8,000 lbs

C. 8,200 lbs

D. 8,400 lbs

4. What should you do before starting work on an inoperable freight door?

A. Check the fuse box

B. Call a supervisor

C. Check the hinges

D. Block open the door and LOTO

5. Where would you find the information for the installation location of machines, governors, and generators?

A. Electrical diagrams

B. Installation manual

C. Machine room plan view

D. Support structure blueprints

6. If a hydro elevator runs with no load but won’t run with a full load, what is likely the problem?

A. Pump failure

B. Relief valve set too low

C. Oil temperature too low

D. Oil level too high

7. Which drawing will show the number and location of fixtures?

A. The blueprint

B. The electrical diagram

C. The elevator abstract

D. The sectional plan

8. What should you do when entering a pit with a toxic atmosphere?

A. Contact local authorities

B. Enter immediately to assess the situation

C. Follow proper OSHA procedures with proper training and PPE

D. Inform your supervisor and leave it

9. You have an EMT run with 3-90s, 2-45s, and a saddle bend. What is required?

A. An Intermediate pull box

B. Double bends at each end

C. Single bends at each end

D. Support brackets every 3 feet

10. How can you make a 300 ohm resistor if you don't have one?

A. 2 150 ohm resistors in series

B. 2 450 ohm resistors in parallel

C. 2 600 ohm resistors in parallel

D. 3 100 ohm resistors in series

Answers

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

Explanations

1. What is typically included in the final layout or Hoistway plan view drawing for an elevator installation?

A. Elevator lighting requirements

B. Elevator speed specifications

C. Pulley arrangements

D. Door control system

The final layout or Hoistway plan view drawing for an elevator installation is crucial for ensuring that all elements are accurately represented and coordinated. Including elevator lighting requirements in this drawing is essential because proper lighting is necessary for both safety and operational efficiency. This ensures visibility for maintenance personnel and during emergency situations. In terms of the other aspects, while elevator speed specifications are important for performance, they are typically noted in the technical documentation rather than the layout drawing itself. Pulley arrangements are more commonly illustrated in separate mechanical drawings that detail the machine and mechanical systems. The door control system, while critical for operation, is generally documented in electrical schematics rather than the layout drawing. Therefore, the inclusion of lighting requirements aligns more directly with ensuring a safe and functional environment within the elevator hoistway.

2. What is the proper way to test incoming voltage?

A. Using a single-phase AC meter

B. Using a ground fault circuit interrupter

C. 3 phase AC using digital meter: L1-L2 L1-L3 L2-L3

D. Using a 12V car battery

To test incoming voltage accurately, the best approach involves using a three-phase AC digital meter, which measures the voltage between different phases. This method allows for a thorough assessment of all three phases of the electrical supply, ensuring you can check how the system is functioning under operational conditions. When using a three-phase AC digital meter, measuring the voltage between combinations of the phases (like L1-L2, L1-L3, and L2-L3) provides crucial information about the balance of the electrical supply, which is vital for the safe and efficient operation of elevator systems. It helps identify any issues with voltage discrepancies that could affect performance or lead to equipment failure. The single-phase AC meter, while useful for specific applications, does not provide the full scope needed to assess a three-phase system. Ground fault circuit interrupters are safety devices and are not designed for measuring voltage; their primary function is to protect against electrical shocks. A 12V car battery is not relevant for testing incoming voltage at higher voltages typically found in elevator systems, as it operates at a completely different voltage level from what would be tested in those environments.

3. Car weighs 7,000lbs with a capacity of 3,500lbs. what does the CWT weigh?

A. 7,800 lbs

B. 8,000 lbs

C. 8,200 lbs

D. 8,400 lbs

The correct answer is D, 8,400 lbs. The term "CWT" stands for "Counterweight," which is a weight that counterbalances the load in the elevator car to help facilitate its movement. In this scenario, the car weighs 7,000 lbs and has a capacity of 3,500 lbs. To determine the weight of the counterweight, you add the weight of the car (7,000 lbs) to its capacity (3,500 lbs) to get a total of 10,500 lbs. Since the counterweight is typically equal to 80% of the total weight, you would calculate 80% of 10,500 lbs, which equals 8,400 lbs. This weight helps balance the load in the elevator system, ensuring its smooth and efficient operation.

4. What should you do before starting work on an inoperable freight door?

A. Check the fuse box

B. Call a supervisor

C. Check the hinges

D. Block open the door and LOTO

Before starting work on an inoperable freight door, it is crucial to block the door open and implement Lockout/Tagout (LOTO) procedures. This ensures that the door cannot be inadvertently closed or operated while you are working on it, which is essential for your safety and the safety of others in the vicinity. LOTO is a safety protocol that protects workers from unexpected energization or movement of machinery, and in the context of a freight door, it prevents anyone from accidentally activating the door mechanism. Other options, while they may seem relevant, do not directly ensure safety while working on the door. Checking the fuse box or the hinges could provide information about the door's inoperability, but they do not address the immediate need to secure the work environment. Calling a supervisor could be part of the process, especially if there are safety concerns or specific procedures that need to be followed, but it does not substitute the need to properly secure the door before work begins. Thus, prioritizing safety through LOTO and blocking the door open is the most appropriate action before starting any repairs.

5. Where would you find the information for the installation location of machines, governors, and generators?

A. Electrical diagrams

B. Installation manual

C. Machine room plan view

D. Support structure blueprints

The electrical diagrams would contain detailed information about the installation location of machines, governors, and generators since they provide a clear visual representation of the electrical components and their placement within a system. The installation manual may also contain some information about placement, but it primarily gives instructions on how to set up the machines rather than providing specific location details. The machine room plan view may show the general layout of the machines, but it may not provide specific installation locations. The support structure blueprints mainly focus on the structural framework and may not include information about the placement of specific components. Therefore, the electrical diagrams are the best source for finding information about the installation location of these machines.

6. If a hydro elevator runs with no load but won’t run with a full load, what is likely the problem?

A. Pump failure

B. Relief valve set too low

C. Oil temperature too low

D. Oil level too high

The situation described indicates that the hydro elevator functions without a load but fails to operate when fully loaded. This suggests a potential issue with the system's ability to generate the necessary pressure to lift the full weight. When the elevator is unloaded, it requires less hydraulic pressure to raise the car, leading to normal operation. However, under a full load, the system needs to produce sufficient pressure to counteract the weight. If there is a failure in the pump, it may not be supplying the needed hydraulic fluid pressure to move the elevator, which explains why the system works when unloaded but cannot lift when fully loaded. While other options might suggest issues that could affect performance, they typically wouldn't lead to a complete failure to operate under load in the same way that a failed pump would. For example, a relief valve that is set too low may allow operation under certain conditions but would restrict performance, while low oil temperature generally influences the viscosity and flow characteristics, possibly leading to operational issues but not a total failure. An oil level that is too high would not generally prevent operation but could lead to other concerns. Thus, identifying pump failure as the likely issue aligns with the symptoms of the elevator's performance under differing load conditions.

7. Which drawing will show the number and location of fixtures?

A. The blueprint

B. The electrical diagram

C. The elevator abstract

D. The sectional plan

The blueprint is the correct choice because it provides a detailed representation of the construction and layout of the elevator system, including the number and location of fixtures. Blueprints typically illustrate the physical layout and dimensions of various components, allowing a clear understanding of how elements like buttons, control panels, and other fixtures are integrated within the elevator space. While the electrical diagram focuses on electrical connections and wiring rather than physical layout, the elevator abstract summarizes various aspects of the elevator system but does not detail specific locations of fixtures. The sectional plan offers a cut-through view of the elevator and its components, but it may not explicitly show all fixture placements in relation to the rest of the elevator's construction. Thus, the blueprint stands out as the most comprehensive resource for identifying both the number and location of fixtures in an elevator installation.

8. What should you do when entering a pit with a toxic atmosphere?

A. Contact local authorities

B. Enter immediately to assess the situation

C. Follow proper OSHA procedures with proper training and PPE

D. Inform your supervisor and leave it

When entering a pit with a toxic atmosphere, it is essential to follow proper OSHA procedures, which involve being adequately trained and using the appropriate personal protective equipment (PPE). OSHA has established guidelines to ensure the safety of workers in hazardous environments, including the necessity of proper training to understand the risks involved and how to mitigate them. By adhering to these procedures, you can minimize the risk of exposure to toxic substances and ensure that you are equipped to handle the situation safely. Proper PPE includes items such as respirators and protective clothing, which mitigate the impacts of harmful chemicals or gases, allowing for a safer work environment. Choosing to enter without following established safety protocols could lead to serious health risks, and while notifying supervisors or local authorities may be part of the overall safety response, the immediate priority should always be ensuring that individuals are trained and protected before entering hazardous areas.

9. You have an EMT run with 3-90s, 2-45s, and a saddle bend. What is required?

A. An Intermediate pull box

B. Double bends at each end

C. Single bends at each end

D. Support brackets every 3 feet

The requirement for an EMT run with multiple bends is primarily focused on maintaining code compliance and ensuring the safety and stability of the electrical conduit. In this scenario, with three 90-degree bends and two 45-degree bends, the total number of bends exceeds the allowed limit for a continuous run without requiring additional support infrastructure. Having an intermediate pull box is crucial because it allows for easier access to the wiring within the conduit and provides a means to change direction without exceeding the maximum number of bends permitted in a conduit run. The NEC (National Electrical Code) has guidelines that state when a run of conduit has too many bends, a pull box must be installed to facilitate pulling the wire through. Different bend configurations or support brackets, while important in other contexts, do not address the need for accessibility in a scenario involving multiple bends. Therefore, the best answer is to have an intermediate pull box to ensure the conduit run is both functional and compliant with safety standards.

10. How can you make a 300 ohm resistor if you don't have one?

A. 2 150 ohm resistors in series

B. 2 450 ohm resistors in parallel

C. 2 600 ohm resistors in parallel

D. 3 100 ohm resistors in series

To create a 300 ohm resistor using resistors you already have, connecting two 150 ohm resistors in series is a valid method. When resistors are connected in series, their resistances add together. Therefore, combining two 150 ohm resistors yields: 150 ohms + 150 ohms = 300 ohms. This approach effectively provides the desired resistance value of 300 ohms by utilizing the series connection property of resistors. In contrast, other options do not achieve the same target resistance. For instance, resistors in parallel reduce the overall resistance, and combinations in those options would not yield a total of 300 ohms.