

EICA Mobile Crane & Digger Practice Test (Sample)

Study Guide



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SAMPLE

Questions

- 1. What is the maximum number of broken wires allowed in a 6x25 hoist line before replacement is needed?**
 - A. 4**
 - B. 6**
 - C. 2**
 - D. 3**
- 2. How is the boom length of a crane measured?**
 - A. From the cab to the tip**
 - B. From the boom foot pin to the center of the boom tip sheave pin**
 - C. From the base to the main hook**
 - D. From the end of the boom to the closest sheave**
- 3. Nylon web slings should not be used near which of the following?**
 - A. Heat sources**
 - B. Acids**
 - C. Water**
 - D. Oils**
- 4. Why is it crucial to assess the crane's stability before lifting a load?**
 - A. To ensure the equipment is new**
 - B. To prevent equipment damage**
 - C. To maintain control over the load**
 - D. To comply with regulations**
- 5. What is the most common cause of death for ground personnel working with cranes?**
 - A. Falls from heights**
 - B. Electrocution**
 - C. Crush injuries**
 - D. Vehicle collisions**

- 6. In a two crane lift with differing rated capacities, how should the crane with the greater capacity be positioned?**
- A. Farther from the load's center of gravity**
 - B. Closer to the load's center of gravity**
 - C. Equal distance from the load's center of gravity**
 - D. Any position is acceptable**
- 7. What is the minimum allowable clearance from the crane and power lines under 50kV?**
- A. 5 ft**
 - B. 10 ft**
 - C. 15 ft**
 - D. 20 ft**
- 8. What type of items must a person working around energized power lines avoid wearing?**
- A. Rubber gloves**
 - B. Conductive items**
 - C. Padded jackets**
 - D. Hard hats**
- 9. What is the role of the controlling entity during crane setup?**
- A. Providing the crane operator with safety gear**
 - B. Overseeing ground preparation**
 - C. Managing site traffic**
 - D. Guiding the crane operator through tasks**
- 10. What must you do when entering or exiting an equipotential zone?**
- A. Use a bridge**
 - B. Use a transition area**
 - C. Wear grounded footwear**
 - D. Call for assistance**

Answers

SAMPLE

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

SAMPLE

Explanations

SAMPLE

1. What is the maximum number of broken wires allowed in a 6x25 hoist line before replacement is needed?

- A. 4
- B. 6**
- C. 2
- D. 3

The maximum number of broken wires allowed in a 6x25 hoist line before replacement is required is six. This is based on industry standards and guidelines that aim to ensure safety and structural integrity when operating hoist lines. In a 6x25 wire rope construction, there are 6 strands, each containing 25 wires. The overall design allows for a certain degree of wear and tear, and the given maximum of six broken wires reflects a balance between safety and practical usability. Once this threshold is reached, it indicates that the wire rope could be compromised, potentially leading to failure under load. Therefore, replacing the hoist line at this point is essential for maintaining safety during lifting operations. Regular inspections are crucial for identifying any broken wires, and adhering to this guideline helps prevent accidents and injuries while ensuring continued safe operation of the equipment.

2. How is the boom length of a crane measured?

- A. From the cab to the tip
- B. From the boom foot pin to the center of the boom tip sheave pin**
- C. From the base to the main hook
- D. From the end of the boom to the closest sheave

The boom length of a crane is measured from the boom foot pin to the center of the boom tip sheave pin. This measurement is standardized in crane operations because it provides a consistent and precise way to determine the working range and load capacity of the crane. The boom foot pin is where the boom connects to the crane structure, and the center of the boom tip sheave pin is the point where the load line exits the boom, which is crucial for understanding the mechanics of lift and extension. Measuring from these two specific points ensures that the length accounts for the effective reach of the crane when in operation, allowing operators to calculate the crane's capabilities accurately. This method plays a significant role in safety and operational efficiency, as it directly impacts load charts and lifting calculations. The other options either do not accurately reflect the standard measurement practices or involve points that do not provide a consistent reference for operational purposes.

3. Nylon web slings should not be used near which of the following?

A. Heat sources

B. Acids

C. Water

D. Oils

Nylon web slings are highly versatile and widely used in lifting applications due to their strength and durability. However, they have specific limitations regarding their exposure to certain substances. When it comes to acids, nylon is susceptible to degradation when exposed to them. Acids can weaken the fibers of the nylon, which compromises the sling's structural integrity and increases the risk of failure during lifting operations. The chemical reaction between the nylon and acid can lead to a reduction in the sling's load capacity, posing significant safety hazards. In contrast, nylon web slings can withstand other conditions, such as being near heat sources within certain limitations, contact with water (as they can handle moisture well but may absorb it), and even oils, although prolonged exposure to certain oils can affect their performance. However, the priority in terms of safety is to avoid using nylon web slings in environments where they may come into contact with acids to ensure the reliability and safety of lifting operations.

4. Why is it crucial to assess the crane's stability before lifting a load?

A. To ensure the equipment is new

B. To prevent equipment damage

C. To maintain control over the load

D. To comply with regulations

Assessing the crane's stability before lifting a load is essential for maintaining control over the load during operation. A stable base ensures that the crane can safely lift and maneuver the load without tipping or swaying, which can result from changes in weight distribution or environmental factors such as wind. When a crane is properly assessed for stability, operators can confidently execute lifts, knowing that they have minimized the risk of accidents that could lead to loss of control. While ensuring that equipment is new, preventing damage, and complying with regulations are indeed important aspects of crane operation, they do not directly address the immediate concern of maintaining control during a lift. Stability plays a direct role in the safety and effectiveness of lifting operations, which is why it is specifically highlighted as a critical factor when preparing to lift a load.

5. What is the most common cause of death for ground personnel working with cranes?

- A. Falls from heights**
- B. Electrocution**
- C. Crush injuries**
- D. Vehicle collisions**

The most common cause of death for ground personnel working with cranes is electrocution. This is primarily due to the proximity in which cranes often operate near overhead power lines and electrical equipment. When cranes are maneuvered, there's a significant risk of contact with live electrical sources, which can lead to severe injuries or fatalities. Additionally, ground personnel may be working in areas where they are exposed to electrical hazards, especially during lifting operations or when rigging and signaling for cranes. Awareness of electrical safety protocols, ensuring proper clearance distances, and using cranes equipped with insulation on components can help mitigate these risks. While falls from heights, crush injuries, and vehicle collisions certainly pose serious risks to ground personnel, electrocution consistently emerges as a leading cause of fatal incidents due to the deadly combination of human and electrical errors in crane operations.

6. In a two crane lift with differing rated capacities, how should the crane with the greater capacity be positioned?

- A. Farther from the load's center of gravity**
- B. Closer to the load's center of gravity**
- C. Equal distance from the load's center of gravity**
- D. Any position is acceptable**

When performing a two crane lift where the cranes have differing rated capacities, positioning the crane with the greater capacity closer to the load's center of gravity is crucial for maintaining stability and control of the lift. The crane with the greater capacity is better equipped to handle the majority of the load and stabilize the load during the lift. By placing it closer to the center of gravity, the load distribution is more balanced, which helps prevent tipping or swinging. This positioning also minimizes the load moment that can occur if the cranes are not properly aligned in relation to the load's center of gravity. Keeping the higher capacity crane closer ensures that it can effectively manage the forces acting on the load and provides a greater level of safety throughout the lifting operation. Ensuring that the crane with the greater capacity is optimally positioned allows the lift to be executed with a reduced risk of accidents or load instability, enhancing the overall safety and efficiency of the operation.

7. What is the minimum allowable clearance from the crane and power lines under 50kV?

- A. 5 ft
- B. 10 ft**
- C. 15 ft
- D. 20 ft

The minimum allowable clearance from cranes to power lines under 50kV is 10 feet. This regulation is in place to ensure safety during crane operations, as electrical hazards can pose a serious risk. The 10-foot distance acts as a buffer zone to prevent accidental contact with power lines, which could lead to electric shock or arc flash incidents. Maintaining this clearance is essential for both the safety of the crane operators and the integrity of the power line infrastructure. Safety guidelines are established by organizations such as the Occupational Safety and Health Administration (OSHA) and the American National Standards Institute (ANSI) to protect workers in proximity to live electrical lines. Understanding the clearance requirements is crucial for anyone operating or working around cranes, as it promotes safe practices and mitigates potential accidents related to electrical hazards.

8. What type of items must a person working around energized power lines avoid wearing?

- A. Rubber gloves
- B. Conductive items**
- C. Padded jackets
- D. Hard hats

Individuals working around energized power lines must avoid wearing conductive items because these materials can significantly increase the risk of electrical shock or electrocution. Conductive items, such as jewelry, metal tools, or clothing made from conductive fabrics, can create a direct path for electricity, potentially leading to severe accidents. In environments with high voltage, it is critical to maintain a safe distance from any source of electrical current, and conductive materials can compromise that safety. Rubber gloves are protective gear specifically designed to insulate against electrical current, so they do not pose the same risk. Padded jackets and hard hats are generally not conductive and are used for protection against physical impacts or weather conditions, making them appropriate choices in such work environments. Thus, the correct choice highlights the importance of safety measures in preventing electric shock when working near energized power lines.

9. What is the role of the controlling entity during crane setup?

- A. Providing the crane operator with safety gear**
- B. Overseeing ground preparation**
- C. Managing site traffic**
- D. Guiding the crane operator through tasks**

The role of the controlling entity during crane setup primarily involves overseeing ground preparation. This responsibility is crucial because the stability and safety of the crane largely depend on the condition and preparation of the ground it is positioned on. Proper ground preparation ensures that the crane is set on a surface that can bear its load and withstand the forces applied during lifting operations. This may include assessing the soil type, ensuring that it is level, firm, and free of any obstructions or hazards that could affect the crane's stability. While safety gear is important for the crane operator, it falls outside the direct responsibilities of overseeing crane setup. Similarly, managing site traffic and guiding the operator through tasks, while relevant to overall site safety and operational efficiency, do not focus specifically on the ground preparation aspect, which is critical in establishing a safe working environment for crane operation. Thus, the emphasis on ground preparation in this context highlights its fundamental role in preventing accidents and ensuring the crane functions safely and effectively.

10. What must you do when entering or exiting an equipotential zone?

- A. Use a bridge**
- B. Use a transition area**
- C. Wear grounded footwear**
- D. Call for assistance**

When entering or exiting an equipotential zone, using a transition area is crucial because it helps ensure safety by reducing the risk of electrical shock. An equipotential zone is created to minimize voltage differences that can occur due to electrical hazards. A transition area acts as a buffer, allowing individuals to safely move from a potentially hazardous environment to a safe one without encountering dangerous voltage differences. The use of a transition area effectively creates a region where electrical potentials are equalized, thus mitigating the risk during entry or exit. This practice is particularly important in environments where electrical currents may be present, such as construction sites involving mobile cranes and diggers, where equipment may create hazards through ground contact or electrical proximity. While other options like wearing grounded footwear can provide some level of protection, they do not substitute the necessary protocols involved in safely entering or exiting an equipotential zone. Similarly, the use of a bridge may not be applicable in every scenario, and calling for assistance, while a good safety practice in certain situations, does not specifically address the procedural requirement of moving through a transition area.